

**ELECTRONIC BANKING AND PROFITABILITY OF DEPOSIT TAKING  
SAVINGS AND CREDIT CO-OPERATIVE SOCIETIES IN KENYA**

**OTIENO LILIAN ATIENO**

**D53/OL/KSU/20965/2021**

**A RESEARCH PROJECT SUBMITTED TO SCHOOL OF BUSINESS,  
ECONOMICS AND TOURISM IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF  
BUSINESS ADMINISTRATION (FINANCE OPTION) OF KENYATTA  
UNIVERSITY**

**JUNE, 2025**

## **DECLARATION**

This project is my own creation and has not been submitted to any university for the purpose of obtaining a degree or diploma.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Lilian Atieno Otieno**

D53/OL/20965/2021

## **Supervisor**

I verify that this project was undertaken under my supervision and is submitted with my approval.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Job Omagwa, PhD**

Department of Accounting and Finance

School of Business, Economics & Tourism

Kenyatta University

## **DEDICATION**

I dedicated this research study to my dear parents Mr. Alloys Ochola and Mrs. Ruth Akeyo Ochola who have been my support system in my entire life, and to my dear husband Caleb Nyoiro, our sons Zuri, Zeke and Ziah for their enduring love.

## **ACKNOWLEDGEMENTS**

I would like to take a moment to express my heartfelt gratitude to the Almighty God for His guidance and support throughout my journey. I am also deeply thankful to my supervisor, Dr. Job Omagwa, for his invaluable mentorship and encouragement. Additionally, I extend my appreciation to the entire Kenyatta University community for fostering an environment of learning and growth. I am grateful to the respondents who participated in my research, as their insights were crucial to my work. Lastly, I want to acknowledge my colleagues for their camaraderie and support during this endeavor.

**TABLE OF CONTENTS**

**DECLARATION..... ii**

**DEDICATION..... iii**

**ACKNOWLEDGEMENTS ..... ii**

**TABLE OF CONTENTS ..... iii**

**LIST OF TABLES ..... vii**

**LIST OF FIGURES ..... viii**

**LIST OF ABBREVIATIONS AND ACRONYMS ..... ix**

**OPERATIONAL DEFINITION OF TERMS.....x**

**ABSTRACT..... ii**

**CHAPTER ONE .....1**

**INTRODUCTION.....1**

1.1 Background of the Study ..... 1

    1.1.1 Profitability .....3

    1.1.2 Electronic Banking.....4

    1.1.3 Deposit Taking Savings and Credit Co-operative Societies in Kenya .....6

1.2 Statement of the Problem.....8

1.3 Objectives of the Study.....9

    1.3.1 General Objective .....9

    1.3.2 Specific Objectives .....9

1.4 Research Hypotheses .....10

1.5 Significance of the Study .....10

1.6 Scope of the Study .....10

1.7 Limitations of the Study.....11

1.8 Organization of the Study .....11

<b>CHAPTER TWO .....</b>	<b>13</b>
<b>LITERATURE REVIEW .....</b>	<b>13</b>
2.1 Introduction.....	13
2.2 Theoretical Review .....	13
2.2.1 Transaction Cost Theory.....	13
2.2.2 Technology Acceptance Model .....	15
2.2.3 Disruptive Innovation Theory.....	16
2.2.4 The Diffusion of Innovations Theory .....	16
2.2.5 Schumpeter Theory of Innovation .....	18
2.3 Empirical Review.....	19
2.3.1 Mobile Banking and Profitability .....	19
2.3.2 Electronic Funds Transfer and Profitability.....	20
2.3.3 Automated Teller Machines and Profitability.....	22
2.3.4 Internet Banking and Profitability .....	23
2.4 Summary of Literature Reviewed and Research Gap.....	25
2.5 Conceptual Framework.....	29
<b>CHAPTER THREE .....</b>	<b>30</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>30</b>
3.1 Introduction.....	30
3.2 Research Design.....	30
3.3 Target Population.....	30
3.4 Sampling Design and Sample Size .....	31
3.5 Data Collection Instruments .....	31
3.6 Data Collection Procedure .....	31
3.7 Data Analysis and Presentation .....	32

3.8 Preliminary Diagnostic tests .....	32
3.8.1 Multicollinearity .....	32
3.8.2 Normality .....	33
3.8.3 Heteroscedasticity .....	33
3.9 Ethical Considerations .....	34
<b>CHAPTER FOUR.....</b>	<b>35</b>
<b>RESEARCH FINDINGS AND DISCUSSIONS .....</b>	<b>35</b>
4.1 Introduction.....	35
4.2 Descriptive Statistics.....	35
4.2.1 Mobile Banking .....	35
4.2.2 Electronic Funds Transfer.....	37
4.2.3 Automated Teller Machine .....	39
4.2.4 Internet Banking.....	41
4.2.5 Profitability .....	43
4.3 Diagnostic Test Results.....	44
4.3.1 Multicollinearity Test.....	44
4.3.2 Normality Test .....	45
4.3.3 Heteroscedasticity Test .....	46
4.4 Inferential Statistics .....	47
4.4.1 Correlation Analysis .....	47
4.4.2 Multiple Regression Analysis .....	50
4.5 Test of Hypotheses.....	52
4.5.1 Mobile Banking and Profitability .....	52
4.5.2 Electronic Funds Transfer and Profitability.....	52
4.5.3 Automated Teller Machine and Profitability .....	53

4.5.4 Internet Banking and Profitability .....	53
<b>CHAPTER FIVE .....</b>	<b>55</b>
<b>SUMMARY, CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>55</b>
5.1 Introduction.....	55
5.2 Summary.....	55
5.3 Conclusions.....	57
5.4 Recommendation .....	59
5.4.1 Recommendations for Policy.....	59
5.4.2 Recommendations for Practice .....	59
5.4.3 Recommendations for Theory.....	60
5.5 Contribution to Knowledge.....	60
5.6 Suggestions for Further Study .....	61
<b>REFERENCES.....</b>	<b>62</b>
<b>APPENDICES .....</b>	<b>70</b>
Appendix I: Data Collection Sheet .....	70
Appendix II: Research Approval .....	71
Appendix III: NACOSTI Permit.....	72

## LIST OF TABLES

Table 2.1: Summary of Literature Reviewed and Research Gaps .....	25
Table 4.1: Mobile Banking and Profitability .....	36
Table 4.2: Electronic Funds Transfer and Profitability .....	37
Table 4.3: Use of Automated Teller Machine and Profitability .....	39
Table 4.4: Internet Banking and Profitability .....	41
Table 4.4: Internet Banking and Profitability .....	43
Table 4.5: Assessment of Multicollinearity Test .....	44
Table 4.6: Normality Test.....	45
Table 4.7: Heteroscedasticity Test.....	46
Table 4.8: Correlation Analysis .....	48
Table 4.9: Model Summary .....	50
Table 4.10: Analysis of Variance.....	50
Table 4.11: Coefficients.....	51

## LIST OF FIGURES

Figure 2.1: Conceptual Framework .....	29
--	----

## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>ATM</b>	-	Automated Teller machines
<b>CBK</b>	-	Central Bank of Kenya
<b>DT</b>	-	Deposit Taking
<b>EFT</b>	-	Electronic funds transfer
<b>FOSA</b>	-	Front Office Services
<b>ICT</b>	-	Information Communication Technology
<b>IT</b>	-	Information Technology
<b>NSSF</b>	-	National security services Funds
<b>POS</b>	-	Point of Sale
<b>ROA</b>	-	Return on Asset
<b>ROE</b>	-	Return on Equity
<b>SACCOs</b>	-	Savings and Credit Co-operative Societies
<b>SASRA</b>	-	Sacco Societies Regulatory Authority
<b>SME</b>	-	Small and Medium Term Enterprises
<b>SMS</b>	-	Short Messages Services

## OPERATIONAL DEFINITION OF TERMS

<b>Automated Teller Machine</b>	A specialized electronic device that enables individuals to undertake monetary transactions, for example withdrawal of cash, depositing of funds, as well as know their account balances, without a bank teller. It was measured in terms of Cash/loan withdrawal, value of ATM transactions and maintenance and operation cost.
<b>Electronic Funds Transfer</b>	This is movement of money electronically from an account to another, the mode aid moving money carry physical cash or checks. Its measures were; value of internet transactions, loan disbursement and maintenance and operation cost.
<b>Internet Banking</b>	The digital services offered by financial organizations that enable clients to perform different banking operations through the internet. It was measured in terms of repayment of loans and withdrawals, maintenance and operation cost and payment of utilities/bills.
<b>Mobile Banking</b>	The utilization of mobile gadgets, including smartphones and tablets, for performing financial operations and handling banking services. It was measured in terms of checking balance and cash

withdrawal, bill payment and loan payback and maintenance and operation cost.

**Profitability**

The extent to which a business activity generates causes financial gain, which is the difference between its revenues and expenses. It was measured using Return on Assets (ROA).

**Savings and Credit**

An organization formed by individuals who come

**Cooperative Society**

together to save money and provide loans to one another.

## ABSTRACT

The deposit taking Savings and Credit Co-Operative Societies play a crucial role in promoting savings and providing credit to the members who often lack access to traditional banking services. However, recent data indicates that many SACCOs are struggling with profitability. Statistics show that only about 30% of these societies are operating at a profit, which raises questions about their sustainability and efficiency. The recent reports also indicate that the average return on asset stands at approximately 1-2%, which is considerably lower than the financial benchmarks set for effective financial institutions. Therefore, this study sought to investigate the effect of electronic banking and profitability of deposit taking savings and credit co-operative societies in Kenya. The electronic banking was measured in terms of mobile banking, electronic funds transfer, automated teller machine utilization and internet banking. The study was guided transaction cost theory, the technology acceptance model, disruptive innovation theory, diffusion of innovation theory, and Schumpeter's innovation theory. A descriptive research design was used. The study target population was 40 teachers based DT-SACCOs controlled by SACCOs Societies Regulatory Authority (SASRA) and are authorized to function in Kenya. A census of 40 teachers based DT-SACCOs was done. The study used secondary data that was collected using secondary data collection sheet. The data collected was analyzed using descriptive statistics. Inferential statistics like correlation analysis and regression were used to establish how one variable influenced the other. The diagnostic statistics done included; multicollinearity test, normality test, and heteroscedasticity test. The results were presented using tables. The research revealed a significant positive impact of mobile banking, electronic funds transfer, automated teller machines, and internet banking on the profitability of deposit-taking Savings and Credit Co-Operative Societies in Kenya. The research revealed that the SACCOs which implement mobile banking access a wider customer segment, enabling them to draw in additional deposits and enhance their ability to lend. Electronic funds transfer decreases the requirement for handling physical cash, thereby lowering expenses related to cash transport, security, and storage. Automated teller machines offer members round-the-clock access to their accounts, enabling them to withdraw funds, check balances, and conduct various transactions without having to go to a physical location. Online banking increases the quickness and effectiveness of service provision, which boosts customer satisfaction and promotes more regular transactions, leading to higher earnings for SACCOs. The research suggests that SACCOs should create a mobile banking app that is user-friendly and straightforward to navigate, allowing individuals of all ages to utilize it efficiently. SACCOs ought to create intuitive mobile apps that enable users to conduct transactions, view balances, and easily access services. The SACCOs analyzed ought to perform comprehensive market research to pinpoint high-traffic locations where prospective members live or are employed. SACCOs ought to invest in strong online banking systems that are easy to use, safe, and able to grow.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Deposit-Taking Savings and Credit Co-operative Societies (DT-SACCOs) play a vital role in enhancing the growth and stability of a national economy as they provide essential financial services to individuals and small businesses, promoting savings and facilitating access to credit (Shaa, 2022). According to Ogum and Jagongo (2022), DT-SACCOs often support local development projects, which can lead to improved infrastructure and services. Their cooperative model fosters a sense of community and shared responsibility, encouraging members to work together towards common economic goals. Therefore, the impact of DT-SACCOs extends beyond individual financial benefits, contributing significantly to the overall economic development and resilience of a nation.

Nwakoby, Okoye, Ezejiofor, Anukwu and Ihediwa (2020) observe that the relationship between electronic banking services and the financial performance of savings and credit cooperative societies that accept deposits is a significant since the financial institutions play a crucial role in providing financial services to their members. According to Rauf, Qiang and Sajid (2023), DT-SACCOs enhance their operational efficiency, reduce transaction costs, and improve customer satisfaction through use of electronic banking, all of which can contribute to increased profitability. Furthermore, understanding this correlation can help cooperative societies strategize their services to better meet the needs of their members while also ensuring sustainable financial growth.

Raj, Kirkham and Clarke (2020) observe that the worldwide profitability of savings and credit co-operative societies is a significant topic that encompasses various

financial models and practices across different nations. These co-operatives, which are member-owned financial institutions, play a crucial role in promoting savings and providing credit to their members. In countries like Canada and the United States, these societies have demonstrated robust profitability through effective management and community engagement. For instance, in Canada, credit unions have shown resilience and growth, often outperforming traditional banks in customer satisfaction and profitability metrics (Salyzyn, 2021; Brean, Kryzanowski & Roberts, 2023).

In Uganda, for instance, SACCOs have shown impressive profitability due to their ability to mobilize savings from members and offer competitive interest rates on loans, which in turn attracts more members and increases their capital base (Madinah, 2023). Similarly, in Tanzania, Nyangarika and Bundala (2024) observe that the government has supported the development of SACCOs, recognizing their potential to enhance financial inclusion and stimulate economic growth. The profitability of these co-operatives is often linked to their operational efficiency, member engagement, and the ability to adapt to changing market conditions. The success of deposit-taking SACCOs in various African countries highlights their importance in promoting financial stability and economic empowerment among communities.

In Kenya, SACCOs have become a vital source of financial services for many individuals, providing affordable loans and encouraging savings among members. The growth of these societies has been driven by the increasing demand for accessible financial products, especially in rural areas where traditional banking services may be limited (Ali, Muema & Muriuki, 2021). Kinyua (2023) indicate that the savings and credit co-operatives in Kenya have been instrumental in financial inclusion, allowing underserved populations access to financial services while maintaining sustainable profit margins. The profitability of these institutions can be attributed to their unique

structure, which prioritizes member benefits over shareholder profits, leading to a loyal customer base and lower operational costs.

