

**ELECTRONIC BANKING AND FINANCIAL PERFORMANCE
OF DEPOSIT TAKING SAVINGS AND CREDIT CO-OPERATIVE
SOCIETIES IN WESTERN KENYA**

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DECLARATION

This research project is my original work and has not been submitted for the degree in any university.

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DEDICATION

Dedicated to my beloved Wife Juster, my children Merrice, Consty, Care and Kingnice for their love and support.

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ABSTRACT

Most Savings and Credit Cooperative Societies in Kenya have adopted Information and Communication Technology (ICT) innovations as part of their operations with a view of maximising benefits and enhancing service delivery. However there is limited research on impact of adoption of technological innovations and performance of Saccos. Therefore this research was carried out to determine the correlation between electronic banking and financial performance of Deposit-taking Saccos in Western Kenya. Secondary data was collected from audited and published annual statements that contained information on total assets, net income, total shareholders' equity, expenditure on electronic banking and total capital of Deposit-taking Saccos. The data provided useful information that helped to derive annual performance of Deposit-taking Saccos measured as return on assets, electronic banking (electronic banking expenditures), capital adequacy and liquidity. The study results showed a feeble positive correlation between electronic banking adoption and financial performance of Saccos. But there exists a strong positive correlation between Sacco's capital adequacy and Sacco's liquidity. In view of these findings, there is need for management of Saccos to act rationally in adoption of innovations such as e-banking and work methods that promote efficiency to ensure minimum cost and maximum net benefits. Electronic banking would help Saccos improve effectiveness in customer service delivery which may enhance membership mobilisation.

ABBREVIATIONS AND ACRONYMNS

ATM	Automated Teller Machine
M-banking	Mobile banking
CAMELSS	Capital Adequacy, Management Quality, Asset Quality, Equity and Liquidity
EFT	Electronic Fund Transfer
FSD	Financial Sector Deepening
FOSA	Front Office Services Activity
PEARLS	Protection, Effective financial structure, Asset quality, Rates of return and cost and Liquidity and Signs of growth
IT	Information Technology
SACCOs	Savings and Credit Cooperative Societies
SASRA	Sacco Societies Regulatory Authority
SMS	Short Text Message Service
ROA	Return on Asset
ROE	Return on Equity
WOCCU	World Council of Credit Unions

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Savings and Credit Co-operative Societies (Saccos) in Kenya have realised a tremendous growth in the subsector and are investing huge amount of their scarce financial resources in electronic technology (IT) to enhance services delivery and offer a wide variety of products and services range, increased membership mobilisation and size, ensure better structure and effective financial performance (Koduk, 2015). Electronic banking (e-banking) as used in the Saccos industry is as a result of Information Communication Technology (ICT) revolution commonly referred to as electronic commerce (Ovia, 2001)). Many Saccos are steadily changing from manual banking system of operations to providing electronic banking (e-banking) services that include internet banking, M-banking and Automated Teller machine support (ATM). Mouawad & Kleiner, (1996) posit that the adoption of electronic banking by the Saccos is a strategic attempt to deal with increased cut throat competition from traditional banking institutions and non-banking financial institutions, to cut costs and add value to their services in order to optimise benefits to the shareholders.

Even though there is a rapid adoption of electronic banking taking place in Saccos industry in Kenya, it is coming much later relative to the use of electronic banking in the traditional banking institutions. The Saccos adopting electronic banking are applauded by the citizens and the government of Kenya since electronic banking is considered a way of improving productivity and a means of gaining competitive advantage (Oyugi, 2014). Saccos are also considered to have a vital economic value in terms of productivity and growth, employment generation and dynamics,

community development, equity promotion or innovation. From this perspective, better financial performance of Saccos enhances the effectiveness and sustainability of Saccos (Aduda & Kingoo, 20012). It is therefore envisaged that huge benefits that include effective service delivery, cost reduction and accessibility will accrue to the many clients, firms and regulators that adopt electronic banking (Koduk, 2015).

While electronic banking has efficiently facilitated tasks of Saccos and made services less expensive, investment in automation consumer huge rare financial resources, (Atavachi, 2015). Therefore a sound analysis of costs and risks associated with electronic banking is needed to avoid harm on Sacco's financial performance.

In Kenya Saccos are registered under the Sacco Societies Act (2008). Under the Act (2008), Saccos are licensed, regulated and promoted by the Sacco Societies Regulatory Authority (SASRA). The Act (2008) provides minimum requirements for operation and prudent standards necessary for Saccos that take deposit to minimise risk and ensure stability in funds of the Saccos. The Saccos are classified into those Saccos that take deposit (DTSs) and those that do not take deposit. Saccos that take deposit give members savings and credit services inform of basic banking services. Such Saccos accept deposit, provide payment services and operate quasi banking services known as Front Office Services Activities (FOSA). FOSAs are part of Saccos' e-banking activities which are licensed by SASRA and are aimed at improving customer services, cutting costs and ensuring effective operation of Saccos (SASRA Report 2014). As a norm, Saccos begin as non-Deposit Taking Saccos and eventually grow to deposit taking Saccos where they provide a variety of financial services to their members (Kenya Financial Stability Report, 2014).

The study aimed at assessing the relationship between e-banking and financial performance of Deposit Taking Savings and Credit Co-operative Societies in Western Kenya. The study used three theories: Rogers's Innovation Diffusion Theory, Task-Technology Fit Theory and Technological context, Organisational context and Environmental context theory to explain and understand the underlying factors in adoption of innovation such as e-banking by Saccos.

1.1.1 Electronic Banking

Electronic banking (e-banking) is the utilisation of Information Technologies (IT) to provide a variety of value added products and services to bank clients (Steven, 2002). E-banking entails M-banking, internet banking, and computer-based banking as reflected in e-banking expense of Saccos, (Atavachi, 2013). Ovia, (2001) posit that the use of information technology in banking is called electronic banking and is one of the products of e-commerce. It is a way through which a client makes transactions by electronic means instead of visiting a brick – and mortar institution (Epstein, 2004). Aduda & Kingoo, (2012) noted that online banking enable individuals to check their account balances without visiting the banking hall for such services but had a huge expense on institutions adopting e-banking.

The major indicator of e-banking services in Kenya is the electronic banking expenditure which is incurred on automation by Saccos for the installation of Automated Teller Machines (ATMs), M-banking tools and internet banking instruments in order to provide e-banking services. E-banking is also considered to influence the Liquidity and Capital adequacy of Saccos as evidenced from the audited records of Saccos (Atavachi, (2013)).

The major innovation to deal with e-banking risks are the adoption of Global Security standards in payment cards, Visa and MasterCard as well as Euro pay, (Kenya Financial Sector Stability Report, 2013).

The operational definition of electronic banking for the research study referred to Mobile banking platform, ATMs support and internet banking services that individuals utilize to access their Saccos Societies account directly from their mobile phones or Personal Digital Assistant to utilize services such as cash deposits, make payments, balance inquiry, account opening, transfer cash, subscription to initial public offers by transmitting money through the accounts, on-line shopping, online banking, ATM support, paying for tickets, paying school fees, SMS, buy air time or even access customised information as measured in electronic banking expenses.

The main electronic banking instruments used by Saccos include Mobile Banking services, Internet banking and the Automated Teller Machine (ATMs). Mobile banking is done using mobile phones (M-banking). The M-banking has rapidly developed because of the new modalities of M-banking that has enabled many unbanked people in both urban and rural areas to access banking services, (Michael & Mayer, 2011). Mobile banking services are assumed as inexpensive, affordable and accessible geographically to everyone including remote locations that can't be accessed by traditional retail bank branches due to lack of infrastructure (Coetzee, Kamau & Njema, 2003).

The Internet banking has evolved as an instrument to provide bank clients access to bank account through web site. This enables clients to perform financial transactions electronically on their account given compliance with strict controls such as the use of PIN number as a security measure (Mallick,

2006). Atavachi, (2013), noted that the challenge to expand and maintain market share led Saccos to investing in more enhanced internet banking.

Saccos also use Automated Teller Machines (ATMs) networks which make use of computerised technology to provide services to customers. ATMs have contributed greatly to enhancing client convenience, cutting costs of transactions, which has enhanced operations and banks' profitability (Muthui, 2013).

1.1.2 Financial Performance

Financial performance is a determinant of the accountability of an organisation for the results of its activities, policies, and operations quantified for a defined financial period (VanHome & Wachowics, 2008)

The World Council of Credit Unions (WCOCU) developed performance monitoring system that entails Protection, Effective financial structures, Asset Quality, Rates of Return and cost, Liquidity and Signs of growth (PEARLS } as financial performance monitoring system that act as guidelines or standards for credit unions and other savings institutions to measure and monitor performance. PEARLS uses a set of financial ratios to measure vital areas of savings institutions and credit unions operations. The PEARLS system gives key disciplines of proper financial stewardship (Branch & Klaehn, 2008).

There are other financial monitoring and performance evaluation systems such as Capital adequacy, Asset quality, Management, Earnings ability, Liquidity management and Solvency (CAMELS) Model that help measure performance of firms. The CAMELS model utilises qualitative measures of assessment and indicators

which are specific to microfinance institutions to measure performance of a given Sacco (Cifuentes, 2008).

The reason for determining financial performance of a firm is to allow decision makers judge the aftermath of an enterprise strategies and operations in unbiased monetary terms. This enables determination of a firm's overall effectiveness over a specified financial period. This can facilitate comparison with similar firms in the same industry in an aggregated fashion.

The key ratios that are utilised to assess financial performance of a business entity are Liquidity ratios, Solvency ratios, Profitability ratios and Efficiency ratios (Julie et al 2010). Profitability ratios indicate management's ability to convert sales into profits and cash flow, financial ratios shows ability of a firm financially, because they determine a firm's leverage relative to its resources (assets) and equity (Bryn et al, 2010). Liquidity ratios measure the ability of a firm to meet its short term financial obligations. Efficiency ratios show how effectively a firm is utilising its enterprise assets. Sacco's financial performance refer to whether a Saccos has performed better over a defined period of time to achieve its targeted aims.

Financial statements of a business entity give information on the performance. Devinaga & Rahia, (2010) noted that to determine how well a banking institution is doing, the results must be considered in terms of return on assets (ROA) and return on equity (ROE). Richard Loth, (1999) ROA ratio shows how better the management is utilising the firm's assets to generate profits. The higher the return, the more efficient management is utilising its assets to generate profits.

In this study, profitability measure; the ROA was used to assess Sacco's financial performance. These profitability ratios help indicate management efficiency and rate

of returns. Financial performance of Saccos is evaluated by SASRA reports that evaluate the Saccos' performance financially in the Sacco subsector using audited financial statements and reports provided by individual Saccos annually as part of the legal requirements.

In the study, financial performance of Saccos was measured by way of computation of ROA over a period of two years (2014/2015). ROA was calculated by dividing Sacco's annual earnings by their total assets. This is displayed in percentage. In the context of this indicator, e-banking in performance measurement leans mainly on operating activities of a firm. ROA puts into consideration the resources (assets) utilised to facilitate enterprise tasks. It established a company's ability to produce sufficient return on these resources rather than simply indicating returns on sales. ROE on the other hand as a performance measure focuses on returns to the shareholders of the firm. It helps obscure a lot of likely challenges as organisations may embark on approaches to uniquely retain a better ROE for a short period and obscure diminishing performance of the enterprise basics (Hagel, Brown & division, 2010).

1.1.3 E-Banking and Financial Performance

Customers demand higher quality services (Okiro & Ndung'u, 2013). They are conscious about technological advancements and want products and services that meet their precise and individual needs (Koduk, 2015). Technology adoption in the recent past decades has helped financial institutions to effectively respond to this challenge (Gitau, 2011). This is very vital as any firm's ability to perform well financially is so critical to its existence and sustainability in the short and long run (Aduda & Kingoo, 012). Ombudo, (2009), noted that electronic banking services enable Saccos to cut costs sharply and in return, they improve the quality of services

which contribute to improvement of profitability of an organisation. It is in this respect that electronic banking is positively correlated to financial performance of Saccos. Sergeant (2000), posits that electronic banking services offer a chance to cut down on transaction costs of doing business, provides a huge chance to carry out large scale business operations, to reengineer business phases and a viable chance to commit the firm's resources and sell across the borders.

Empirically and theoretically, research on e-banking and financial performance has been carried out mainly in banking institutions service context (Muhammad Malnudin, 2006). The available literature indicate that service quality is a key driver of profit of any profit oriented service firm (Okiro & Ndung'u, 2013). Electronic services enable Saccos to cut cost significantly and in return, generate profit, (Ombudo, 2009). The study aimed at investigating the correlation between e-banking and financial performance of Saccos.

Khrawish & et al, (2011), did a research to determine the impact of electronic banking on bank profit in Jordan. It was noted that banks which used electronic banking services to do business transactions for less than two years, e-banking had insignificant effect on the ROA and the ROE. The study results revealed an insignificant effect of electronic banking services on banks' profit margin after a period of two years of applying it in Jordan.

1.1.4 The Deposit Taking Saccos Subsector in Western Kenya

Savings and Credit Cooperative Societies in western Kenya are growing and showing improvement in performance in the region. However the greatest development has been the adoption of electronic banking services in their operations, a step that has seen Saccos enhance operational efficiency and service delivery to clients, (Afubwa et

al, 2013). Atavachi, (2013) notes that most Saccos in Kenya are investing their scarce financial resources in electronic banking services to enhance performance. This gives them a competitive advantage in the Saccos subsector in Kenya.