### **1.1.1 Profitability**

Profitability serves as the measure for assessing the success or failure of a business operation. Another definition of profitability could mean the capability of a corporation's assets to generate a return on investment compared to the expenses of those resources (Coetzee, Kamau, & Njema, 2003). While a business might generate financial revenue, this does not automatically equate to being profitable. To enhance service for their clients, SACCOs have embraced the implementation of digital technologies like ATM networks. Banks and other financial institutions have greatly profited from ATMs due to the convenience and low fees for transactions they offer their clients (Muthui, 2019).

The financial statements offer understanding regarding a company's wellbeing. Olungas(2016) emphasized both return on assets (ROA) together with return on equity (ROE) as indicators of a bank's effectiveness. As stated by Kamochu (2015), the return on assets or ROA ratio serves as an indicator of management efficiency. An increased return rate indicates that management is utilizing resources efficiently, meaning they are maximizing the company's assets to produce profits. An increase in the adoption, implementation, and utilization of computer-assisted systems within the DT-SACCOs financial services will trigger a transformation towards digitally supported technologies and generate new prospects for DT-SACCOs, while also significantly depending on them for payment services. This consequently resulted in heightened income and subsequently raised profits for DT-SACCOs that embrace such ICT platforms to offer services to their members, making their offerings

accessible, which will undoubtedly influence their operational efficiency and capability (SASRA 2016).

The key objective of profitability is to grow the owners' wealth; a company's profitability is an essential measure of its performance (Malik, 2011). For a SACCO to keep functioning, it needs to produce sufficient income, and preferably a surplus to invest in growth and progress (Goyal, Pandey, & Batra, 2010). The worth of an award is greatest when it effectively enhances the wealth of shareholders (Corbetta & Salvato, 2013). Coetzee et al. (2023) identify several challenges faced by SACCOs, including ineffective governance and management, poor asset quality, lack of capital, insufficient liquidity, low profitability, and non-compliance with regulations. Profitability in this study was measured in terms of Return on Assets (ROA).

### **1.1.2 Electronic Banking**

Electronic banking, often referred to as e-banking, is a system that allows individuals and businesses to conduct financial transactions and manage their bank accounts through digital platforms which includes accessing account information, transferring funds, paying bills, and applying for loans via the internet or mobile applications (Rexha, Kingshott & Shang, 2022). According to Yousafzai, Pallister and Foxall (2023), electronic banking has transformed the way financial institutions operate, significantly enhancing their profitability. Therefore, by offering online services, banks can reduce operational costs associated with physical branches, such as rent and staffing. This shift allows them to allocate resources more efficiently and invest in technology that improves customer experience. Electronic banking in this study was measured in terms of mobile banking, electronic funds transfer, automated teller machine and internet banking.

Waiganjo (2022) observe that mobile banking has emerged as a crucial component of the financial services industry, playing a significant role in shaping the profitability of financial institutions. Cho, Lee, Hwang and Kim (2023) argue that with an increasing number of consumers embracing mobile banking solutions, banks and credit unions are finding opportunities to lower the operational costs that come with conventional banking practices. Therefore, this transition not only streamlines their operations but also enables these institutions to utilize their resources in a more effective manner, ultimately leading to an improvement in their financial performance.

Ngwa (2020) indicate that the impact of electronic funds transfer (EFT) on the financial performance of banking institutions is significant, as it streamlines transactions, reduces operational costs, and enhances customer satisfaction. Akani and Tony-Obiosa (2020) argue that EFT allows banks to improve their service offerings, attract more customers, and ultimately increase their profitability through facilitating quicker and more efficient money transfers. Furthermore, the adoption of EFT technologies can lead to better cash flow management and reduced risk of fraud, contributing positively to the overall financial health of these institutions.

Automated teller machines (ATMs) play a significant role in enhancing the profitability of financial institutions by providing customers with convenient access to their funds leading to more frequent transactions, which can lead to increased customer satisfaction and loyalty (Jegede, 2019). Tumwesige (2022) indicate that ATMs reduce the need for physical bank branches, allowing financial institutions to lower operational costs associated with staffing and maintaining these locations. Furthermore, ATMs can generate revenue through transaction fees charged to non-customers, as well as through partnerships with other businesses that may utilize

ATM services. Therefore, the strategic deployment of ATMs can lead to improved financial performance for banks and credit unions.

Online banking allows customers to access their bank accounts, transfer funds, pay bills, and perform various banking activities from the comfort of their own homes or on the go, using a computer or mobile device. This service provides convenience and flexibility, enabling users to manage their finances 24/7 without the need to visit a physical bank branch (Xue, Hitt & Chen, 2023). Sullivan (2020) observes that internet banking significantly contributes to the profitability of financial institutions by offering customers easy and convenient access to their accounts and a variety of services which improves customer satisfaction also fostering loyalty among clients.

### **1.1.3 Deposit Taking Savings and Credit Co-operative Societies in Kenya**

In Kenya, SACCO establishment is regulated by the Sacco Societies Act of 2008 (Muriuki & Ragui, 2013). The regulator of SACCOs as per the 2008 Act is the SACCO Societies Regulatory Authority (SASRA). The regulator oversees, license, and regulate SACCOs within the country. For SACCOs that receive deposits, the Act (2008) establishes the essential operational regulations and appropriate standards needed to mitigate risk and maintain the stability of SACCO funds. The SACCOs fall into two categories: those that accept deposits (DT) and those that do not accept deposits (NDT). Deposit-taking SACCOs provide their members various banking services, including savings accounts, online loans, and credit options. Front Office Services Activities (FOSA) denote the collection of deposits, processing of payments, and quasi-banking services provided by these SACCOs.

SACCOs licensed by SASRA incorporate FOSAs into their e-banking activities to enhance customer service, lower costs, and operate effectively (SASRA Report 2019).

Non-Deposit Taking SACCOs are typical; however, as the SACCO expands, it evolves into a Deposit Taking SACCO and starts providing banking services to its members. In Kenya, more than 2,000 SACCOs are registered, with some operating under the traditional principles of welfare organizations and others authorized to accept deposits from clients. The growth of the domestic economy has been crucial for the ongoing sustainability of SACCOS in Kenya (Muthui, 2019).

There are forty teacher DT-SACCOs functioning in Kenya. This idea has been prevalent in the field of deposit-taking; SACCOs have offered savings and different kinds of loans for development, educational expenses, and emergencies. In Kenya, DT-SACCOs face competition from various sources for example the banks, microfinance institutions, pyramid scams, investment companies and shylocks, (Muthui, 2019). The country had an estimated population of 47.6 million, with an impressive 24.6 million of them participating in SACCO enterprises in various capacities. In spite of the government's strong attempts to support cooperative movements via legislation, 3,457 SACCOs (51%) were inactive by the end of 2013 (Kiaritha et al., 2014). The research was important due to the high failure rate of SACCOs, which has obstructed attempts to enhance mobile banking and profitability as noted in Vision 2030 and the Millennium Development Goals.

In Kenya, the average ROA for SACCOs has shown a favorable trend. According to the latest data from the Sacco Societies Regulatory Authority, many deposit-taking SACCOs have reported an ROA ranging between 3% and 6% annually. First, SACCOs often charge lower interest rates on loans compared to traditional banks, which can attract more members and increase lending volume. Secondly, SACCOs usually have lower operating costs. The community-driven model means less expenditure on marketing and branches, allowing more profits to be returned to

members. However, some SACCOs face challenges, such as regulatory hurdles and competition from microfinance institutions. To maintain and improve their ROA, they need to innovate and adopt new technologies for better service delivery and risk management (SASRA, 2024).

## **1.2 Statement of the Problem**

Over recent years, SACCOs in Kenya have emerged as important players in the financial services sector, especially for individuals who may not have access to traditional banking facilities (Muchiri & Muthimi, 2024). However, while many rely on these institutions for financial support, recent statistical data suggests that SACCOs are experiencing challenges when it comes to profitability. According to SASRA (2024), in the financial year 2024, the average ROA for deposit-taking SACCOs hovered around 1.5% which falls significantly short of the banking sector's average ROA, which is typically above 2% and often reaching as high as 3% or more. The report also indicates that while some SACCOs perform well, nearly 60% reported profits declining over the past five years. This sharply contrasts with the financial institutions, which often return upwards of 10-15% Return on Investment (ROI).

A study by Shabiha and Otinga (2020) explored the influence of electronic banking service management on financial performance of deposit taking SACCOS in Nairobi County and found that effective use of secure and upgraded phone banking system can reduce financial transaction costs and enhance financial performance of deposit taking Saccos. However, the study presents a contextual gap since it analyzed financial performance from the year 2016 to 2019. Tambasi (2022) investigated the influence of electronic delivery services on customer satisfaction in Savings and Credit Cooperatives and found a significant relationship between electronic delivery services on customer satisfaction. However, the study context was Mwalimu National

Sacco, Kenya thus presenting a contextual gap. Barasa (2023) explored the effect of electronic banking on the financial performance of commercial banks in Kenya and found that internet banking transactions had a positive but minimal effect on commercial banks' financial performance. However, the study presents a contextual gap. Therefore, this study sought to investigate the effect of electronic banking and profitability of deposit taking savings and credit co-operative societies in Kenya.

### **1.3 Objectives of the Study**

This section presents the general objective and specific objectives of the study.

#### **1.3.1 General Objective**

Electronic banking and profitability of deposit taking Savings and Credit Co-Operative Societies, Kenya.

#### **1.3.2 Specific Objectives**

The research was directed by the particular aims outlined below:

- i. To assess the effect of mobile banking on the profitability of deposit-taking SACCOs in Kenya.
- ii. To assess the effect of electronic funds transfer on the profitability of deposit-taking SACCOs in Kenya.
- iii. To assess the effect of Automated Teller Machine utilization on the profitability of deposit-taking SACCOs in Kenya.
- iv. To assess the effect of internet banking on the profitability of deposit-taking SACCOs in Kenya.

#### **1.4 Research Hypotheses**

The null hypotheses for the study were:

- H<sub>01</sub>:** Mobile banking has no significant effect the profitability of deposit-taking SACCOs in Kenya
- H<sub>02</sub>:** Electronic funds have no significant effect the profitability of deposit-taking SACCOs in Kenya.
- H<sub>03</sub>:** Use of Automated Teller Machines do not have any significant effect on profitability deposit-taking SACCOs in Kenya.
- H<sub>04</sub>:** Internet banking does not have any significant effect on profitability of deposit-taking SACCOs in Kenya.

#### **1.5 Significance of the Study**

The study would provide various stakeholders with several advantages. For policymakers, the findings could inform regulations and policies that enhance the financial sector's stability and growth. The financial institutions, including the cooperatives themselves, would gain insights into how electronic banking can improve their operational efficiency and customer engagement, leading to increased profitability. Customers, particularly members of these cooperatives, would benefit from improved services and access to financial products, which can enhance their overall banking experience. Additionally, researchers and academics would have access to valuable data that can contribute to the body of knowledge on electronic banking and its effects on financial institutions in developing economies.

#### **1.6 Scope of the Study**

The primary objective of undertake the research is to investigate electronic banking and the profitability of 40 teacher based DT-SACCOs located throughout Kenya (SASRA Report 2022). Electronic banking in this study was measured in terms of

mobile banking, electronic funds transfer, automated teller machine and internet banking. A descriptive research design was used to evaluate data. The study target population was 40 teachers based DT-SACCOs. A census of 40 teachers based DT-SACCOs was done. The study used secondary data that was collected using secondary data collection sheet. The quantitative data was evaluated using descriptive statistics. Inferential statistics like correlation analysis and regression were used in data analysis. The data in the study was drawn from published financial statements of 40 teacher based DT- SACCOs over a five year span (2018-2022). The study also explored the effects of electronic banking on the profitability of these SACCOs.

### **1.7 Limitations of the Study**

The researcher encountered the following challenges: Access to secondary data on SACCOs, particularly concerning their profitability and the exact effects of electronic banking, could be limited or hard to find. Additionally, certain data might be proprietary or confidential, which can hinder researchers from accessing essential information. The researcher could perform a comprehensive literature review to find current studies, reports, and datasets associated with electronic banking and SACCOs. This may aid in finding pertinent data sources and comprehending the context.

Secondary data may originate from multiple sources employing different methodologies, which can result in variations in data quality. Nonetheless, the researcher will collaborate with financial institutions and regulatory agencies that possess proprietary data, which could enable data sharing and improve the research's quality.

### **1.8 Organization of the Study**

This project is composed of five chapters, the first chapter contains the introduction to the study. It commences by outlining the study's background, followed by an

explanation of the study variables. Additionally, it includes a statement of the problem and emphasizes the objectives, sub-objectives, and hypotheses that will be utilized in the research. Subsequently, it offers a summary of the extent of the study, including its limitations and importance. The second chapter includes the literature review, theories that support the study, and the empirical review that aids in pinpointing the research gaps. Ultimately, it provides the theoretical structure. Chapter three outlines the methods utilized in the study. Moreover, it outlines the research design utilized and specifies the target population. Ultimately, the chapter includes a description of the techniques for gathering and examining the information. The Fourth chapter contains the findings of the research and the accompanying discussions. The fifth chapter provides summary the conclusion of the study, recommendations from the research, and proposals for additional research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter outlines the theories that underpin the study and reviews earlier research, and outlines the conceptual framework accordingly. This chapter examines the literature regarding electronic banking and the profitability of deposit-taking SACCOs. It is divided into four primary sections. The opening part examines the theories that underpin the research. The next part contains an empirical analysis of studies regarding e-banking and the profitability of DT-SACCOs. The third part contains a write up on literature reviewed and analyzed the gaps in earlier studies. The final section presents the mathematically demonstrates the relationship in form a conceptual framework, showing how the variables interrelate, specifically the how variables dependent together with independent relate.

#### **2.2 Theoretical Review**

A theory is a well-supported explanation of a natural phenomenon that can include laws, assumptions, or verified facts (Gregory, 2008). This section includes theories concerning electronic banking and profitability, along with their arguments and significance in the research. The research is underpinned by Transaction cost theory, the Technology Acceptance Model, Disruptive Innovation theory, Diffusion of Innovation theory, and Schumpeter's innovation theory.