Western Kenya is a region of Kenya and includes the former Nyanza and Western Provinces of the same name. The western Kenya has 10 Counties namely; Busia, Bungoma, Homa bay, Migori, Kisii, Nyamira, Siaya, Kakamega, Kisumu and Vihiga Counties. The region has a total of 22 SASRA registered deposit taking Saccos evenly spread across the counties, (SASRA list of Saccos, 2016). 2 Deposit taking Saccos are restricted by SASRA for the year 2016. (SASRA list of Restricted Saccos).

There are also non-Deposit Taking Saccos in Western Kenya which are registered and supervised by the commissioner for Cooperatives. Such non Deposit Taking Saccos include farmers Saccos, Jua Kali Artisans Saccos among others, and provide advisory role and inputs support to the members. This study will investigate the effect of electronic banking on Deposit taking Saccos in Western Kenya. The uniqueness of western Kenya is its rapid growth in Saccos subsector and the rapid adoption of e-banking in the recent years.

The Deposit Taking registered Sacco Societies in Western Kenya are fully automated and use Mobile banking, ATM support and electronic banking services to serve their members. The members use MasterCard, mobile phones, internet, Visa cards (Kenya Financial Sector Stability Report, 2013), to process and receive loan, to access their savings and co-operatives account directly from their mobile phones or Personal computers and to use services such as cash deposits, make payments, balance inquiry, account opening, transfer cash, subscription to initial public offers by transmitting money through the accounts and online banking.

In the year 2014 the total assets of Saccos in Kenya went up by 17.2 percent (SASRA Supervision Report, 2014). This was from Ksh. 275, 368 million in 2013, to Ksh. 301.537 million in 2014.

1.2 Research Problem

Despite the fact that Saccos have rapidly adopted electronic banking to provide services, and that they drive a huge section of the financial sector savings of the economy, they have experienced various challenges such as uncertainty and risk due to electronic banking (Koduk, 2015). There is a basic assumption that adoption of electronic banking is a survival strategy by Saccos Subsector of engaging in technologically innovative ways of managing and running the sector to ensure sustainability (Ahimbisibwe, 2012). This topic has not been adequately researched. Moreover the correlation between electronic banking and financial performance of Saccos using electronic banking is still ambiguous, perhaps understandable.

Electronic transactions have facilitated efficient customer centred services globally. Sathye, (2005) carried a comparative study on using internet transactions banking to enhance service delivery in order to improve major Credit Union's financial performance in Australia. He concludes that automated transactions banking have an insignificant impact on financial performance and risk, but posits that electronic transactions should be exploited as an instrument to enhance service delivery in credit unions.

Mwau (2013), studied the effect of financial sector liberation in Kenya and the financial performance of Saccos. He concludes that there is no clear indication of a link between the good financial performance of Saccos and financing diversification. This study did not assess the electronic banking and financial performance as

electronic banking may be an innovative strategy of investment. Oyugi (2014), carried out a research on the effect of automated services on performance of SASRA licensed Saccos in Nairobi and Kiambu Counties in Kenya. He concludes that there is positive effect of automation on financial performance of Saccos that adopted internet banking. This study did not link electronic banking to financial performance of Saccos in Kenya.

Electronic banking enhances Sacco's performance. Koduk, (2015) a survey study to assess the effect of electronic banking on financial performance of Saccos in Nairobi County (Koduk, 2015). He established a positive correlation between electronic banking and financial performance of Saccos. Notably most of these studies have not been done in Western Kenya.

The previous studies have mainly examined the effect of electronic banking on banks' financial performance and not Saccos. The research did not link electronic banking to financial performance of Saccos, in particular western Kenya. The previous studies also concentrated on one year, mainly 2013. These are the gaps that have been identified and therefore the study intends to fill the gap by determining the correlation between e-banking and Saccos' financial performance in Western Kenya focusing on a duration of 2 years. The question therefore is; what is the correlation between e-banking and financial performance of Sacco's, concentrated on Saccos in Western Kenya?

1.3 Study Objectives

The specific objective of the study was to determine the correlation between electronic banking and financial performance of Deposit-taking Saccos in Western Kenya.

1.4 Value of the Study

The increasing development of modern electronic services and the adoption of electronic banking by firms necessitated the need for further research in this area. Previous studies show that electronic banking services are increasingly becoming a strategic management focus due to their ability to significantly influence a firm's competitive advantage, performance, customer attraction and retention, and profitability (Koduk, 2015).

The results of the study would provide management of Saccos with reliable information resource for effective decision making to achieve effectiveness and efficiency in Sacco's performance.

The study findings would be of value to practicing consultants in the financial sector to provide effective services to their clients from the Saccos subsector which will help enhance operations of Saccos in Kenya.

The adoption of e-banking brings risks related to electronic banking tasks, which influence the overall risk profile of banking. In relation to the above, it was felt that the study findings would be useful to financial firms to formulate appropriate policy on risk management. The study findings would also provide useful information to the shareholders and customers on emerging e-banking services that improve services delivery.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section explores and highlights the concept of electronic banking through a review of a number of theories and empirical studies that address major issues that are relevant to this study which are published on the topic.

2.2 Theoretical Review

Theoretical framework is a collection of interrelated concepts such as in a theory to guide research work as it determines the items for measurement and the statistical relationship being studied (Kotler and Gary, (2005). The research was guided by three theories of innovation and technology: Diffusion of Innovation Theory which explains how individuals and organisations adopt an innovation such as technology to perform a traditional activity. The study variables were electronic banking the independent variable and financial performance the dependent variable.

With regard to electronic banking, this theory is very vital as it aims to describe the patterns of adoption of electronic technology, explains the mechanism of adoption, and assists in predicting whether and how a new innovation will be successful. Saccos need to adopt new innovations such as e-banking to enhance service delivery. The Theory of Task-Technology Fit Theory proposes the matching of the abilities of technology to the demands of the job, that is, IT to support a job. It means that Saccos adopting innovation such as e-banking, mobile banking and ATMs must analyse the suitability of technology before adoption is done. On the other hand, Technological context, Organisational context and Environmental context Theory provides a clear framework that identifies three key aspects of a firm that influences the adoption process of a new technology by a firm. The former is particularly important since it

stresses on the need for management adopting an innovation such as electronic banking to reduce the risks associated in investing in such innovative technology just the same way Saccos expose themselves to risk of financial risk by easily adopting electronic banking (Greenhalgh et al., 2004).

2.2.1 Rogers Innovation Diffusion Theory

Rogers's innovation Diffusion Theory (Rogers, 1995), explains how new technological innovations are accepted. This theory proposes that there are five characteristics of an innovation that affect acceptance of the innovation. The features include complexity, compatibility, testability, observability and relative advantage of the innovation. Compatibility is the extent to which an innovation is perceived as difficulty to comprehend and use. Rogers posit that the meaning of the innovation may not be understood clearly by the potential adopters or perceived as complex thereby hindering the use or adoption of the innovation (Greenhalgh, 2004). If the key users perceive an innovation as being simple to use, the innovation will be more easily adopted (Greenhalgh, 2004).

With regard to electronic banking, this theory is very important and applicable in modern financial services business of Saccos. Innovation is vital in order for a Sacco to improve its performance.

2.2.2 Task-Technology Fit Theory

This theory explains the matching of the abilities of technology to the demands of the job, i.e. IT to support a job (Goodhue and Thompson, 1995). The theory proposes that there are four major constructs that determine IT use: Technology characteristics, Task features which jointly affect the third one, Task-Technology Fit, which later on influences the outcome variable, either performance or usage. The model

hypothesizes that Information technology will only be adopted if the functions necessary are accessible to the users and fit the tasks of the users. In this case, management of Saccos must act rationally to adopt IT tools and work methods that will help them accomplish the task efficiently with minimum cost and maximum net benefits.

2.2.3 Technology, Organisational and Environmental Context (TOE)

Tornatzky and Fleischer (1990), developed a clear framework that identifies three key aspects of a firm that influences the adoption process of a new technology by a firm. These aspects are Technological situation, Organisational situation and Environmental situation. The technological situation refers to both internal and outside factors relevant to the company that can influence utilisation of technology. The management of an enterprise must be aware of a number of factors and take into consideration the availability of valuable competencies. The TOE introduces a new vital component; that of the environment. The environment presents strength, constraints, opportunities and threats for technological innovation. It is therefore vital when making a decision on whether to adopt or not to adopt and innovation such as e-banking, Saccos consider Technological, Organisational and Environmental contexts.

2.3 Financial Performance of Saccos

Financial performance is vital for the management and the members of a Sacco to determine how well the Sacco is performing. According to WOCCUs standards of measurement of performance for credit unions, the factors which establish performance of Saccos include Protection of the savings to inspire confidence in the members that their funds are safe, effective financial structure, Asset quality, Rates of Return and Costs, Liquidity and Signs of growth (PEARLS) of the Sacco. Additional factors affecting Sacco performance include membership mobilisation and

participation, rational investment decisions, performance of loan book, corporate managerial competence, leverage, loan non repayment, regulations in the industry, poor financial stewardship of Sacco funds.

Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity management (CAMELS) Model provides descriptive measures of assessment and yardsticks that are specific to microfinance institutions (Cifuentes, 2008). Determination of financial performance of a firm enables decision takers judge the aftermath of a company's strategies and activities in objective financial ways. This facilitates measurement of a Sacco's effectiveness over a defined time duration, and the results can be utilised in comparing organisation in the same industry in aggregated manner. Financial performance of Saccos can be determined by way of computation of ROA and ROE as dependent variables over a defined period. ROA is computed by dividing Sacco's yearly earnings by their total resources (assets) and indicated in percentage. ROA is regarded as a better metric financial performance measure of a firm as it takes into consideration resources (assets) utilised to facilitate enterprise tasks. In this case mobile banking, internet banking and ATMs are independent variables (business activities). ROA establishes whether an organisation has ability to accrue enough return on these resources instead of simply indicating returns on sales. ROE on the other hand as a performance measure (dependent variable) focuses on returns to the shareholders of the firm.

Letting (2009), posit that a company's performance is measured in terms of effectiveness, efficiency, relevancy, and financial ability of the firm. The cardinal tenets of performance measurement include effectiveness and efficiency in the operations of a firm (Lusthaus, 2000).

2.3.1 Capital Adequacy

Capital adequacy refers to the amount of capital needed by firms to enable them to engage in standard business activity and endure uncertainties and risks that include operational, credit and market risks which they are prone to, (Njiru, 2014). This enables the firm to absorb potential losses and protect their debtors.

Adequate capital provides a measure to the members that the firm will continue to provide financial services (Karagu and Okibo, 2014). A Sacco needs to maintain adequate capital level to ensure that even during adverse business periods, capital cushions fluctuations in earnings of the Sacco and ensure that the Sacco operates effectively. A Sacco's capacity to maintain enough financial resources (capital) is influenced by its leverage level, ability to raise additional equity and adequacy of resources.

2.3.2 Asset Quality

Asset quality as a variable, greatly affects an enterprise's profits and performance. The rating of asset quality is normally a function of current situations and the probability of future diminishing or increase in performance based on economic circumstances, present practices and trends (Koduk, 2015). A Sacco must minimise excess default in loan repayment or delay in repayment of loans and a high percentage of non-earning assets as this has a negative effect on a firm's earnings, such as a Saccos earnings because these assets are not earning income. Delinquency must be controlled or kept to a minimum. Sources of funds of a Saccos that have a financial cost such as savings deposits need to be invested in productive resources that will earn a return greater than the cost of funds.

2.3.3 Earnings

A firm's ability to earn an appropriate returns on its assets influences its success or failure (Karagu and Okibo, 2014). The ability to generate revenue enables a company to fund its operations and diversification, to remain competitive enough as well as increase capital. In assessing performance it's necessary to review past, present and future anticipated performance including performance underlying conditions. Performance determination should include an assessment of the main earnings of a firm such as the long run earnings capacity of the firm by discounting temporary fluctuations in income. The most vital variables to measure performance are operational efficiency, the adjusted returns on equity, adjusted return on assets, and interest rate policy of the firm.

2.3.4 Management

The management is key to the failure or success of any firm. Managerial performance is normally expressed quantitatively by use of subjective examination of management systems, control systems, organisation discipline, and quality of staff (Koduk, 2015). One of the financial ratios used to assess management quality is operating profit to income ratio. The higher the operating profit to total revenue, the more the efficiency is the management in terms of operational efficiency, income accrual and asset utilisation. Njiru, (2014) however, noted that it is difficult to evaluate management efficiency through the use of financial ratios. Globally, the key indicators of measuring management efficiency include corporate governance, human resources, processes, quality management systems and audits, information technology, strategic planning and budgeting in a firm.

2.3.5 Liquidity

Liquidity is the ability of a firm to fulfil its current obligations with ease (Dang, 2011). The key yardsticks in assessing the liquidity of a firm include availability of funds to pay creditors, cash flows predictions, productive current assets and proper liability structure. In determination of liquidity position of a firm, a review of interest rates, risk sensitivity and exposure, reliable sources of funds are vital. Assessment of availability of short term assets to readily be converted into cash in relations to asset liability management is very vital.

2.4 Empirical Studies

DeYoung et al (2006), carried out a study on performance of internet banking community banks in USA. He concludes that the adoption of internet banking services improves services delivery and performance. The banks that used internet services had improved bank's profitability of community banks, in particular, increased income from deposit service charges.

Santomer and Seater (1997), investigated the effect of internet use on financial services in Europe using a cross sectional survey on 55 micro finance institutions. The study findings indicated a signification positive correlation between internet use and increased accessibility to financial services. Internet use was also attributed to the movement of deposits from banks account to money market deposit account, enhanced use of higher average wage rates from bank employees and brokered deposits. In another study on an examination into the impact of online banking on community banks (Kegan et al, 2005), the results showed that banks which provided online banking services performed better than those banks that did not use internet banking services.