##### **2.2.1 Transaction Cost Theory**

The transaction theory was developed by Oliver Williamson (1993) who states that transaction cost theory examines if a deal can be completed at a lower price using marketplace pricing or within a firm's structure and includes the costs associated with negotiation, monitoring, and enforcement that arise when multiple parties engage in

an operation. The expense of transactions generates external incentives for companies to diversify, and without transaction costs, divergence would not be a value-maximizing approach since resources can be acquired through the market (Geyskens, Steenkamp, & Kumar, 2006). The rise of ineffective markets, conversely, increases transaction costs, necessitating integration.

Independent diversification enhances only when it strengthens the acquired company's internal capital market. The primary cause of differences in transaction costs is the variations in administrative expenses required to effectively manage and coordinate the separate divisions. Monitoring and evaluating performance in the connected diversification will demand additional time, effort, and resources (Geyskens et al, 2006). As noted by Geysken et al. (2006), an increase in interdependence leads to higher bureaucratic costs. Unrelated diversification will incur the least bureaucratic costs. The structure of unlinked diverse businesses is often simple, with various units operating autonomously. Essentially, this framework of reciprocal reliance allows for performance management grounded in financial standards. Consequently, the expenses related to overseeing and managing the divisions are low.

Mosongo et al. (2013) argue that financial innovations lower the expense of reallocating investments from lower return sectors to more profitable options. SACCOs are presently posing a significant challenge to commercial banks, having implemented contemporary electronic banking systems for service provision. The SACCOs, similar to commercial banks, have introduced innovative offerings such as M-pesa and electronic money transfer options that facilitate the use of automated payment solutions and, in certain situations, serve as a substitute for cash (Geyskens et al, 2006). This has provided the SACCOs with a competitive advantage, drawing in investors who subsequently leave banks to choose SACCOs instead.

### **2.2.2 Technology Acceptance Model**

Theory was conceptualized in 1989 by two writer Fred Davis and his colleague Richard Bagozzi in 1989. The theory predicts the acceptance of new technologies in the information field, particularly regarding the acceptability of an information system in an organization. The theory emphasizes psychological tendencies and social factors like beliefs, intentions, and attitudes. The goal was to forecast how acceptable is tool and to determine the required adjustments to the system to ensure it meets user standards. According to this hypothesis, an information system's potential utility or the perceived capability to use it were factors influencing its acceptance (Mosongo, et al., 2013).

Davis also pointed out that a person assesses the impact a system has on performance for an individual beyond merely their perspective of the system. The attitude towards using that specific system and the anticipated usefulness influences the intention to behave. As a result, attitude is shaped by both the system's apparent benefits and perceived simplicity of usage (Davis, 1989). It certainly provides a persuasive rationale for the enhanced performance of SACCOs noted in various writings. For example, it seems that due to broad acceptance and exclusions from mainstream finance, more individuals chose to transfer their savings via mobile money rather than physically visiting the financial institution.

The theory outlines the different factors that SACCOs take into account prior to investing in mobile-enabled banking services. This encompasses the intended ease of use and functionality, and how it affects financial performance. The theory also advises SACCOs to educate both staff and clients about the use of the new technology implemented to enhance service and subsequently boost their profitability (Mosongo, *et al.*, 2013).

### **2.2.3 Disruptive Innovation Theory**

Put forward by Christensen following a number of studies from 1997 to 2006 (Christensen, 2006), the theory illustrates how a product or service initially establishes itself through fundamental methods at the lowest tiers of a market. The product consistently and persistently elevates a market to ultimately displace the existing competitors. It fundamentally revolves around four main components, starting with the idea that existing market participants advance by adhering to a course that fosters innovation (King & Baartartogtokh, 2015). Nevertheless, companies or technologies focused on innovation follow a clearly different path for launching new and enhanced products or through sustaining innovation. Second, incumbents exceed customer expectations; third, they can respond to disruptive threats; and fourth, they ultimately fail after experiencing disruption.

This theory primarily describes how a service or product establishes itself initially through simple methods at the lowest tiers of a market. The product subsequently scales a market upward in a continuous and relentless way to ultimately displace the existing competitors. This would clarify the reduced profitability in SACCOs after mobile banking was introduced, along with the later increase in profitability after some time.

### **2.2.4 The Diffusion of Innovations Theory**

The model describes the process that takes place when a community accepts a novel concept, item, or philosophy and is based on a proposal made by Rogers (2010) (Kaminsky, 2011). Innovations are ideas, methods, or things that members of a certain social system deem novel, whereas diffusion refers to the process by which an

invention spreads over a period amongst members of a social system through particular channels (Kaminsky, 2011).

This theory consists of three components: the innovation decision process, the traits of the adopter, and a characteristic of the innovation. The process of making decisions about innovation involves recognizing the traits that affect adoption and classifying those who adopt (Aboelmaged and Gebba (2013). The features of innovation that affect its adoption include its perceived benefits compared to other innovations, how well it aligns with an individual's needs, values, and previous experiences, their understanding of the difficulty of learning and adopting the innovation, the extent to which they can try out and utilize the new technology before fully committing, and the visibility of the technology's use by others (observability) (Okiro and Ndungu 2013).

The diffusion process consists of five stages: persuasion, awareness, choice, validation, and execution. Individuals intrigued by the innovation search for information about it, and once they are persuaded of its benefits, they decide to adopt it, put it into practice, and then either confirm or dismiss it (Rogers, 2010). Rogers (2010) categorizes adopters into innovators, then early adopters, through to early majority, then late majority, and laggards in relation to their timing in accepting an innovation. Innovators, accounting for 2.5 percent of the group, are risk-taking individuals with significant financial backing eager to try new concepts, whereas the early adopters are largely prominent figures in social contexts, representing 13.5 percent of the group. The early majority thinks carefully before adopting, whereas the late majority tends to be doubtful. Both make up 34 percent of the group, while the final 16 percent are the laggards among the adopters. The theory outlines how SACCOs choose to adopt technology based on the rationale that the features and

abilities of the innovation align with the current needs of both members and institutions, which encompass enhancing SACCOs' profitability.

### **2.2.5 Schumpeter Theory of Innovation**

In 1928 Joseph Schumpeter coined the theory. Schumpeter (1928) posits that entrepreneurs are innovators who generate opportunities for fresh profits stemming from their innovations. Schumpeter places greater importance on entrepreneurs to identify opportunities that allow them to grow and innovate their businesses while minimizing costs and boosting product demand. Moreover, he viewed innovation as a means that allows companies to develop new and enhanced products, improving their quality and creating opportunities for new markets for diverse offerings.

Schumpeter (1934) argues that the aim of entrepreneurship is to pursue opportunities and engage in value-creating activities that can enhance income through these value-generating efforts. He asserts that if an innovation is successful, meaning it achieves its goal of either reducing production costs or boosting product demand, it will lead to higher profits.

Porter (1992) reinforced Schumpeter's assertions by emphasizing that innovations are essential in providing a competitive edge and favorably influencing long-term economic growth. Porter emphasizes that companies need to constantly innovate and enhance their operations to maintain a competitive edge. Companies must consistently invest in both tangible and intangible assets. Many individuals attempt to develop innovations to simplify life and aid the trailblazers who embrace them (Wang et al., 2003). The theory underpins the research as it aligns with evolving technological advancements such as mobile banking, internet banking, ATMs, and EFTs, all aimed at reducing operational costs for DT Saccos. This significantly contributes to boosting

income while lowering costs, resulting in greater profits and enabling firms to optimize asset use to deliver favorable returns to investors.

### **2.3 Empirical Review**

This section presents a review of past studies that have been done in relation to the study variables which are mobile banking, electronic funds transfer, automated teller machine and internet banking.

#### **2.3.1 Mobile Banking and Profitability**

Mugane (2020) investigated the association between mobile banking and Kenyan commercial banks' financial performance using a descriptive methodology and quantitative methodologies. The study included 80 individuals, comprising two senior managers from each of the 40 banks. Original data was gathered via surveys, producing both numerical and descriptive information. Qualitative data underwent content analysis, whereas quantitative data were presented in form of descriptive statistics like means, standard deviations, displayed in graphs as well as tables. The results were a statistically significant positive link in relation use of short message service and how commercial banks performed financially, concentrating specifically on this sector and highlighting a contextual gap.

Orina (2020) looked on how commercial banks' operational efficiency in the country are affected by mobile banking, employing a descriptive design centered on 41 banks. A census study was performed utilizing secondary data from the Central Bank of Kenya, from the year 2010 to 2018. Essential information comprised bank deposits, loans granted, and recorded accounts. The results were presented using descriptive statistics as well as the inferential statistics, which was carried out using STATA, alongside multiple regression equations to evaluate relationships between variables.

The Hausman Test established the application of a Fixed effect model for panel data, and tests for heteroscedasticity, autocorrelation, multicollinearity, and normality were performed. The results showed that mobile banking loans greatly improve operational efficiency, while also highlighting conceptual and contextual gaps in comprehending this efficiency in Kenya.

Iravonga and Miroga (2018) investigated how mobile banking affected small and medium-sized businesses' (SMEs') financial results in Kenya's Kakamega County, by employing an exploratory study approach. The study focused on SMEs that provide financial services, using a sample of 373 chosen via random sampling. Information was gathered from entrepreneurs using semi-structured questionnaires, with support from trained researchers. A preliminary study was performed with 25 questionnaires, and data was handled using Excel and examined with SPSS. The results indicated that SMEs utilized mobile banking for multiple purposes, yet a negative relationship was found between financial performance and mobile banking charges. Research observed a methodological deficiency because of its explanatory framework.

### **2.3.2 Electronic Funds Transfer and Profitability**

The impact of fund transfers on the market share and financial performance of Kenyan commercial banks listed on the Nairobi Securities Exchange (NSE) was investigated by Kenneth, Samson, Kibas, Chepkilot, and Koima (2019). They used a survey approach, collecting primary data through questionnaires and concentrating on 11 banks. Descriptive statistics and Analysis of Variance (ANOVA) were used in quantitative analysis to evaluate the effect of mobile banking. According to the results of the regression analysis, certain fund transfer variables improved financial performance, featuring an intercept of 1.076 and independent variables accounting for 75.1% of performance (adjusted  $R^2 = 0.751$ ). The research found that mobile banking

fund transfers greatly improve the financial performance and market presence of Kenyan banks, as different offerings such as E-funds transfer and bill payments boost efficiency. Nonetheless, the study shows a contextual gap as it concentrated on commercial banks that are listed on NSE.

The impact of e-banking on the financial performance of 24 commercial banks in Kenya's North Coast region was investigated by Mwakera, Riwo-Abudho, and Abudho (2023), with a sample size of 240 participants from December 2022 to July 2023. The sample consisted of 72 participants from different management tiers. The data used were from primary and secondary sources, they employed use questionnaires, the questions comprised open and closed-ended. Results revealed a significant link between mobile banking and electronic funds transfer (EFT) regarding enhanced financial performance, emphasizing mobile banking's impact on lowering operational expenses and EFT's role in boosting transaction volumes. Nevertheless, the research highlights a contextual gap by concentrating exclusively on Kenyan banks.

Wangui and Nzuki (2021) assessed how electronic money transfer systems affect Sumac Deposit Taking Microfinance Ltd.'s financial results in Kenya. They gathered information via surveys and secondary sources, examining it using tables, pie charts, and graphs. The results showed advantages including enhanced speed, profitability, and convenience, while also pointing out matters boarding on money laundering and identity theft. The writers suggested improved regulation and supervision of electronic money transfer systems to safeguard users from financial losses and avert tax revenue decline, which might result in larger economic problems such as inflation. A more stringent regulatory framework would encourage an effective and transparent electronic money transfer system, nurturing a stable financial atmosphere.

Nonetheless, the research reveals a contextual shortcoming as it concentrated regarding Sumac Deposit Taking Microfinance Ltd.'s financial performance in Kenya.

### **2.3.3 Automated Teller Machines and Profitability**

A study by Mutiso and Senelwa (2017) investigated how automated teller machines affected the asset returns of Kenyan commercial banks. The study included the 11 the banks in Nairobi Stock Exchange. The findings demonstrated that between 2007 and 2016, automated teller machines had a favorable substantial consequence on these banks' return on assets. The conventional linear regression model's diagnostic tests revealed that all of the variables were homoscedastic, normally distributed, and autocorrelation-free. Furthermore, a robust association between automated teller machines to return on assets was discovered, suggesting a significant relationship between these two factors. However, by examining the financial performance of Kenyan commercial banks, the study revealed a contextual gap from that year.

Ndhine and Kibati (2022) investigated the effects of ATMs on the financial results of commercial banks that are listed on the Nairobi Securities Exchange in Kenya using the theories of innovation diffusion and economic value added. They focused on 11 banks that were listed as of December 31, 2020, selected through purposive sampling from a total of 42 licensed banks in Kenya, using an explanatory research methodology. The study used secondary panel data between the period 2014 to 2020. Both descriptive and inferential methods were used. Findings showed a negative correlation in adoption of ATMs and financial performance, revealing a significant link between ATMs and return on equity. Basic linear regression validated the statistical importance of ATMs' impact on financial performance. The study noted increase in the number of ATMs in the last seven years. Nonetheless, the research employed an explanatory research design, thereby revealing a methodological gap.

Abdullai and Nyaoga (2017) evaluated the impact of ATM use on the operational effectiveness of commercial banks in Nakuru County, Kenya using a correlational-cross-sectional methodology. The study included 56 workers from 28 banks, chosen by simple random sampling from an overall total of 31 branches. Data were gathered through structured questionnaires, and a preliminary study in Eldoret Town evaluated the instruments' validity using Cronbach's alpha. Correlation and regression analyses demonstrated a notable positive connection between ATM usage and operational performance. Using a correlational-cross-sectional methodology, the study was on the operational performance of commercial banks in Kenya's Nakuru County that highlights both contextual and methodological gaps.

#### **2.3.4 Internet Banking and Profitability**

George, Gudda, and Gathuru (2022) studied how internet banking affected Kenyan commercial banks' profitability specifically focusing on Kenya Commercial Bank. Due to widespread adoption and being amongst the leading adoption of technological innovation, the study used a descriptive research design and the sample was selected purposively, Kenya Commercial Bank was selected from a list of all licensed commercial banks in Kenya as of December 31, 2020. Simple linear regression was used to analyze the data that was taken from the bank's financial statements. The findings indicated that Kenya Commercial Bank's profitability was significantly impacted by internet banking. According to the study, Kenya Commercial Bank's profitability rose due to adoption of internet banking. However, the study was on Kenyan commercial banks' profitability, thereby highlighting a contextual gap.