Sathye, (2005) did a comparative study on performance of the main Credit Unions in Australia that used internet banking and determined that internet related banking had insignificant effect on performance and risk. Cicirett Hassan and Zazzra (2009), established a significant correlation between offering internet banking services and Italian banks' performance. The results showed a significant negative correlation between the adoption of internet activities and banks' risks.

In Kenya, Oyugi, (2014) did a research study on the effect of automated services on performance of SASRA licensed Saccos in Nairobi and Kiambu Counties, Kenya. The study sampled 45 Saccos in Nairobi and Kiambu Counties. The results of the study showed that the majority of Saccos use internet services and the main service was ATM. The study established a significant positive relationship between electronic banking and financial performance of Saccos in Kenya. Koduk (2015), conducted a research on influence of financial innovations on financial performance of Saccos in Nyeri County, Kenya. 56 operating Saccos in Nyeri County were sampled. The results of the study concluded that telephone and internet banking are the main drivers of financial performance of Saccos.

2.5 Conceptual Framework

The study sought to determine the correlation between electronic banking and financial performance of Saccos. The dependent variable used in the study was financial performance of Saccos in Western Kenya. The financial performance was measured using Return on Assets % and Return on Equity. In the study, e-banking expenses, Liquidity and capital adequacy were used as independent variables.

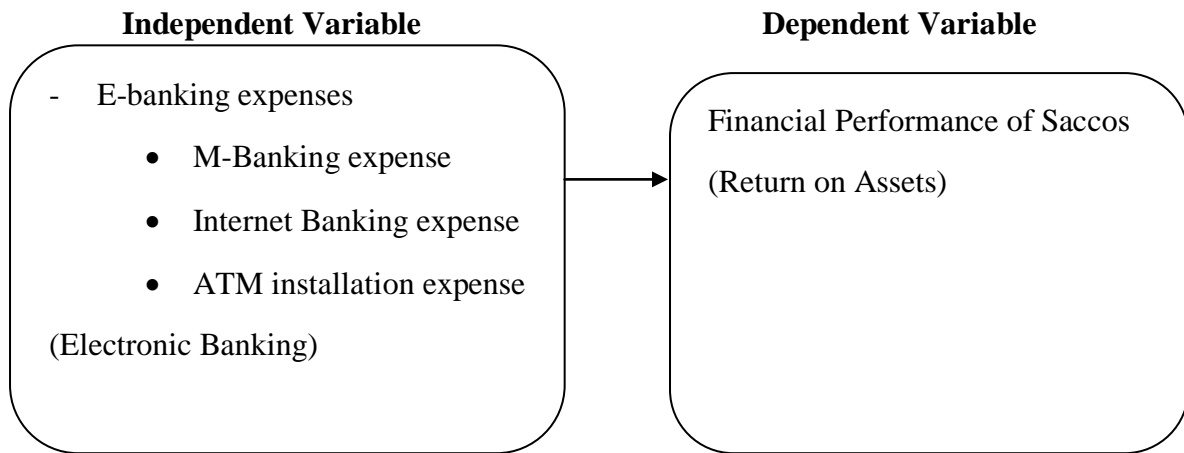


Figure1: Conceptual Framework

(Adapted from Atavachi, 2013)

2.6 Summary of the Literature Review

This chapter presents literature relevant to the study subject of the electronic banking and financial performance of Saccos in Western Kenya that was reviewed. Kenya's Saccos surveyed in the literature reviewed are all automated in their service provision with an aim of improving service quality to customers, customer attraction and retention, enhanced communication with customers, and to increase market share by reaching to the unbanked population and ensure effective performance of Saccos. The underlying profit maximisation motive may eventually be fulfilled through the use of IT innovations by Saccos to enhance their ability to provide services and products in more effective ways, which is a basis for effective operations in a competitive business environment.

Aduda and Kingoo, (2002) conducted investigation on effect of M-banking and internet banking on performance of financial firms; Atavachi, (2013) effect of electronic banking on performance of deposit taking microfinance institutions, (Okiro and Ndung'u, 2013) impact of M-banking and internet banking on performance of financial firms. From all the above studies little had been researched on electronic banking and financial performance of Saccos.

From global perspective, most of the literature is on effect of electronic banking on commercial banks and community based banks. It is evident that little studies has been undertaken on e-banking and Saccos. Therefore there was need for further research on the electronic banking and financial performance of Saccos. In Kenya, there is no substantive research on the electronic banking and financial performance of Saccos, is perhaps understandable, in particular by regions. This study is considered pioneer study to establish the effects of e-banking on Savings and Credit Co-operative Societies' financial performance in Western Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines how the research was conducted. In particular, it discusses the research design, study population, instrumentation and procedure that was used for data collection and analysis.

3.2 Research Design

A correlation research design was used in the study. Quantitative data was collected and analysed in order to determine whether there was a correlation or co-variation between two or more variables under study. The design enabled survey of the Saccos which had adopted electronic banking in western Kenya and describe the correlation between electronic banking and financial performance of Saccos.

The correlation research design was adopted since the study involved collection, analysis and interpretation of evidence to determine the facts that addressed the correlation between study variables. The design enabled study and make comparison of financial results of Saccos that had adopted e-banking with their electronic parameters. The researcher used secondary sources of data which were obtained from Sacco's audited accounts and published financial statements by Sacco's management using data capture sheet.

3.3 Population

According to Kombo and Delno, (2006) population is a group of individuals, objects or items from which samples are taken for measurement. A population component is the subject such as person, organisation or customer database or the amount of quantitative data on which measurement is taken (Cooper & Schindler, 2003). The

population for the study was made up of 22 Deposit Taking Saccos in western Kenya. The number was obtained from SASRA list of registered licensed Saccos (2015).

3.4 Data Collection

The study utilised both qualitative and quantitative data. Secondary data was collected through data capture sheet (attached as appendix iv). Secondary data was collected from published documents of Saccos such as annual reports, audited accounts and journals for a period of 2 years (2014-2015). The 2 year period for the research was arrived at primarily due to incomplete data available for the previous years. Data for the independent variables were not available for all the SACCOs for the period before the year 2014. The data collected included “Return on assets”, “Electronic banking expenditure”, “Liquidity” and “Capital adequacy” for the audited records of Saccos.

3.5 Data Analysis

This was a correlation study, and to test the correlation between study variables, inferential tests that included correlation coefficient and regression analysis were employed. The variables that were under consideration to establish the correlation between electronic banking and Saccos’ financial performance included total investment in mobile banking, internet transactions of various Saccos measured in Kenya shillings. Other variables included earnings and liquidity levels and capital adequacy. The main analysis involved multiple linear regression model that entailed univariate, bivariate and multivariate level analysis of independent variable and the depended variable (s) that helped to establish the correlation between electronic banking and Saccos’ financial performance. The regression model indicated below (adopted from Koduk, 2015) was employed to establish the correlation.

3.5.1 Analytical Model

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$$

Y = Financial Performance measured by Return on Assets

a = Constant or intercept

X₁ = log(electronic banking expenditure measured in Kenya shillings).

X₂ = Liquidity

X₃ = Capital adequacy

e = error term

3.5.2 Operationalization of the Study Variable

Variables	Indicators	Measures	Adapted From
Financial Performance	ROA	Net income divided by average total assets	Atavachi, 2013
Electronic banking expenses	Total expenses incurred on e-banking	Total amount incurred on e-banking	Atavachi, 2013
Capital adequacy	Total capital	Total capital to total Assets	Dang, 2013
Liquidity	Customer deposits	Total customer deposits to total Assets	Dang 2013

3.5.3 Test of Significance

Analysis of variance (ANOVA) was done. The correlation coefficient, R and coefficient of determination, R² was used to test the significance of regression model in explaining the relationship between e-banking and financial performance.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This section presents data analysis that was carried out in the study. The section also provides a summary of breakdown and analysis of correlation between electronic banking and financial performance of Saccos through a review of annual published reports and audited accounts of Saccos. The findings, discussions and interpretation of the study results are given. The study sought to establish the correlation between electronic banking and financial performance of Savings and Credit Cooperative Societies in western Kenya.

4.2 Descriptive Statistics

There were 22 Deposit-taking Saccos in western Kenya as at December, 2015. That formed the study population. 2 Saccos were restricted by SASRA to take deposit. These restricted SACCOs were not allowed to take deposits from members due to non-compliance with the regulations of SASRA. Secondary data was collected from 20 Deposit-taking Saccos representing 90.9% response rate. For the purpose of ethical responsibility, the individual Saccos have been hived.

Data on electronic banking is proxied by electronic banking expenditure, financial performance is proxied by Return on Assets, return on equity, capital adequacy and earnings ability of the 20 Saccos was collected for two years which yielded 20 observations as presented in table 4.1 below:

Table 1: Descriptive Statistics of the key Variables

Variables	Mean	Standard deviation
Electronic banking expenditure	259850	92803.90
Return on assets	0.06	0.08
Capital adequacy	0.22	0.30
Liquidity	0.61	0.11

The mean return on assets stood at 6% (sd=0.08) as shown in table 1 above.

The overall mean expenditure on electronic banking by all SACCOs was KSh.259,850 (sd=92803.90).

The overall mean return on investment was 2.43 (sd=1.45).

Overall, the SACCOs had a mean liquidity of 61% (sd=11%).

The overall mean capital adequacy for all the SACCOs was 0.22 (sd=0.30).

4.3 Correlation Analysis

Table 2 below shows the correlation coefficients of the various variables in the study.

	Return on assets	Electronic banking expenditure	Return on equity	Liquidity	Capital adequacy
Return on assets	1				
Electronic banking expenditure	-0.1639	1			
Liquidity	-0.1874	-0.0833	-0.1695	1	
Capital adequacy	-0.0742	0.4076	-0.3353	0.5023	1

There was weak positive correlation between capital adequacy and electronic banking expenditure. We also had weak positive correlations between return on assets and weak negative correlations as follows: return on assets and electronic banking expenditure (-0.1639), return on assets and liquidity (-0.1874), return on assets and capital adequacy (-0.0742), electronic banking expenditure and return on investment (-0.0406), electronic banking expenditure and liquidity (-0.0833), return on investment and liquidity (-0.1695), and return on investment and capital adequacy (-0.3353). The correlation between liquidity and capital adequacy is somehow strong (0.5023).

4.4 Linear Regression analysis

4.4.1 Regression Diagnostics

Multi-collinearity tests

Multi-collinearity was investigated using variance inflation factor (VIF) in Stata software. The linear regression equation was estimated with the variables “Return on assets” as the dependent variable, and “Electronic banking expenditure”, “Return on investment”, “Liquidity” and “Capital adequacy” as independent variables. A post-estimation command was used to get the VIFs, which are shown in table 3 below

Table 3: Variance Inflation Factors from Regression Estimation

Variable	VIF	1/VIF
Capital adequacy	1.96	0.51022
Liquidity	1.54	0.65025
Log(e-banking expenses)	1.35	0.73802
Mean VIF	1.5	

The VIFs found for all the covariates were relatively small (less than 2) indicating that there is no multi-collinearity problem in the independent variables. “A maximum VIF value in excess of 10 is often taken as an indication that multi-collinearity may be unduly influencing the least square estimates.” (Neter et al. 1989: 409)

4.4.2 Regression Analysis Results

A multiple linear regression analysis on the set of variables was conducted: variables “Return on assets” as the dependent variable, and “Electronic banking expenditure”, “Liquidity” and “Capital adequacy” as independent variables.

The results of the multiple linear regression analysis done using Stata are as shown in table 4.

Coefficient of determination explains the extent to which changes in the variable can be explained by the change in the independent variable. The independent variable explain 82.8% of variation in the dependent variable. This means that there could be other factors not covered in the model that can explain the differences of 17% of variation in the dependent variable.

The regression equation is: $ROA = -1.447 + 0.388 \cdot \log(\text{ebanking_investment}) + 0.069 \cdot \text{Liquidity} - 0.042 \cdot \text{Capital adequacy}$.

Table 4: Regression Analysis Results

Variable	Measure	Standard error	p-value
Constant	-1.447	21.005	0.0432
Log(e-banking expenditure)	0.388	1.584	0.0182
Return on equity	-0.663	0.441	0.0154
Liquidity	0.069	0.067	0.0319
Capital adequacy	-0.042	0.028	0.0148
R ²	0.82		
Observations	20		

None of the independent variables was found to be significant in the linear regression model.

4.5 Summary of the Results of the study

The study sought to establish the correlation between electronic banking and financial performance of Deposit-Taking Saccos in Western Kenya. As presented in table 4 above, the variations in financial performance of Saccos is explained by variations in the independent variables that consist of electronic banking expenditure, Liquidity, and Capital adequacy. None of the independent variables was found to be significant in the linear regression model.

The R square of 0.82 indicates that up to 82.2 percent of variations in Saccos performance is explained by other factors other than those included in the present model as used.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the research process. It provides a discussion of key elements of the study and interpretation of the study results. The conclusions derived from the investigations are also presented. The section also gives recommendations for improvement and suggestion for further research. The study sought to determine the correlation between electronic banking and financial performance of deposit-taking Saccos in western Kenya.

5.2 Summary of Findings

The study sought to determine the correlation between electronic banking and financial performance of Deposit-Taking Saccos in western Kenya. Secondary data was collected from audited and published annual statements that contained information on total assets, net income, total shareholders' equity, expenditure on electronic banking and total capital of Deposit-taking Saccos. The data provided useful information that helped to derive annual performance of Deposit-taking Saccos measured as return on assets, electronic banking (electronic banking expenditures), capital adequacy and liquidity. The summary of results is presented in accordance with the research objective.

The regression analysis results show a statistically insignificant relationship between electronic banking and financial performance of Saccos. The results of the study indicate that for a unit increase in electronic banking use as reflected on expenditure on e-banking, there is minor increase in Saccos ROA. This finding is positively confirming Koduk's finding (2015) and the findings of Oyugi (2014) which

established a statistically feeble positive relationship between the adoption of electronic banking and financial performance of Saccos' ROA.