Ghose and Maji (2022) evaluated data from 67 commercial banks over nine years (2011/12 to 2019/20) to investigate the connection between the level of internet banking and bank profitability in India. They evaluated the intensity of internet

banking by analyzing the volume and value of transactions and examined profitability. The study found that bank profitability is positively impacted by both online banking measures, with more pronounced effects noted in public sector banks, suggesting operational economies of scale. Nonetheless, the research reveals a methodological gap as it employed three-stage least squares models.

Yasin (2018) studied the impact of internet banking on Ethiopian commercial banks' financial performance using an explanatory approach and secondary data from ten banks between 2010 and 2016. The research used of descriptive statistics and regression analysis, ultimately choosing a random effects regression model. The results disclosed that while bank liquidity, the deposits-to-assets ratio, and inflation showed negative correlations with financial performance, cost efficiency and capital sufficiency had favorable effects. The size of bank showed a negative effect on financial performance, internet banking had a beneficial impact; both effects were not statistically significant. The study focused on Ethiopian commercial banks' financial performance employing an explanatory design, thereby highlighting both a contextual gap and a methodological gap.

## 2.4 Summary of Literature Reviewed and Research Gap

**Table 2.1: Summary of Literature Reviewed and Research Gaps**

<b>Author</b>	<b>Study focus</b>	<b>Findings</b>	<b>Identified gap</b>	<b>Focus of present study</b>
Mutiso and Senelwa (2017)	ATMs and return on assets	A positive relationship was found between automated teller machines and return on assets.	The study looked at the year-end financial results of Kenyan commercial banks that were listed, providing a contextual gap.	The research concentrated on the profitability of DT-SACCOs in Kenya
Abdullai and Nyaoga (2017)	Impact of ATM use on the operational effectiveness of commercial banks in Nakuru County, Kenya	A notable positive connection between ATM usage and operational performance.	The study was on the operational performance of commercial banks in Kenya's Nakuru County that highlights both contextual and methodological gaps	The research concentrated on the profitability of DT-SACCOs in Kenya using descriptive research design
Iravonga and Miroga (2018)	Mobile banking on financial outcomes of SMEs in Kakamega County, Kenya.	SMEs utilized mobile banking for multiple purposes; however, a negative relationship was discovered associating financial performance and the	The research identified a methodological gap as a result of its explanatory design.	The research concentrated on the profitability of DT-SACCOs in Kenya

		expenses of mobile banking.		
Yasin (2018)	Online banking and financial results	The financial performance was positively affected by capital adequacy and cost efficiency	The research focused on Ethiopian commercial banks' financial results through an explanatory design, highlighting both contextual and methodological gaps.	Using a descriptive research design, the study focused on the profitability of DT-SACCOs in Kenya.
Kenneth, Samson, Kibas, Chepkilot, and Koima (2019)	The impact of fund transfers on the market share and financial performance of Kenyan commercial banks listed on the Nairobi Securities Exchange (NSE)	Mobile banking fund transfers greatly improve the financial performance and market presence of Kenyan banks	The study shows a contextual gap as it concentrated on commercial banks that are listed on NSE	The research concentrated on the profitability of DT-SACCOs in Kenya
Mugane (2020)	Mobile banking and financial effectiveness.	A statistically significant positive correlation between short messaging service and commercial banks' financial results.	Concentrated exclusively on commercial banks, thereby creating a contextual gap.	The research concentrated on the profitability of DT-SACCOs in Kenya.

Orina (2020)	Mobile banking and operational effectiveness	Mobile banking loans greatly improve operational efficiency.	The research uncovered theoretical and situational gaps in comprehending this efficiency in Kenya.	The research concentrated on the profitability of DT-SACCOs in Kenya
Wangui and Nzuki (2021)	How electronic money transfer systems affect Sumac Deposit Taking Microfinance Ltd.'s financial results in Kenya	A more stringent regulatory framework would encourage an effective and transparent electronic money transfer system	The research reveals a contextual shortcoming as it concentrated regarding Sumac Deposit Taking Microfinance Ltd.'s financial performance in Kenya	The research concentrated on the profitability of DT-SACCOs in Kenya
Ndhine and Kibati (2022)	Automated teller machines (ATMs) and financial outcomes	It was observed that a negative association between ATMs and financial performance, highlighting a noteworthy link between ATMs and return on equity.	The research employed an explanatory design, thereby indicating a methodological gap.	The study used descriptive research design
George, Gudda, and Gathuru (2022)	How internet banking affected Kenyan commercial banks' profitability	Kenya Commercial Bank's profitability was significantly impacted by	The study was on Kenyan commercial banks' profitability, thereby highlighting a	The research concentrated on the profitability of DT-SACCOs in Kenya

	specifically focusing on Kenya Commercial Bank	internet banking	contextual gap	
Ghose and Maji (2022)	The research concentrated on the financial outcomes of Ethiopian commercial banks through an explanatory design, highlighting both contextual and methodological gaps.	Discovered that bank profitability is positively impacted by internet banking., with more pronounced impacts seen in public sector banks, suggesting operational economies of scale.	Cross-sectional research design used	Descriptive research design was used in the study.
Mwakera, Riwo-Abudho, and Abudho (2023)	E-banking on the financial outcomes	A significant connection exists between mobile banking and electronic funds transfer that enhances financial performance.	The research reveals a contextual gap by concentrating exclusively on Kenyan banks.	The research concentrated on the profitability of DT-SACCOs in Kenya

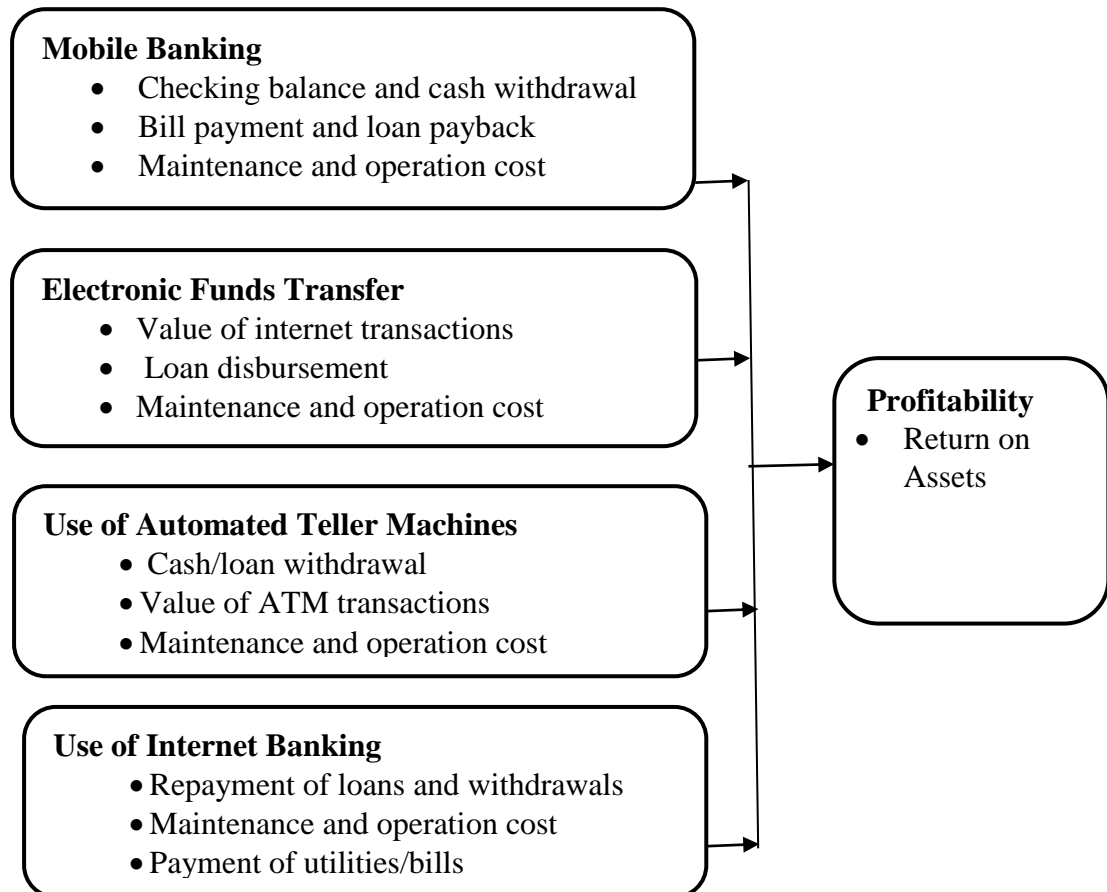
**Source: Researcher (2025)**

## 2.5 Conceptual Framework

Kothari (200) contends that conceptual framework illustrates how the causes and outcomes relate.

### Independent variables

### Dependent variable



**Figure 2.1: Conceptual Framework**

**Source: Researcher, (2025)**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the research methods that is employed by the research including the research design, target population, sampling design and sample size, data collection instrument, data collection procedure, data analysis and presentation and ethical considerations.

#### **3.2 Research Design**

Research design according to Cooper and Schindler (2014), is a systematic approach that comprises data collection, variable measurement, information processing, and findings presentation. To fully comprehend the subject, a descriptive research design was used. As stated by Doyle, McCabe, Keogh, Brady, and McCann (2020), descriptive research methodically examines and records features, actions, and trends associated with the phenomenon, gathering both quantitative and qualitative data via surveys, observations, and documentation. This might reveal trends and changes, creating a basis for additional analysis. Consequently, the research employed this design to gather and showcase the data based on the finding without modifying any of the responses.

#### **3.3 Target Population**

As stated by Tiwari, Arya, and Bansal (2017), the target population denotes the group of elements designated for the study. Daniel (2016) suggests that there ought to be a connection between research objectives and the participants in the study. The research focused on 40 teachers based DT-SACCOs controlled the SACCOs Societies Regulatory Authority (SASRA) and are authorized to function in Kenya since they form the second highest membership among the DT taking SACCOs.

### **3.4 Sampling Design and Sample Size**

Sampling refers to a procedure where from a populace a representative number drawn. Furthermore, it emphasizes the strategy taken by the researcher in choosing the components included in the study, which must be dependable and valid (Kothari, 2004). The research utilized a census of all 40 teacher based DT SACCOs in Kenya (SASRA 2022). A census examination is possible when the elements are comparatively different from one another and the study population is small (Cooper & Schindler, 2006).

### **3.5 Data Collection Instruments**

Creswell (2002), the process of acquiring information from a study sample is known as data collection. The data gathering refers to mechanism researchers use to gather information from the participants in their study. The phrase "data extraction methods" (Axinn & Pearce, 2006) refers to the techniques employed to collect the necessary information for carrying out the research. Secondary data was collected using a data collection sheet. Data used in the study were obtained from public sources, they include annual reports and financial statements, for the 40 teacher based SACCOs.

### **3.6 Data Collection Procedure**

Secondary data used for DT-SACCO's were drawn from annual audited reports spanning 2018 to 2022. Kenyatta University's School of Postgraduate Studies issued a letter introducing the research. Consent to undertake the study was granted by the National Commission for Science and Technology (NACOSTI). In seeking data access from yearly financial reports, SASRA received an introductory letter from the school of postgraduate studies and NACOSTI to authorize and provide the relevant data.

### 3.7 Data Analysis and Presentation

The examination of data was in using time series analysis, descriptive statistics, and Pearson correlation analysis. Statistical techniques like Pearson's correlation study and time series examination were utilized. It was crucial to evaluate the association between dependent and independent factors at the 0.05 significance level and 95% confidence interval. The transformation of the dependent variable (profitability) was achieved by getting the aggregate mean of ROA for cash year:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;-

- Y - is profitability of DT-SACCOs
- X<sub>1</sub> - represents mobile banking at DT –SACCO.
- X<sub>2</sub> - represents electronic funds transfer at DT –SACCO
- X<sub>3</sub> - represents use of ATMs at DT –SACCO.
- X<sub>4</sub> - represents internet banking at DT –SACCO.
- $\beta$ 's denotes coefficients
- $\varepsilon$  - represents the error term
- $\alpha$  - intercept

### 3.8 Preliminary Diagnostic tests

The subsequent primary diagnostic tests were as follows; -

#### 3.8.1 Multicollinearity

The multicollinearity as the interrelationship between independent variables in a regression model, making the fitting of the model and interpretation of results more difficult (Vatcheva, Lee & Rahbar, 2021). According to Obite, Olewuezi, Ugwuanyim

and Bartholomew (2020), the variance inflation factor (VIF) is a way to measure multicollinearity, with values from 1 (indicating no correlation) to those above 5 (signifying strong correlation). A VIF higher than 5 is generally desired to prevent multicollinearity problems in regression analysis.

### **3.8.2 Normality**

Schmidt, A. F., & Finan, C. (2018) indicate that a normality test assesses if a sample data set adheres to a normal distribution, impacting the precision of hypothesis tests and confidence intervals for regression coefficients. Das and Imon (2022) state that the normality of residuals affects model selection metrics such as R-squared and adjusted R-squared, which evaluate goodness of fit and the complexity of the model. Moreover, it is essential for detecting outliers and influential points that can greatly influence model fitting. The research will apply the Shapiro-Wilk test to determine significant departures from normality, where a p-value greater than 0.05 suggests that the data probably satisfies normality criteria.

### **3.8.3 Heteroscedasticity**

Heteroscedasticity refers to the circumstance in regression analysis where the variability of the errors is not constant across all levels of the independent variable which may lead to inefficient estimates and affect the validity of statistical tests (Klein, Gerhard & Schermelleh-Engel, 2021). The statistical test, the Breusch-Pagan test or the White test was employed to formally assess the presence of heteroscedasticity. Addressing heteroscedasticity was crucial, as it could lead to biased standard errors, which in turn affects hypothesis testing and confidence intervals. A p-value below 0.05 is looked at when interpreting the results of the

Breusch-Pagan test. If your p-value is less than this threshold, then reject the null hypothesis of homoscedasticity, indicating potential heteroscedasticity.

### **3.9 Ethical Considerations**

The study ensured that all ethical standards were maintained, with a focus on these essential principles: the research was carried out with honesty, making certain that all results were disclosed accurately and transparently. All conflicts of interest were revealed, and the research complied with the utmost standards of scientific integrity. The results were communicated and published. While conducting research, the researcher also made certain that all references were credited to the true author and the year of publication. The research also guaranteed that all collected data would be handled as confidential, following the standards set by the Kenyatta University Ethics and Review Committee.

## **CHAPTER FOUR**

### **RESEARCH FINDINGS AND DISCUSSIONS**

#### **4.1 Introduction**

Results of secondary data analysis are summarized in this chapter, employing a collection sheet for methodical organization and assessment. The chapter is organized into essential sections: Descriptive statistics results that summarize data traits, encompassing variability as well as measures of central tendency. Results from Diagnostic Tests evaluate the accuracy and dependability of the data via several tests and inferential statistical findings, emphasizing conclusions and predictions using methods such as correlation and regression analysis.

#### **4.2 Descriptive Statistics**

Observations were summarized using descriptive statistics through the: the minimum and maximum values, which were computed to determine the range and to show the dispersion of the data. The average was computed to capture the general trend by averaging all the observations. The standard deviation was determined to measure variation, where a low value shows data points are near the mean and a high value indicates a greater dispersion. All these were examined to aid in comprehending the data distribution and facilitate informed choices. The results are shown as follows;

##### **4.2.1 Mobile Banking**

The first research objective was to investigate the effect of mobile banking on the profitability of Kenyan deposit-taking SACCOs. Mobile banking was assessed based on checking balances, cash withdrawals, bill payments, loan repayments, and maintenance and operational expenses.

**Table 4.1: Mobile Banking and Profitability**

<b>Indicators</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Standard deviation</b>
Checking balance and cash withdrawal	2.2854	10.2654	4.061	0.7512
Bill payment and loan payback	3.5781	9.1547	3.946	1.0558
Maintenance and operation cost	5.0124	11.6475	4.123	0.8761

**Source: Survey Data (2024)**

The results reveal a minimum effect of 2.2854 and a maximum of 10.2654, suggesting that certain SACCOs greatly gain from mobile banking. The average value of 4.061 indicates a generally favorable effect on profitability, whereas a standard deviation of 0.7512 implies that most SACCOs undergo comparable effects. In general, the findings highlight how mobile banking influences SACCO profitability in Kenya, showing consistent patterns among various institutions. The results align with Omondi (2015) research findings that indicate mobile banking, specifically through balance inquiries and cash withdrawals, significantly contributes to the more incomes of SACCOs in Kenya.

The study's lowest score was 3.5781, and its greatest value was 9.1547, highlighting a spectrum of performance metrics among the SACCOs regarding the influence of these factors on their profitability. The average value of 3.946 indicates that, generally, the impact of bill payment and loan repayment on profitability is somewhat moderate, leaning toward the lower side of the observed spectrum. This mean value, combined with a 1.0558 standard deviation, shows that there are differences in various SACCOs experience the impacts of these financial activities. This magnitude of standard deviation suggests that while the majority of SACCOs are grouped near the mean, there are significant variations in performance, with certain institutions excelling or

underperforming relative to the average. The consistency of these findings with the research by Too et al. (2016) highlights the significance of these financial activities in enhancing profitability and suggests that SACCOs could gain from establishing strong systems for efficiently managing both bill payments and loan collections.

The research additionally uncovered a minimum cost of 5.0124 and a maximum cost of 11.6475, pointing to a spectrum of operational expenses encountered by these organizations. The average cost was determined to be 4.123, indicating that typically, SACCOs experience a reasonable degree of expenses linked to their maintenance and operational functions. Additionally, the standard deviation of 0.8761 suggests a fairly low variability in these expenses across the various SACCOs, indicating that the majority of organizations incur costs that are near the average value. These results correspond with the study by Ayugu and Mutswenje (2023), which revealed that the cost structures related to mobile banking services significantly positively impact the profitability of financial institutions.

#### **4.2.2 Electronic Funds Transfer**

The second research objective was to assess the effect of electronic funds transfer on the profitability of DT-SACCOs in Kenya. The metrics of electronic funds transfer included the worth of online transactions, loan distribution, and the costs of maintenance and operations.

**Table 4.2: Electronic Funds Transfer and Profitability**

<b>Indicators</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Standard deviation</b>
Value of internet transactions	4.6281	16.3452	3.974	1.0289
Loan disbursement	3.816	11.1839	4.068	0.8318
Maintenance and operation cost	5.006	10.3642	4.185	0.8677

**Source: Survey Data (2024)**

The assessment showed a lower limit of 4.6281 and upper limit value of 16.3452, signifying a notable variation in the performance metrics tied to these electronic transactions. The average value, computed at 3.974, indicates that, on average, the profitability associated with online transactions is situated within a somewhat moderate range. This average, nonetheless, has a standard deviation of 1.0289, displaying the data points' variability with respect to the mean. The findings indicate a favorable connection between online transactions and SACCOs' profitability, underscoring the importance of adopting technology for sustainable development in Kenya's financial cooperative sector. These results align with Owade's (2018) study, which notes the increasing significance of electronic funds transfer in improving the operational efficiency and profitability of SACCOs.

The figures for loan disbursement act as an essential measure of how electronic funds transfer (EFT) systems influence the profitability of deposit-receiving SACCOs in Kenya. The documented loan disbursement amounts varied from a low of 3.816 to a high of 11.1839. This range emphasizes the variation in loan disbursement sizes across various SACCOs, indicating that certain institutions excel in utilizing electronic funds transfer to improve their lending practices compared to others. The average value of loan disbursement was determined to be 4.068, suggesting that the usual loan disbursement figure is within a fairly modest range. The standard deviation of 0.8318 further highlights the level of variability in loan disbursement amounts, indicating that although many SACCOs may be close to the mean, notable differences exist in the amounts they can disburse. The discovery aligns with Ngangi (2022) study which notes that implementing EFT enhances customer satisfaction, reduces transaction costs, and optimizes procedures to improve financial performance.

The analysis performed identified a variety of values that emphasize the differences in costs linked to EFT. The minimum value determined was 5.006, signifying the least amount of operational costs experienced by certain SACCOs. In comparison, the peak value attained 10.3642, indicating that other SACCOs incur considerably greater expenses in their operations. This array of figures highlights the variation in operational efficiency and cost management tactics among various SACCOs. Moreover, the average value of 4.185 reflects the typical expenses incurred by these organizations, serving as a standard for evaluating their operational effectiveness. Standard deviation of 0.8677 shows the level of variation in these expenses, implying that while certain SACCOs succeed in maintaining lower costs, others might face challenges with elevated expenses, potentially harming their profitability. These results align with Ondigo's (2018) study, which showed that operational expenses, especially those associated with technology and electronic transactions, can greatly impact the financial results of SACCOs.

#### **4.2.3 Automated Teller Machine**

The third research objective sought to assess the effect of Automated Teller Machines on the profitability of deposit-taking SACCOs in Kenya. The indicators of automated teller machine usage included cash/loan withdrawals, ATM transaction values, and maintenance and operational expenses.

**Table 4.3: Use of Automated Teller Machine and Profitability**

<b>Indicators</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Standard deviation</b>
Cash/loan withdrawal	6.3454	16.5421	3.643	1.359
Value of ATM transactions	7.0061	13.5623	3.907	1.092
Maintenance and operation cost	10.0641	21.2635	4.215	0.788

**Source: Survey Data (2024)**

The minimum withdrawal amount of 6.3454, representing the least amount of ATM usage by members, whereas the maximum value of 16.5421 signifies the greatest involvement with these financial services. The average of 3.643 indicates that, generally, the withdrawals are fairly low in relation to the noted range, which could suggest that although some members are heavily using the ATMs, a considerable number might not be using these services to a similar extent. The standard deviation of 1.359 reflects a moderate variability in the withdrawal amounts, implying significant differences in the use in ATMs by various customers of the SACCOs. The result aligns with the study by Chamakany and Mbuva (2023), which notes a positive link between ATM usage and profitability due to the convenience and accessibility that enhance transaction volumes, resulting in increased revenue for the SACCOs.

The analysis showed a minimum transaction value of 7.0061, suggesting the least amount of ATM usage in the surveyed SACCOs. On the other hand, the peak value attained was 13.5623, highlighting the maximum volume of ATM transactions, indicating a considerable difference in how various SACCOs utilize ATM services. The average figure of 3.907 represents the typical number of transactions among the analyzed SACCOs, demonstrating a moderate degree of ATM usage. This average, viewed in conjunction with the standard deviation of 1.092, showing a relatively small variability in transaction volumes among the SACCOs. A reduced standard deviation suggests that the majority of SACCOs exhibit transaction values near the average, reflecting a uniform trend in ATM utilization throughout. The results align with Nyumoo's (2020) study, which indicated that greater use of ATMs results in improved customer satisfaction and convenience, thereby potentially boosting the profitability of these financial entities.

The research additionally revealed that the expenses linked to ATM maintenance and operations varied from a low of 10.0641 to a high of 21.2635. This range reflects a significant variation in the costs experienced by various SACCOs, implying that certain entities could be more effective in handling their ATM activities compared to others. The average value of 4.215 signifies that, on average, SACCOs face a moderate level of operational expenses, whereas the standard deviation of 0.788 illustrates the variation in these expenses across the various entities. The results align with Farah (2020) study, which discovered that efficient handling of ATM-associated costs results in enhanced profitability and sustainability for SACCOs, especially in a competitive financial environment.

#### **4.2.4 Internet Banking**

The fourth research aim aimed to investigate how internet banking affects the profitability of DT-SACCOs in the country. The aspects of internet banking included loan repayments and withdrawals, operating and maintenance expenses, as well as utility and bill payments.

**Table 4.4: Internet Banking and Profitability**

<b>Indicators</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Standard deviation</b>
Repayment of loans and withdrawals	4.119	14.085	4.058	0.942
Maintenance and operation cost	5.562	12.213	4.312	0.689
Payment of utilities/bills	6.623	15.064	3.824	1.176

**Source: Survey Data (2024)**

Repayments of loans and withdrawals serve as essential indicators of how internet banking affect the profitability of SACCOs that accept deposits in Kenya. Table 4.4 show, the loan repayments and withdrawals registered a minimum of 4.119 and a maximum of 14.085, reflecting a noteworthy performance range. The average value is

4.058, accompanied by a standard deviation of 0.942, indicating that although certain members have larger repayments and withdrawals, the majority group around the lower range. This could suggest a lack of use of internet banking services, which might affect SACCO profitability. These results are backed by earlier studies by Gitau (2020), who noted that internet banking has resulted in better operational efficiency, lower costs, and increased customer engagement, all essential for the profitability of SACCOs.

The findings show that the maintenance and operational costs were from a minimum of 5.562 to a maximum of 12.213, reflecting the spectrum of operational expenses these institutions face when implementing and sustaining internet banking services. The average cost, noted at 4.312, indicates that SACCOs typically face a fairly moderate level of operational expenses related to their internet banking systems. This average, nonetheless, should be understood alongside the standard deviation of 0.689, which suggests depicting variability in the expenses across various SACCOs. These results align with earlier studies conducted by Mateka, Gogo, and Omagwa (2016), who note that, although the upfront investment in technology and infrastructure may be significant, the long-term advantages—like greater efficiency, better customer service, and improved access to financial products—can surpass these expenses.

The findings show that the lowest recorded payment for utilities and bills was 6.623, whereas the highest payment reached 15.064. This range indicates a significant variation in the effects of these transactions on the profitability of SACCOs. Moreover, the average value of 3.824 represents the typical impact of utility and bill payments on the financial results of these institutions. When considered with the standard deviation of 1.176, it emphasizes the level of variation in the data, implying that although numerous SACCOs might achieve comparable profitability from these

services, there are also notable outliers that either surpass or drop below this mean. These observations concur with a study conducted by Barasa, Obura, and Anyira (2017) that assessing the connection between online banking and SACCOs' financial performance. It determined that embracing digital banking options, such as paying bills and utilities, can boost operational efficiency and enhance customer satisfaction, ultimately resulting in increased profitability.

#### 4.2.5 Profitability

The key objective was to explore the profitability of DT-SACCOs in Kenya. The profitability indicators of DT-SACCOs included loan repayment and withdrawals, operational and maintenance costs, as well as utility/bill payments, results are in Table 4.4.

**Table 4.4: Internet Banking and Profitability**

Indicators	Minimum	Maximum	Mean	Standard deviation
Return of assets	4.274	9.6452	4.371	0.629

**Source: Survey Data (2024)**

The ROA recorded a lowest value of 4.274, suggesting that even the least profitable SACCOs managed to achieve a return exceeding 4% on their assets. In contrast, the highest value was 9.6452, indicating that the most successful SACCOs attained close to a 10% return on their assets, emphasizing a notable difference in performance between these organizations. The average ROA was determined to be 4.371, indicating that, generally, SACCOs in Kenya are able to produce a modest return on their assets. This average figure is fairly near the minimum, suggesting that numerous SACCOs might be concentrated around reduced profitability levels. The standard deviation of 0.629 further highlights this aspect, as it indicates the level of variation in ROA across the various SACCOs. Based on the outcome a standard deviation of this

level indicates that although certain SACCOs are doing well, a significant number are close to the lower limit of profitability. As per Kamochu (2015), the return on assets (ROA) ratio serves as an indicator of managerial efficiency. An increased return rate indicates efficient resource utilization by management, meaning they are effectively using the company's assets to produce profits.

### 4.3 Diagnostic Test Results

Research conducted the subsequent investigative assessments: multicollinearity assessment, normality assessment, and heteroscedasticity assessment. The findings are shown as follows;

#### 4.3.1 Multicollinearity Test

To establish the correlation degree between the independent variables in the model a multicollinearity test was undertaken the results are as tabulated in table 4.5.