Correlation analysis results suggest a strong relationship between capital adequacy (0.4076) and liquidity (0.5023). The statistically significant strong correlation between capital adequacy and liquidity implies that Sacco's liquidity is positively supported by the contributions of shareholders.

5.3 Conclusions

The results of the study show that there is a weak positive relationship between electronic banking adoption and financial performance of Saccos. On the other hand, the existence of a strong positive correlation between Sacco's capital adequacy and Sacco's liquidity imply that Sacco's liquidity is positively supported by capital from other sources or contributions of the Sacco members.

The existence of statistically weak positive correlation between adoption of electronic banking and financial performance of the Saccos leads to the conclusion that adoption of technological innovation such as electronic banking by Saccos may not necessarily enhance financial performance of Saccos. On the other hand adoption of e-banking may enhance service delivery which may lead to increase in capital adequacy, perhaps through membership mobilisation, which in each case leads to inclusiveness and improved financial performance. From this conclusion, the theory of financial innovations and technology acceptance fit model is supported.

The study findings also indicate statistically significant weak positive relationship between Sacco's electronic banking and earnings ability of the Sacco. This finding is supported by a proposition by Koduk (2015) and Oyugi (2013) that a Sacco investing in innovative technology must take rational decision if it has to do so.

5.4 Recommendation

From the summary of findings of the research study, it was established that there a statistically insignificant correlation between electronic banking and financial performance of Saccos. On the other hand there is a strong positive correlation between Sacco's capital adequacy and Sacco's liquidity.

In this case, it is recommended that management of Saccos must act rationally to adopt innovations in information technology such as e-banking and work methods that will help them accomplish the task efficiently with minimum cost and maximum net benefits. Electronic banking would help improve effectiveness and customer service delivery.

It is recommended that Saccos maintain capital adequacy levels, since it positively influences the liquidity of the Sacco. Capital adequacy can be ensured through ways such as membership mobilisation and rational investment decisions by management of Saccos.

5.5 Limitations of the Study

The study collected secondary data from 20 Deposit-taking Saccos in Western Kenya. The study therefore was limited to the Saccos that had precise financial data that was validated by SASRA, such data could still be vulnerable to shortcomings that could affect the study results.

The study was based on only 2 years period, from 2014 to 2015 primarily due to insufficient data from Saccos, particularly missing data for the previous years. Perhaps, the findings could have been more sufficient if the period could have been

more years. The decision to research on 2 year period was arrived at based on available and accessible data from deposit-taking Saccos.

Some Saccos had recently adopted electronic banking in their operations. Therefore it could not be possible to determine the impact of adoption of electronic banking precisely as compared to the Saccos that had adopted e-banking for a long period.

5.6 Suggestions for Further Research

The study sought to establish the relationship between electronic banking and financial performance of Saccos in Western Kenya. It is suggested that a similar study be carried out in other regions of the country that have more Saccos that have adopted electronic banking. The other parameters include, member mobilization, accounting practices to determine their effect on financial performance of Saccos.

REFERENCES

- Aduda, J. and Kingoo, N. (2012). The Relationship between electronic banking and financial performance among commercial banks in Kenya. *Journal of Finance and Investment Analysis*, 1(3), 99-118
- Ahimbisibwe, F. (2012). *The Growth of Saccos Industry of Uganda*. Uganda
- Akhtar, S. Javed, Maryam, B. and A. Sadia, H. (2012). *Relationship between Financial Leverage and Financial Performance: Evidence from Fuel and Energy Sector of Pakistan*. *European Journal of Business and Management*, 4(11), 1905-2222
- Atavachi, B, S. (2013). Electronic banking and financial performance of Deposit taking Micro finance Institutions in Kenya. Unpublished MBA project. University of Nairobi
- Bascom, W. (1997). *Savings and Credit Cooperative Societies Management and Supervision in Developing Financial Markets*. London: Basingstoke Palgrave Macmillan.
- Cooper, D.R. and Schindler, P.S (2006). *Business Research Methods* (9th ed.) McGraw Hill.
- DeYoung, R .P. (2000). *Dictionary of Banking Terms*. New York. Hauppauge
- Financial Sector Deepening Trust (FSDT), Kenya (2010). Automation of SACCOs: Assessment of Potential Solutions. 3 (2010), 1-3
- Frust, K., Lang, W., and Nolle, D., E. (20000). *Internet Banking: Developments and Prospects: Office of the Comptroller of the Currency* (September).
- Gitau, R.M. (2011). The Relationship between financial Innovation and financial performance of Commercial banks in Kenya. Unpublished MBA Project.
- Gweyi, E. (2013). *Determinants of Leverage of Savings and Cooperative Societies in Kenya*

- Karagu J.M. & Okibo, B. (2014). *Financial Factors Influencing Performance of Savings and Credit Cooperative Societies in Kenya*, 4(2) 291-302, <http://doi.org/10.6007/IRAFMS/V4-I2/892>
- Karanja, C. (2013). *Effects of Financial Leverage on Financial Performance of Deposit Taking Saccos in Kenya*.
- Kariuki, B.N (2014). *The Relationship between Dividend and Financial Performance of Savings and Credit Cooperative Societies Registered by SACCO Society Regulatory Authority*. Nairobi, Kenya.
- Kimata, O.N. (2012). *Effects of Financial Innovation on the Performance of Deposit Taking Saccos in Nairobi County*. Unpublished Research project, University of Nairobi.
- Koduk, S.C. (2015). *The electronic banking and financial performance of Savings and Credit Cooperative Societies in Nairobi County*. Unpublished MBA project. University of Nairobi
- Kombo D.K. and Tromp L.A. (2006), *Proposal and Thesis Writing, An Introduction*. Paulines Publications Africa.
- Kothari, C. (2005). *Research Methodology, Methods and Techniques*. New Age International Publishers. New Delhi, India.
- KUSCO, (2007). *The Sacco Family Union Newspaper*. Nairobi, Kenya
- Letting, N.K. (2009). *The link between leadership, Strategic management and firm performance: A critical Literature Review*: Unpublished PhD independent study paper, University of Nairobi.
- Mayo, H.B (2007). *Basic Finance: An Introduction to Financial Institutions*.
- Mouawad, M. and Kleiner B. (1996). *New developments in Customer Service Training. Managing Service Quality*, 6(2), 49-56.

- Mugenda, O. and Mugenda, A. (2003). *Research Methods, Quantitative and Qualitative Approaches*. Africa Centre for Technology Studies. Acts Press, Nairobi Kenya.
- Mwakajumilo, C. (2011). *Financial Practice as a Determinant of Growth of Savings and Cooperative Societies*. International Journal of Business and Social Science, 33.24
- Neter, J., Wasserman, W. & Kutner, M. H. (1989). *Applied Linear Regression Models*. Homewood, IL: Irwin.
- Ngung'u. G. (2010). Orderly Movement. Business Post, 1.28-30
- Noyer. C. (2007). *Financial Innovation, Monetary Policy and Financial Stability. Spring Conference*, Banque de France. 21(6).116-132
- Okiro, K. Ndungu, J. (2013). The Impact of Mobile Banking on Performance of Financial Institutions in Kenya. European Scientific Journal 9(13): 1857-743.
- Ovia, J. (2001). Internet Banking: Practices and Potentials in Nigeria: A paper at the Conference organised by the Institute of Chartered Accountants of Nigeria.
- Oyugi, C.A. (2013). The effect of Size on the financial performance of deposit taking micro finance institutions and commercial banks in Kenya. Unpublished MBA project. University of Nairobi.
- Oyugi, I.G. (2014). The effect of automated service on financial performance of Savings and Credit Cooperative Societies licensed by SASRA in Kenya. Unpublished MBA Project. University of Nairobi.
- Rogers, E.M. (1962). *Diffusion of Innovations*. New York: Free Press. 4th Edition
- SASRA (2013). The Sacco Societies Regulatory Authority (SASRA). Supervision Report. Nairobi, Kenya.
- Steven, A. (2000). *Information Systems: Foundation of e-business*. New Jersey, Prentice-Hall Inc.

Sumra, S.H., Manzoor, M.K., Sumra, H.H and Abbas, M. (2011). The Impact of e-banking on the Profitability of Banks; A study of Pakistan Banks, *Journal of Public Administration and Governance* 13(1):960-989.

Tornatzky, L. G. and Fleischer, M. (1990). *The process of technology innovation*, Massachusetts, Lexington Books.

APPENDICES

Appendix i: List of Deposit Taking Sacco's in Western Kenya Licensed by SASRA 2015

NAME OF SACCO	CONTACT ADDRESS
Agro Chem Sacco Society Limited	P.O Box 94 40107 Muhoroni
Elgon Teachers Sacco Society Limited	P.O Box 27 50203, Kapsokwony
'Faridi' Sacco Society Limited	P.O Box 448 50400 Busia
Gusii Mwalimu Sacco Society Limited	P.O Box 1335 40200 Kisii
IG Sacco Society Limited	P.O Box 1150 50100 Kakamega
Jumuika Sacco Society Limited	P.O Box 14 40112 Awasi
Kaimosi Sacco Society Limited	P.O Box 153 50305 Sirwa
'Kenya Achievas' Sacco Society Limited	P.O Box 3080 40200 Kisii
Kite Sacco Society Limited	P.O Box 2073 40100 Kisumu
Koru Sacco Society Limited	Private Bag 40100 Koru
Mudete Tea Grower Sacco Society Limited	P.O Box 221 41053 Khayega
Ng'arisha Sacco Society Limited	P.O Box 1199 50200 Bungoma
Rachuonyo Teachers Sacco Society Limited	P.O Box 147 40332 Kosele
Smart Life Sacco Society Limited	P.O Box 118 30705 Kapsowar
Stake Kenya Sacco Society Limited	P.O Box 208 4013 Kehancha
Sukari Sacco Society Limited	P.O Box 841 50102 Mumias
Suba Teachers Sacco Society Limited	P.O Box 237 40305 Mbita
Taraji 'Sacco Society Limited'	P.O Box 605 40600 Siaya
Vihiga County Farmers Sacco Society Limited	P.O Box 309 50317 Chavakali
Wakenya Pamoja Sacco Society Limited	P.O Box 829 40200 Kisii
Wevarsity Sacco Society Limited	P.O Box 873 50100 Kakamega

**Appendix ii: List of Restricted Licences of Deposit Taking Saccos in
Western Kenya as at June 2016**

Nyamira Sacco Society Limited	P.O Box 633 40500 Nyamira
Nitunze Sacco Society Limited	P.O Box 295 50102 Mumias

Appendix iii: Average Raw Data For Year 2014 And 2015

AVG_ROA	AVG E-BANKING EXPENSES	AVG ROE	AVG LIQUIDITY	AVG CAPITAL ADEQUACY	AVG LIQUIDITY
0.02082	370500	1.1705315	0.691078313	1	0.7693415
0.0066416	300000	1.929161	0.665471571	0.0327	0.74248525
0.012866	375500	4.66133765	0.606261013	0.0387	0.6825605
0.008975	353000	3.7054515	0.575443008	0.0534	0.7493015
0.09959	268500	1.90337	0.61178585	0.1381	0.668574
0.054981	144000	3.40693	0.454356354	0.1215	0.710187
0.0188715	312000	1.6214655	0.419527591	0.02163	0.6658165
0.0048235	310000	1.9677	0.704250093	0.449	0.8101895
0.074885	99500	0.879981	0.634012563	0.065472	0.7216896
0.2897655	145000	1.84843	0.678194078	0.0872	0.64381
0.0498505	285500	3.490253	0.598378664	0.0672	0.622119
0.0043645	98500	1.9181365	0.645952048	0.0953	0.61220015
0.003344	166000	5.80932	0.655162707	0.0815	0.768389
0.1844255	367500	2.951372	0.675400165	0.673	0.567508
0.0059765	296500	1.05110565	0.814856797	0.943	0.678459
0.0058942	241000	1.044397	0.646045078	0.0812	0.4445235
0.040215	300000	1.542686	0.5638651	0.2138	0.82463775
0.0084735	328000	0.0974108	0.50974042	0.2177	0.5571112
0.2279185	294000	3.940143	0.336621716	0.0454	0.8298725
0.078285	142000	3.5732315	0.698319429	0.03744	0.660831

Appendix iv: Data Capture Sheet

This Data Capture Sheet is designed to collect secondary information on the electronic banking and financial performance of this SACCO. The information obtained will merely be utilised for the study aims and handled with confidentiality.

Return completed data capture to:

POLYCARP NDETA

Phone: 0720867398

Email: ndetapolycarp@yahoo.com

Appendix v: Secondary Data Capture Template

Kindly provide information on your Sacco for the following period:

Year	2014	2015
Net profit		
Total Assets		
Total capital		
Expenditure on E-Banking		
Currents Assets		
Current Liabilities		

Thank you

Appendix vi: Turnitin Report

ELECTRONIC BANKING AND FINANCIAL PERFORMANCE OF DEPOSIT-TAKING SAVINGS AND CREDIT CO-OPERATIVE SOCIETIES IN WESTERN KENYA

ORIGINALITY REPORT

% 14	% 12	% 1	% 9
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.sasra.go.ke Internet Source	%2
2	chss.uonbi.ac.ke Internet Source	%1
3	41.204.187.24 Internet Source	%1
4	Submitted to Eiffel Corporation Student Paper	%1
5	Submitted to Kenya College of Accountancy University Student Paper	%1
6	hrmars.com Internet Source	%1
7	Submitted to Kenyatta University Student Paper	%1
8	www.strategicjournals.com Internet Source	<%1
9	www.ijsrp.org	