**Table 4.5: Assessment of Multicollinearity Test**

Variables	Collinearity Tests	
	Tolerance	VIF
Mobile banking	0.745	4.401
Electronic funds transfer	0.764	3.164
Automated teller machine	0.779	5.119
Internet banking	0.791	2.645

**Source: Survey Data (2024)**

It is shown that the tolerance values for mobile banking, electronic funds transfer, automated teller machines (ATMs), and internet banking are recorded as 0.745, 0.764, 0.779, and 0.791, respectively. Multicollinearity degree amongst the independent variables in the study is reflected in these tolerance values. A greater tolerance value indicates a reduced level of multicollinearity, which is advantageous for guaranteeing the dependability of the regression analysis findings. Along with the tolerance values,

the Variance Inflation Factor (VIF) values for those same services are also significant. Variance Inflation Factor values are noted as 4.401 for mobile banking, 3.164 for electronic funds transfer, 5.119 for ATMs, and 2.645 for internet banking. Typically, VIF values over 10 are interpreted as presence of multicollinearity that is cause for concern; therefore, the VIF values found in this research indicate that although some multicollinearity exists, it is not significant enough to compromise the analysis.

#### 4.3.2 Normality Test

This assessment was undertaken to ascertain if the model's residuals conformed to a normal distribution. This was significant as breaches of normality can the impact the reliability of confidence intervals and hypothesis testing.

**Table 4.6: Normality Test**

Variable	Statistic	Shapiro	
			Sig.
Mobile banking	0.709		0.245
Electronic funds transfer	0.684		0.336
Automated teller machine	0.781		0.181
Internet banking	0.803		0.294
Profitability	0.811		0.308

**Source: Survey Data (2024)**

The results of the normality evaluations demonstrate that the statistical figures for mobile banking, electronic funds transfer, automated teller machines, internet banking, and profitability were determined to be 0.709, 0.684, 0.781, 0.803, and 0.811, respectively. These values reflect how closely the data for each service aligns with a normal distribution, a crucial assumption in numerous statistical analyses. Besides the statistical values, the related significance values for these services were evaluated, resulting in 0.245 for mobile banking, 0.336 for electronic funds transfer, 0.181 for automated teller machines, 0.294 for internet banking, and 0.308 for

profitability. These significance values indicate that the data for each financial service does not significantly differ from normality, since they all exceed the typical threshold of 0.05. This suggests that the distributions of these variables can be viewed as roughly normal, which is beneficial for subsequent statistical testing and analysis. The significance of these results is especially pertinent to the fiscal success of DT-SACCOs in Kenya. The normality of the data indicates that the financial behaviors linked to these services can be effectively analyzed and modeled, enabling SACCOs to make well-informed decisions grounded in statistical evidence.

### 4.3.3 Heteroscedasticity Test

This test was incorporated into the study to ascertain whether the residuals' variance stayed constant at every level of the independent variables. The study used Breusch-Pagan (1980) test to undertake the assessment and the outcome are as shown table 4.7.

**Table 4.7: Heteroscedasticity Test**

<b>Test name</b>	<b>Test Statistic</b>	<b>p-value</b>	<b>Decision (at <math>\alpha = 0.05</math>)</b>	<b>Conclusion</b>
Breusch-Pagan Test	4.38	0.0051	Reject Ho	Evidence of heteroscedasticity

**Source: Survey Data (2024)**

The Breusch-Pagan Test is a statistical method employed to identify heteroscedasticity in a regression model, which arises when the error variance is not uniform for every independent variable level. In this case, the test produced a test statistic of 4.38, suggesting the robustness of the evidence opposing the null hypothesis of homoscedasticity (steady variance of errors). The relevant significance value, or p-value, of 0.0051, is essential for understanding the results. If p value of below 0.05 is obtained then the null hypothesis is rejected. This implies that the

results show that the model exhibits heteroscedasticity, meaning that the error variance varies according to the level of the independent variables.

#### **4.4 Inferential Statistics**

In this study regression and correlation analyses were inferential statistics used. The results are presented in the following way:

##### **4.4.1 Correlation Analysis**

To assess the direction and degree of association between two or more variables, correlation analysis was used.

**Table 4.8: Correlation Analysis**

		Mobile banking	Electronic funds transfer	Automated teller machine	Internet banking	Profitability
Mobile banking	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	40				
Electronic funds transfer	Pearson Correlation	.308	1			
	Sig. (2-tailed)	.203				
	N	40	40			
Automated teller machine	Pearson Correlation	.106	.307	1		
	Sig. (2-tailed)	.228	.304			
	N	40	40	40		
Internet banking	Pearson Correlation	.118	.314	.367	1	
	Sig. (2-tailed)	.231	.113	.300	.40	
	N	40	40	40	40	
Profitability	Pearson Correlation	.791**	.802**	.779**	.783	1
	Sig. (2-tailed)	.002	.004	.003	.003	
	N	13	13	13	40	13

**Source: Survey Data (2024)**

The study found that, at a significance level of 0.002, the Pearson r correlation for mobile banking with respect to the profitability of DT-SACCOs in Kenya was 0.7911. This shows that the profitability of these financial institutions and the usage of mobile banking are significantly and positively correlated. The observation is similar to Mugane's (2020) who studied Kenyan commercial banks and how mobile banking affect their financial performance. According to the study's findings, there was a

favorable link between short messaging service and commercial banks' financial success.

The study identified a Pearson  $r$  value of 0.802 concerning electronic funds transfer and the profitability of DT-SACCOs in Kenya, with a significance value of 0.004. This shows a strong positive relationship, implying that a greater use of electronic funds transfers results in increased profitability. The small significance value indicates that this correlation is statistically meaningful. The discovery aligns with the research by Wanjiku and Mbugua (2018) which revealed that a proportionate rise in the EFT values is likely to enhance notably return on equity.

The study revealed a Pearson  $r$  value of 0.779 for the relationship ATMs and the profitability of DT-SACCOs in Kenya, accompanied by a significance value of 0.003. This shows a robust positive relationship, implying that a rise ATMs often leads to increase in SACCO profitability. The small  $p$ -value verifies that this relationship is statistically meaningful. The result agrees to what Mutiso and Senelwa (2017) observed which research revealed that ATMs had a notable statistical relationship with return on equity.

Finally, the study revealed a Pearson  $r$  coefficient of 0.783 regarding the association between the financial performance of SACCOs and internet banking in the country, with a significance level of 0.003. This suggests a robust positive relationship, indicating that greater utilization of internet banking correlates with enhanced profitability for SACCOs. The discovery aligns with Ndhine, Kibati, and Bowen (2022), that the results showed a relationship between internet banking and financial performance that is statistically significant.

#### 4.4.2 Multiple Regression Analysis

The model was used to determine each independent variable's significance, gauge the overall model fit and recognize any possible confounding factors that could affect the results. The findings are shown as follows;

**Table 4.9: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.867	0.752	0.721	0.2150

**Source: Survey Data (2024)**

The R value of 0.867 indicates a strong positive correlation between mobile banking, electronic funds transfers, ATMs, and internet banking with the profitability of SACCOs. This indicates that a greater utilization of these technologies is linked to increased profitability. According to the R square value of 0.752, roughly 75.2% in profitability is as a result of these independent variables, highlighting their importance in improving financial performance. The adjusted R square value of 0.721 (72.1%) indicates that the model stays robust even when considering the number of predictors. Thus, other unexamined variables contribute to the remaining 27.9% of profitability.

**Table 4.10: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regressions	121.645	4	30.411	54.367	0.003
	Residuals	19.578	35	0.559		
	Total	141.223	39			

**Source: Survey Data (2024)**

The values of Analysis of Variance (ANOVA) table show that the mean square value is 30.411, the F value is 54.367 and the level of significance value is 0.003. This suggested the model was significant.

**Table 4.11: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	0.587	0.312		1.881	0.002
Mobile banking	0.715	0.267	0.0613	2.678	0.003
Electronic funds transfer	0.789	0.229	0.0521	3.445	0.001
Automated teller machine	0.716	0.107	0.0418	6.692	0.004
Internet banking	0.754	0.305	0.0211	2.472	0.003

**Source: Survey Data (2024)**

The findings suggest that if mobile banking, electronic funds transfer, ATMs, and internet banking remain unchanged, the profitability of DT-SACCOs in Kenya would be 0.587. The derived regression coefficients suggest that enhancing mobile banking, electronic funds transfer, ATMs, and internet banking would boost the profitability of DT-SACCOs in Kenya by 0.715, 0.789, 0.716, and 0.754, respectively. Consequently, the resulting regression formula is stated as follows;

$$Y = 0.587 + 0.715X_1 + 0.789X_2 + 0.716X_3 + 0.754X_4 + \varepsilon$$

- Y - is profitability of DT-SACCOs
- X<sub>1</sub> - represents mobile banking at DT –SACCO.
- X<sub>2</sub> - represents electronic funds transfer at DT –SACCO
- X<sub>3</sub> - represents use of ATMs at DT –SACCO.
- X<sub>4</sub> - represents internet banking at DT –SACCO.

#### **4.5 Test of Hypotheses**

The research included examining the hypotheses to answer particular study questions.

The outcomes are as explained below:

##### **4.5.1 Mobile Banking and Profitability**

The goal of the study was to determine the hypothesis that mobile banking in Kenya has no discernible effect on the profitability of SACCOs that accept deposits. The mobile banking variable displayed a beta value of 0.0613 with a p-value of 0.003, according to the regression analysis results. These observations are consistent with other studies showing that mobile banking enhances the financial performance of cooperatives and microfinance institutions. The beta coefficient of 0.0613 signifies a positive correlation between mobile banking adoption and profitability, implying that each unit rise in mobile banking usage correlates with an increase in profitability of about 6.13%. This outcome is statistically meaningful, as demonstrated by the p-value of 0.003, which is significantly lower than the standard threshold of 0.05. This degree of significance indicates that the probability of witnessing such a correlation randomly is quite minimal, thus offering robust evidence opposing the null hypothesis. These findings are consistent with a 2019 study by Kathuo, Rotich, and Anyango that focused on how mobile banking improves client interaction, reduces transaction costs, and transforms financial inclusion.

##### **4.5.2 Electronic Funds Transfer and Profitability**

The research evaluated the hypothesis that electronic funds transfer is not significantly impacting the profitability of DT- SACCOs in Kenya. Regression analysis indicated that mobile banking possessed a beta value of 0.0521 and a p-value of 0.001, signifying a strong positive correlation between electronic fund transfer and profitability. This shows that incorporating electronic funds transfer systems boosts

SACCOs' profitability by enabling faster transactions, lowering expenses, and enhancing customer satisfaction. A significance level of 0.001 offers robust evidence opposing the null hypothesis, suggesting that the detected relationship is improbable to arise from random chance. These results are consistent with the research by Kenneth, Samson, Kibas, Chepkilot, and Koima (2021) on digital financial services, which indicates that mobile banking enhances transaction volumes and draws in more customers, thus increasing profitability.

#### **4.5.3 Automated Teller Machine and Profitability**

In this study the aim was to evaluate the hypothesis that automated teller machines do not significantly influence the profitability of DT-SACCOs in Kenya. The basis that the implementation and adoption of automated teller machines (ATMs) might have little impact on these businesses' financial performance. To evaluate this hypothesis, a thorough analysis was done, using regression analysis as the main statistical technique. The results obtained showed that the automated teller machine variable had a beta value of 0.0418, signifying a positive correlation between the existence of ATMs and the profitability of the SACCOs. The strength of this finding is highlighted by the significance level of 0.004, that signify ATMs effect on profitability is statistically significant by established thresholds (typically p- value less than 0.05). Hence, reject the null hypothesis, which held that ATMs do not significantly affect profitability. These results align with Wairimu (2019) study, which has frequently emphasized the importance of technological innovations in improving the operational effectiveness and service provision of financial organizations.

#### **4.5.4 Internet Banking and Profitability**

The aim of the study was to test the hypothesis that online banking has no discernible impact on the profitability of Kenyan SACCOs that accept deposits. The researcher

used regression analysis to test the hypothesis. With a significance level of 0.003, the research showed that internet banking use and SACCO profitability were positively correlated, with a beta value of 0.0211 for internet banking. The null hypothesis is strongly refuted by this significance level, which is far lower than the 0.05 cutoff. These observations are consistent with Yasin's (2018) findings, which showed how internet banking enhances financial institutions' performance and how implementing technology increases operational effectiveness.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

In this chapter an outline of the main results of the study are presented, emphasizing important outcomes and their relevance in the discipline. It provides suggestions for practitioners, policymakers, and stakeholders to tackle recognized issues and enhance practices. Moreover, it highlights the necessity for ongoing studies, urging researchers to investigate unresolved issues and expand upon these results.

#### 5.2 Summary

The objective of the study was to assess the effects of electronic banking on the profitability of DT-SACCOs in Kenya. Electronic banking was defined through various channels, including mobile banking, electronic funds transfer, automated teller machines, and internet banking. Secondary data was used in the study, they were obtained from the published financial statements of the SACCOs. Both descriptive and inferential statistical methods were employed for data analysis. As discussed below are the findings in brief.

The study sought to assess how mobile banking affected Kenyan SACCOs' profitability and discovered a notably favorable influence. The findings highlight how mobile banking significantly increases SACCO profitability in Kenya ( $\beta=0.0613$ ,  $p=0.003$ ), showing uniform patterns among various organizations. The impact of bill payments and loan repayments on profitability is fairly moderate. Although the majority of SACCOs are grouped near the mean, there are remarkable variations in their performance, as certain institutions excel or lag considerably compared to the average. SACCOs experience a moderate degree of costs associated with their upkeep and operational functions.

The second objective to assess how electronic money transfers affected Kenyan deposit-taking SACCOs' profitability, revealing a significant positive effect. The study found that electronic money transfers affected positively the Kenyan deposit-taking SACCOs' profitability ( $\beta=0.0521$ ,  $p=0.001$ ). The profitability associated with online transactions lies within a somewhat moderate spectrum. The findings indicate a favorable connection between online transactions and SACCOs' profitability, underscoring the notion that adopting technology is crucial for enduring growth in Kenya's financial cooperative industry. Loan disbursement amounts vary across different SACCOs, indicating that certain institutions are more skilled at utilizing electronic funds transfer to improve their lending abilities than others.

The third research objective was to assess how automated teller machines affected Kenyan deposit-taking SACCOs' profitability, finding that their use significantly boosts profitability ( $\beta=0.0418$ ,  $p=0.004$ ). Generally, the withdrawals appear quite modest when compared to the observed range, suggesting that although some members are using the ATMs frequently, a notable number may not be participating in these services to the same extent. There was a peak in ATM transactions, indicating a substantial difference in how various SACCOs utilize ATM services.

The fourth research objective assessed Internet banking's effect on DT-SACCOs profitability in Kenya, discovering a strong positive relationship between profitability and the use of online banking ( $\beta=0.0211$ ,  $p=0.003$ ). Although certain members engage in greater repayments and withdrawals, the majority tend to group towards the lower end. This could suggest insufficient use of internet banking services, which might affect SACCO profitability. These institutions face a variety of operational costs when launching and sustaining internet banking services. While numerous SACCOs might

achieve comparable profitability from these services, there are also notable exceptions that either surpass or drop below this mean.

### **5.3 Conclusions**

The research revealed that statistically mobile banking significantly had the highest effect on the profitability of DT-SACCOs in Kenya. Consequently, the research finds that SACCOs implementing mobile banking can access a wider clientele, enabling them to draw in additional deposits and enhance their lending ability. The ease of performing transactions through mobile phones motivates members to save additional funds and make use of credit services, which directly boosts the profitability of these organizations. SACCOs can channel the savings gained from lowered operational costs into improving their services, boosting member benefits, and ultimately enhancing profitability. Mobile banking enables a greater number of transactions because of its user-friendliness and availability. Members have the ability to deposit, withdraw, and transfer funds whenever they wish, resulting in higher transaction frequency.

The research indicated that electronic fund transfers significantly positively affected the profitability of DT-SACCOs in Kenya. Consequently, the findings indicate that EFT reduces the requirement for physical cash management, lowering expenses linked to cash transport, security, and storage. The decrease in operational expenses can result in increased profit margins for SACCOs. EFT allows SACCOs to connect with members in distant locations who might not have convenient access to physical branches. This inclusiveness may result in a rise in memberships and deposits, directly affecting profitability. By using EFT, members are able to perform transactions anytime, which boosts the chances of greater transaction volumes and, as a result, increased income from fees and interest.

The research revealed that automated teller machines had positive influence on the profitability of deposit-taking SACCOs in Kenya. Consequently, the research determines that ATMs offer members round-the-clock access to their accounts, enabling them to retrieve cash, verify balances, and conduct various transactions without needing to go to a physical branch. This ease can result in greater member satisfaction and loyalty, ultimately boosting profitability. The presence of ATMs can enhance the appeal of SACCOs to prospective members who value convenience and easy access. This may result in a rise in membership, which directly enhances deposits and loan portfolios, increasing profitability. ATMs assist SACCOs in managing their cash flow more efficiently by offering real-time information on deposits and withdrawals. This data can aid in improved liquidity management and financial strategy.

The study established that online banking had a favorable and significant effect on the profitability of Kenyan SACCOs that accepted deposits. As a result, the study concludes that online banking improves service delivery speed and efficiency, thereby enhancing customer satisfaction and promoting more frequent transactions, leading to higher revenue for SACCOs. By incorporating internet banking, SACCOs expand their range of financial products and services, drawing in new members and enhancing the institution's overall profitability. SACCOs can tailor their products and marketing strategies by analyzing the enormous amounts of data generated by online banking platforms to better understand consumer behavior and preferences, resulting in enhanced member involvement and greater profitability.

## **5.4 Recommendation**

### **5.4.1 Recommendations for Policy**

The DT-SACCOs in Country ought to establish comprehensive rules governing the usage of internet banking, ATMs, EFT, and mobile banking within SACCOs. This encompasses criteria for security, data privacy and consumer rights. Develop training initiatives for SACCO personnel regarding digital financial services, emphasizing technology integration, customer support, and risk mitigation. Urge SACCOs to prioritize investment in strong IT frameworks that facilitate mobile banking and online banking services, guaranteeing dependability and safety. Create and implement rules designed to deter fraud and safeguard consumers in online transactions, along with straightforward processes for reporting and settling disputes. Motivate SACCOs to create products and services targeting underserved groups, such as rural areas and low-income households, to improve financial inclusion.

### **5.4.2 Recommendations for Practice**

The research suggests that the SACCOs need to enhance their digital infrastructure to facilitate mobile banking, EFT, ATMs, and online banking, making sure they are safe and easy to use. Create initiatives to inform members about the advantages of digital banking, boosting usage and diminishing reluctance. Implement robust security protocols, such as two-factor authentication and periodic audits, to safeguard customer information and foster trust. Establish explicit guidelines for reporting and tackling fraud to guarantee member safety. Offer a range of financial products utilizing digital platforms, including microloans, savings accounts with attractive interest rates, and investment options designed to meet the requirements of members. Create a specialized customer service team that is accessible 24/7 to help members with any problems concerning digital banking services.

### **5.4.3 Recommendations for Theory**

The research suggests that SACCOs should implement appropriate theories like the technology acceptance model (TAM) that aid in understanding how people adopt and use new technologies. Diffusion of Innovations Theory can offer insights into the spread of new banking technologies among SACCOs and their effects on member involvement and profitability. Resource-Based View (RBV) is employed to investigate how technology resources (such ATMs and mobile banking) improve SACCOs' profitability and competitiveness. Furthermore, the research ought to include economic theories such as cost-benefit analysis to assess the financial effects of embracing new technologies compared to conventional banking practices, along with transaction cost economics to examine how electronic banking lowers transaction expenses for SACCOs and their members, which could enhance profitability.

### **5.5 Contribution to Knowledge**

This study will help users to better understand how electronic banking affects SACCO profitability in Kenya. The financial environment has changed considerably because of technological innovations and the emergence of digital financial services. Electronic banking, which encompasses mobile money transfers and online account management, is essential in this transition, offering both advantages and obstacles for SACCOs. Moreover, the study assessed how electronic banking affected Kenya's financial inclusion more broadly, emphasizing its capability to empower marginalized groups and foster economic development. In the end, the research sought to deliver a thorough examination of the connection between electronic banking and the profitability of SACCOs. Consequently, by illuminating this important area, the research would provide significant insights for SACCO management, policymakers,

and stakeholders in the finance sector, ultimately aiding in the sustainable growth and advancement of these essential financial institutions.

### **5.6 Suggestions for Further Study**

The outcomes from the regression model show that 27.9% is still accounted for by factors that were not examined. Consequently, the research indicates that additional facets of electronic banking not included in the analysis may be explored to fill the conceptual gap. The research focus was on the profitability of DT-SACCOs. Hence, a comparable study may be conducted that centers on different financial institutions like commercial banks.

## REFERENCES

- Abdullai, H. M., & Nyaoga, R. B. (2017). Effect of automated teller machines usage on operational performance of Commercial Banks in Nakuru County, Kenya. *International Journal of Economics, Finance and Management Sciences*, 5(3), 162-167.
- Aboelmaged, M., & Gebba, T. R. (2013). Mobile banking adoption: an examination of technology acceptance model and theory of planned behavior. *International journal of business research and development*, 2(1), 5 – 11
- Adewoye, J. O. & Omoregi, N. V. (2013). The impact of automatic teller machines on the cost efficiency of Nigeria. *Journal of Internet Banking and Commerce*, 18(3), 1-21
- Akani, H. W., & Tony-Obiosa, R. L. (2020). Effects of financial innovations on the profitability of deposit money banks in Nigeria. *European Journal of Accounting, Auditing and Finance Research*, 8(1), 52-73.
- Akerlof, B. C., & Girardone, D. E. (2011). The Impact of Electronic Banking on the Performance of Banks. *Journal of internet banking and commerce* 16(2): 101-120
- Ali, A. G., Muema, W., & Muriuki, M. (2021). Influence of profitability on dividend payout in deposit-taking savings and credit co-operatives (SACCOs) in Kenya. *International Academic Journal of Economics and Finance*, 3 (7), 147, 158(2).
- Atsiaya, G. O., Ayuya, O. I., Nakhone, L. W., & Lagat, J. K. (2019). Drivers and responses to climate variability by agro-pastoralists in Kenya: the case of Laikipia County. *SN Applied Sciences*, 1, 1-12.
- Ayugu, J. A., & Mutswenje, V. S. (2023). Mobile banking services and profitability of Deposit Taking SACCOs in Vihiga County, Kenya. *International Academic Journal of Economics and Finance*, 4(1), 324-339.
- Barasa, C. (2023). *Effect of Electronic Banking on the Financial Performance of Commercial Banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Barasa, C., Obura, W., & Anyira, F. A. (2017). Effect of Internet Banking On Financial Performance of Commercial Banks in Kisumu City-Kenya. *Saudi Journal of Business and Management Studies*, 2(10), 904-912
- Brean, D. J., Kryzanowski, L., & Roberts, G. S. (2023). Canada and the United States: Different roots, different routes to financial sector regulation. In *History and Financial Crisis* (pp. 75-95). Routledge.
- CBK (2012), Monetary Policy Statement, Central Bank of Kenya, December 2010, Nairobi
- Chamakany, L. B., & Mbuva, G. (2023). Payment automation and profitability of Mwalimu National Deposit Taking Sacco, Kenya. *International Academic Journal of Economics and Finance*, 4(3), 263-276

- Cho, S., Lee, Z., Hwang, S., & Kim, J. (2023). Determinants of bank closures: what ensures sustainable profitability in mobile banking? *Electronics*, 12(5), 1196.
- Christensen, C. M. (2006). The ongoing process of building a theory of disruption. *Journal of Product innovation management*, 23(1), 39-55.
- Cooper, D. R., Schindler, P. S., Cooper, D. R., & Schindler, P. S. (2006). *Marketing research*. New York: McGraw-Hill/Irwin.
- Corbetta, G., & Salvato, C. A. (2004). The board of directors in family firms: one size fits all. *Family business review*, 17(2), 119-134.
- Das, K. R., & Imon, A. H. M. R. (2022). A brief review of tests for normality. *American Journal of Theoretical and Applied Statistics*, 5(1), 5-12.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 35(8), 982 - 1003
- Farah, A. A. (2020). *Effect of intellectual capital on financial sustainability of savings and credit cooperative societies in Kenya* (Doctoral dissertation, KeMU)
- George, K. S., Gudda, P., & Gathuru, E. K. (2022). *Effect of Internet Banking on Profitability of Commercial Banks in Kenya: A Case of Kenya Commercial Bank* (Doctoral dissertation).
- George, K. S., Gudda, P., & Gathuru, E. K. (2022). *Effect of Internet Banking on Profitability of Commercial Banks in Kenya: A Case of Kenya Commercial Bank* (Doctoral dissertation).
- Geyskens, I., Steenkamp, J. B. E., & Kumar, N. (2006). Make, buy, or ally: A transaction cost theory meta-analysis. *Academy of management journal*, 49(3), 519-543.
- Ghose, B., & Maji, S. G. (2022). Internet banking intensity and bank profitability: evidence from emerging Indian economy. *Managerial Finance*, 48(11), 1607-1626.
- Gitau, M. W. (2020). *Effects of Internet Banking on Financial Performance of Commercial Banks: Case Study of Equity Bank* (Doctoral dissertation, United States International University-Africa).
- Goyal, V., Pandey, U. S., & Batra, S. (2012). Mobile banking in India: Practices, challenges and security issues. *International Journal of Advanced Trends in Computer Science and Engineering*, 1(2).
- Green, L., Daniel, M., & Novick, L. (2016). Partnerships and coalitions for community-based research. *Strategic Management Journals*, 1(2), 9 - 15
- Gregory, T. R. (2008). Evolution as fact, theory, and path. *Evolution: Education and Outreach*, 1(1), 46-52.

- Hajir, H. M. (2021). *Impact of e-procurement practices on operational performance of retail supermarkets in Nairobi City County, Kenya* (Doctoral dissertation, Strathmore University).
- Halunga, A. G., Orme, C. D., & Yamagata, T. (2017). A heteroskedasticity robust Breusch–Pagan test for Contemporaneous correlation in dynamic panel data models. *Journal of econometrics*, 198(2), 209-230.
- Iravonga, J. J., & Miroga, J. (2018). Effect of mobile banking on financial performance of small scale and medium enterprises in Kakamega County, Kenya. *International Journal of Social Sciences*, 5(4), 923-941.
- Jegede, C. A. (2019). Effects of automated teller machine on the performance of Nigerian banks. *American Journal of applied mathematics and statistics*, 2(1), 40-46.
- Jegede, C.A. (2014). Effects of Automated Teller Machine on the Performance of Nigerian Banks. *American Journal of Applied Mathematics and Statistics*, 2(1), 40-46.
- Kaminski, J. (2011). Diffusion of innovation theory. *Canadian Journal of Nursing Informatics*, 6(2), 1-6.
- Kamochu, J. M. (2015). *The effect of electronic banking on the financial performance of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Kathuo, S., Rotich, G., & Anyango, W. (2019). Effect of mobile banking on the financial performance of banking institutions in Kenya. *The strategic journal of business and change management*, 2(98), 1440-1457
- Kenneth, T., Samson, M. N. G., Kibas, P., Chepkilot, R., & Koima, J. (2019). Influences of Fund Transfer on Financial Performance and Market Share of Commercial Banks Listed at the Nairobi Securities Exchange, Kenya. *International Journal of Managerial Studies and Research*, 4(11), 84-92.
- Kenneth, T., Samson, M. N. G., Kibas, P., Chepkilot, R., & Koima, J. (2021). Influences of Fund Transfer on Financial Performance and Market Share of Commercial Banks Listed at the Nairobi Securities Exchange, Kenya. *International Journal of Managerial Studies and Research*, 4(11), 84-92.
- Kiaritha, H. N. (2015). *Determinants of the financial performance of Savings and Credit Cooperatives in the banking sector in Kenya* (Jomo Kenyatta University of Agriculture and Technology)
- Kiaritha, H., Gekara, M., & Mung'atu, J. (2014). Effect of operating costs on the financial performance of SACCOs in the banking sector in Kenya. *Prime Journal of Business administration and management*, 4(2), 1359-1363.

- King, A. A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MIT Sloan management review*, 57(1), 77.
- Kinyua, J. W. (2023). *Relationship between financial performance and size of deposit taking Savings and Credit Cooperative Societies in Kenya* (Doctoral dissertation, University of Nairobi).
- Kiragu, M. (2017). Effects of E-banking on the Financial Performance of Kenyan Banks.
- Klein, A. G., Gerhard, C., & Schermelleh-Engel, K. (2021). The detection of heteroscedasticity in regression models for psychological data. *Psychological Test and Assessment Modeling*, 58(4), 567.
- Madinah, N. (2023). Performance of SACCOs in Uganda: An analysis of the dataset from Uganda. *Islamic University Journal of Social Sciences*, 2(2), 8 – 13
- Maiyo, J. (2013). *The impact Of Electronic Banking on Financial Performance of Commercial Banks in Kenya* (Master Project, University of Nairobi)
- Malik, H. (2011). Determinants of insurance companies' profitability: an analysis of insurance sector of Pakistan. *Academic research international*, 1(3), 315 - 324
- Mateka, M., Gogo, J., & Omagwa, J. (2016). Effects of internet banking on financial performance of listed commercial banks in Kenya. *American Journal of Finance*, 1(2), 53-71.
- Mburu, T. G. (2015). *Adoption of mobile banking services by Nairobi County Saccos* (Doctoral dissertation, University of Nairobi).
- Mosongo, E., Gichana, I., Ithai, J. & Nguta M. (2013). Financial innovation and financial performance: A case of SACCOs in Nairobi County. *International Journal of Research in Management*, 3(5), 93-100.
- Muchiri, T., & Muthimi, J. (2024). The Role of Competitive Strategies in Enhancing Performance of Selected DT-Saccos in Nairobi City County, Kenya. *Journal of Strategic Management*, 5(1), 23-42.
- Mugane, M. (2020). *Mobile Banking Services Effect on Financial Performance on Commercial Banks in Kenya* (Unpublished Masters Thesis, Kenyatta University)
- Mugane, M. (2020). *Mobile Banking Services Effect on Financial Performance on Commercial Banks in Kenya* (Masters Thesis, Kenyatta University).
- Mulwa, M. M., Ndati, N., & Muthini, F. M. (2014). The Role of Context of Use in the Stabilization of Mobile Banking Products: A Case of Selected Mobile Banking Products in Kenya. *The International Journal of Science and Technoledge*, 2(6), 284 - 297
- Muriuki, K. M., & Ragui, M. (2013). Impact of the SACCO Societies Regulatory Authority (SASRA) legislation on corporate governance in Co-operatives in Kenya. *Public Policy and Administration Research*, 3(6), 65-70.

- Mutiso, C., & Senelwa, A. W. (2017). Effect of automated teller machines on the return on assets of the listed commercial banks in Kenya. *IOSR Journal of Business and Management*, 19(10), 86-91.
- Mutiso, C., & Senelwa, A. W. (2017). Effect of automated teller machines on the return on assets of the listed commercial banks in Kenya. *IOSR Journal of Business and Management*, 19(10), 86-91.
- Mutua, R. (2011). *The effects of mobile banking on the financial performance of commercial banks in Kenya* (MBA Thesis, University of Nairobi)
- Mwakera, J. M., Riwo-Abudho, M., & Abudho, S. O. (2023). The Influence of E-banking on the Financial Performance of Kenyan Commercial Banks. *Asian Journal of Economics, Business and Accounting*, 24(4), 332-342.
- Ndhine, T. O., & Kibati, P. B. D. (2022). Effect of Automated Teller Machines on Financial Performance of Commercial Banks Listed on the Nairobi Securities Exchange, Kenya. *IOSR Journal of Business and Management*, 4(2), 32 – 43
- Ndhine, T. O., Kibati, P., & Bowen, D. (2022). Effect of Internet Banking on Financial Performance of Commercial Banks Listed on the Nairobi Securities Exchange. *Journal of Economics and Finance*, 13(4), 47 – 56
- Ngangi, M. K. (2022). *Effect of Integrated Mobile Banking Services on Efficiency Among Deposit-taking Savings and Credit Cooperative Societies in Kenya* (Doctoral dissertation, University of Nairobi)
- Ngango, A., Mbabazize, M. & Shukla, J. (2015). E-banking and performance of commercial banks in Rwanda: a case of Bank of Kigali. *European Journal of Accounting Auditing and Finance Research*, 3(4), 25-57
- Ngumi, P. M. (2013). *Effect of Bank Innovations on Financial performance of Commercial Banks in Kenya* (Doctoral Dissertation, Jomo Kenyatta University of Agriculture and Technology)
- Ngwa, N. (2020). Electronic banking transactions and their effects on the performance of selected commercial banks in Cameroon. *Research Journal of Finance and Accounting*, 7(1), 6 – 13
- Noor, M. M. (2011). Determining critical success factors of mobile banking adoption in Malaysia. *Australian Journal of Basic and Applied Sciences*, 5(9), 252-265.
- Nwakoby, N. P., Okoye, J. N., Ezejiofor, R. A., Anukwu, C. C., & Ihediwa, A. (2020). Electronic banking and profitability: Empirical evidence from selected banks in Nigeria. *Journal of Economics and Business*, 3(2).
- Nyangarika, A., & Bundala, F. S. (2024). Socio-economic factors affecting deposits growth in sacco's development case of geita tanzania. *International Journal of Advance Research and Innovative Ideas in Education*, 6(2), 1273-1288.

- Nyangosi, R., & Arora, J. S. (2011). Antecedents and obstacles to e-banking adoption: a comparative study of India and Kenya. *International Journal of Indian Culture and Business Management*, 4(2), 123-137.
- Nyumoo, A. K. (2020). *Effects of Internal Control on the Financial Performance of Saccos in Meru County* (Doctoral dissertation, KeMU)
- Obite, C. P., Olewuezi, N. P., Ugwuanyim, G. U., & Bartholomew, D. C. (2020). Multicollinearity effect in regression analysis: A feed forward artificial neural network approach. *Asian J. Probab. Stat*, 6(1), 22-33.
- Ogum, E., & Jagongo, A. (2022). Investment Decisions and Financial Performance of Deposit Taking Savings and Credit Co-Operative Societies in Nairobi City County, Kenya. *International Journal of Current Aspects in Finance, Banking and Accounting*, 4(1), 72-90.
- Okiro, K. & Ndung'u, J. (2013). The Impact of Mobile and Internet Banking on Performance of Financial Institutions in Kenya. *European Scientific Journal* 9(13): 1857-7431.
- Olungas, P. N. (2016). *Electronic banking and financial performance of deposit taking savings and credit co-operative societies in Western Kenya* (Doctoral dissertation, University of Nairobi).
- Ombati, D. (2021). *Effect of Financial Innovations on Financial Performance of Commercial Banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Ombati, T.O., Magutu, P.O., Nyamwange, S.O. & Nyaoga, R.B. (2010). Technology and service quality in the Banking Industry: Importance and performance of various factors considered in Electronic Banking services. *African Journal of Business & Management*. 1(5) – 164
- Ondigo, M. A. (2018). *Effects of Product Innovations on the Financial Performance of Savings and Credit Societies Licensed by Sacco's Societies Regulatory Authority in Kenya* (Doctoral dissertation, university of Nairobi)
- Orina, C. O. (2020). *The Effect of Mobile Banking on Operational Efficiency of Commercial Banks In Kenya* (Doctoral dissertation, Kca University).
- Owade, C. A. (2018). *The Effect of Electronic Banking on the Financial Performance of Deposit Taking Microfinance Institutions in Kenya* (Doctoral dissertation, University of Nairobi).
- Oyugi, I. G. (2014). *The effect of automated service on financial performance of savings and credit cooperative societies licenced by SACCO society regulatory authority in Kenya* (Doctoral dissertation, University of Nairobi).
- Raj, B., Kirkham, P. G., & Clarke, E. W. (2020). Dynamics of Canadian deposit-taking institutions: a Markovian approach. *The Journal of Industrial Economics*, 28(2), 177-188.
- Ramos, F. L., Ferreira, J. B., Freitas, A. S. D., & Rodrigues, J. W. (2018). The effect of trust in the intention to use m-banking. *BBR. Brazilian Business Review*, 15, 175-191.

- Rauf, S., Qiang, F., & Sajid, K. U. (2023). Electronic Debit Card Usage and their Impact on Profitability of Pakistan Banking Sector: ROA, Model. *European Journal of Business and Management*, 6(4), 1-7.
- Rexha, N., Kingshott, R. P. J., & Shang, A. A. (2022). The impact of the relational plan on adoption of electronic banking. *Journal of services marketing*, 17(1), 53-67
- Rogers, E. M. (2010). *Diffusion of innovations*. Simon and Schuster.
- Salyzyn, V. (2021). The Competition for Personal Savings Deposits in Canada. *Canadian Journal of Economics and Political Science/Revue canadienne de economiques et science politique*, 32(3), 327-337.
- Schmidt, A. F., & Finan, C. (2018). Linear regression and the normality assumption. *Journal of clinical epidemiology*, 98, 146-151
- Shaai, B. L. (2022). *Financial Structure and Financial Intermediation Efficiency Of Deposit Taking, Saving And Credit Cooperative Societies In Kenya* (Doctoral dissertation, KCA University).
- Shabiha, E. A., & Otinga, H. (2020). Influence of electronic banking service management on financial performance of deposit taking SACCOS in Nairobi County. *The Strategic Journal of Business & Change Management*, 7(3), 703 – 720.
- Siam, A. Z. (2006). Role of the electronic banking services on the profits of Jordanian banks. *American Journal of Applied Sciences*, 3(9), 1999-2004.
- Sullivan, R. J. (2020). How has the adoption of Internet banking affected performance and risk in banks? *Financial Industry Perspectives*, 12(1), 16 – 23
- Sumra, S. H., Manzoor, M. K., Sumra, H. H., & Abbas, M. (2011). The impact of e-banking on the profitability of banks: A study of Pakistani banks. *Journal of Public Administration and Governance*, 1(1), 31-38.
- Tambasi, J. R. (2022). *Influence Of Electronic Delivery Services on Customer Satisfaction in Savings and Credit Cooperatives, A Case Of Mwalimu National Sacco, Kenya* (Doctoral dissertation, University of Nairobi).
- Tiwari, R., Arya, R. K., & Bansal, M. (2017). Motivating students for project-based learning for application of research methodology skills. *International journal of applied and basic medical research*, 7(Suppl 1), S4.
- Tiwari, R., Buse, S., & Herstatt, C. (2006, July). *Mobile banking as business strategy: Impact of mobile technologies on customer behaviour and its implications for banks*. In 2006 Technology Management for the Global Future-PICMET 2006
- Too, V. K., Ayuma, C., & Ambrose, K. (2016). Effects of mobile banking on the financial performance of commercial banks in Kapsabet (Kenya): A case of selected banks in Kapsabet town. *IOSR Journal of Business and Management*, 18(10), 37-48.

- Tumwesige, G. (2022). *The impact of the automated teller machine on customer satisfaction in the banking sector* (Doctoral dissertation, Kampala International University, College of Economics and Management).
- Vatcheva, K. P., Lee, M., & Rahbar, M. H. (2021). Multicollinearity in regression analyses conducted in epidemiologic studies. *Epidemiology (Sunnyvale, Calif.)*, 6(2), 227 – 236
- Waiganjo, C. W. (2022). *Effect of mobile banking investment on financial profitability-A Case of Tier one banks in Kenya* (Doctoral dissertation, Strathmore University).
- Wairimu, R. W. (2019). *Effect of Financial Innovation on Firm Performance of Microfinance Banks in Kenya* (Doctoral dissertation, University of Nairobi)
- Wangui, M., & Nzuki, D. (2021). The Effect of Electronic Money Transfer Systems on the Financial Performance of Financial Institutions in Kenya (Case Study of Sumac Deposit Taking Microfinance Ltd). *International Research Journal of Business and Strategic Management*, 2(1), 8 - 15
- Wanjiku, K., & Mbugua, D. (2018). Effect of electronic banking on performance of Commercial Banks in Kenya. *International Journal of Social Sciences and Information Technology*, IV (5), 393-407.
- Williamson, O. E. (1993). Transaction cost economics and organization theory. *Industrial and corporate change*, 2(2), 107-156.
- Xue, M., Hitt, L. M., & Chen, P. Y. (2023). Determinants and outcomes of internet banking adoption. *Management science*, 57(2), 291-307
- Yasin, M. A. (2018). Impact of internet banking on financial performance: Empirical evidence from commercial banks of Ethiopia. *Journal of Information Engineering and Applications*, 8(6), 1-8.
- Yasin, M. A. (2018). Impact of internet banking on financial performance: Empirical evidence from commercial banks of Ethiopia. *Journal of Information Engineering and Applications*, 8(6), 1-8.
- Yousafzai, S. Y., Pallister, J. G., & Foxall, G. R. (2023). A proposed model of e-trust for electronic banking. *Technovation*, 23(11), 847-860.


## APPENDICES

### Appendix I: Data Collection Sheet

NAME OF SACCOs: .....

YEAR DATA	2018	2019	2020	2021	2022
Revenue from Check account balance through mobile					
Bill payment via mobile banking					
No. of internet transactions					
Amount of loans/ cash withdrawal through internet banking					
Value of transactions through ATM					
Loan repayment through mobile banking					
Loan disbursed through EFT					
Cost of internet transactions					
ROA					

## Appendix II: Research Approval

  
KENYATTA UNIVERSITY  
GRADUATE SCHOOL

E-mail: [dean-graduate@ku.ac.ke](mailto:dean-graduate@ku.ac.ke) F.O. Box 43844, 00100  
NAIROBI, KENYA  
Website: [www.ku.ac.ke](http://www.ku.ac.ke) Tel. 810901 Ext. 4150

Internal Memo

---

FROM: Executive Dean, Graduate School DATE: 23<sup>rd</sup> May, 2024  
TO: Otieno Lilian Atieno REF: D53/OL/KSU/20965/2021  
C/o Accounting and Finance Dept.

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL


This is to inform you that Graduate School Board at its meeting of 15<sup>th</sup> May, 2024 approved your Research Project Proposal for the M.B.A Degree Entitled, **"Electronic Banking and Profitability of deposit Taking Savings and Credit Co-operative Societies in Kenya."**

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and progress report Forms per semester. The Forms are available at the University's Website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your project before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.

Thank you.

  
ANNBELL MWANIKI  
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL

c.c. Chairman, Accounting and Finance. \*

Supervisors:

1. Dr. Job Omagwa  
C/o Department of Accounting and Finance  
Kenyatta University

AM/ms

