

**INFLUENCE OF ADOPTION OF FINANCIAL INNOVATIONS ON
PERFORMANCE OF SAVINGS AND CREDIT COOPERATIVES, IN KIAMBU
COUNTY, KENYA**

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**A research project submitted to the department of Co- operatives and
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Development in partial fulfillment of the requirements for the award of Master
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DECLARATION

This research project is my original work and has not been presented to any other institution for award of a diploma or degree. No part of this work may be reproduced without permission of the author or the Co-operative University of Kenya.

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DEDICATION

I dedicate this research project to the Almighty God, my mother Alice Wangui Chege who single handedly raised me and supported me. To my supervisors and colleagues may God bless you and always protect you.

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ABBREVIATIONS AND ACRONYMS

ATM	Automated Teller Machine.
BOSA	Back Office Services Activities
CBK:	Central Bank of Kenya
CDOs	Collateralized Debt Obligations.
DT:	Deposit Taking
EFT	Electronic Fund Transfer.
FOSA:	Front Office Service Activity
GDP:	Gross Domestic Product
IT	Information Technology.
KUSCCO:	Kenya Union of Savings and Credit Cooperative
MFI:	Microfinance Institutions
NoN WDT	None Withdrawable Deposit Taking.
ROA	Return on Assets.
RTGS	Real Time Gross Settlement.
SACCOs	Savings and Credit Cooperative Society.
SASRA	SACCO Societies Regulatory Authority.
SBCS	Small Business Credit Scoring.
SMEs:	Small and Medium Enterprises
SPSS:	Statistical Package for Social Sciences
USA	United States of America.

OPERATIONAL DEFINITION OF TERMS

Automated Teller Machine: Innovative technology that allows customer to access SACCO product and services through dispensing of cashover a machine hence no physical presence (Tewodros & Debela, 2019).

Financial Innovation: It is the development of new financial products, service development, and process improvement in the financial and investment industry (Khraisha & Arthur, 2018).

Financial Performance: Business activities in which the company makes the best use of the resources it manages.

Internet Banking: This is the innovation that allows the customers to access their account information through the internet withoutvisiting SACCO offices (Murt & Opusunju, 2019).

Mobile Banking: A financial innovation that gives convenient access to the members to access SACCO solutions through digitaldevices anytime and anywhere (Mugo et al., 2019)

Real Time Gross Settlement: SACCO innovation that uses technology to disburse huge transactions in real-time with enhanced security.

SACCO Size: This is the total size of the organization that includes allassets and sales. SACCOs are categorized in terms of their sizes; small-tier, large and medium.

Savings and Credit Cooperatives: Voluntary member owned organizations where Members buy shares, pool their resources together and borrow loans for purposes of financial empowerment.

ABSTRACT

Performance of Deposit Taking Saccos in Kiambu County is deteriorating with reports that 44% of the Saccos are not meeting the regulator's requirements. The Saccos recorded reduced return on assets of 8% against expectation of 10%, there was low deposit of 5.4% against the recommended 8% (2014). Performance further dropped in 2015 where deposit was 5% while return on assets was 7.5%. Additionally, Kiambu County Saccos such as Ekeza, UNES, Orient and Jitegemee were placed under SASRA management as a result of lack of payment of dividend and loans to their members due to poor performance. Financial innovation has revolutionized how financial institutions conduct business so as to make a niche in a highly competitive environment. Savings and Credit Cooperative Societies (SACCOs) have been considered slow in embracing innovation due to their model. The aim of the research was to investigate the influence of financial innovation adoption on financial performance of SACCOs in Kiambu County. The study specific objectives were: to find out the effect of automated teller machine adoption on financial performance, to establish the effect of Real Time Gross Settlement, to determine the effect of internet banking, to examine the effect of mobile banking and to examine the moderating effect of SACCO size on the relationship between financial innovation adoption and financial performance of SACCOs in Kiambu County, Kenya. The theory of transaction cost, diffusion of innovation and agency theories were employed in this research. The study utilized descriptive research design that targeted all 14 Deposit Taking Cooperatives in Kiambu County. Purposive sampling technique enabled the identification of three management employees and three members from all the 14 SACCOs in Kiambu County. Semi structured questionnaire was applied in data collection. Six SACCOs in Nyeri County were selected randomly for pre-testing to assess the instrument's validity and reliability. Descriptive and multiple regression assisted in analysis. The findings showed that ATM had a positive and significant effect on financial performance. On the second objective, Real time gross settlement was found to be positive and insignificant to financial performance. The third objective results demonstrated that internet banking had positive and significant effect to financial performance. The study revealed that mobile banking had positive and significant effect on financial performance of Deposit Taking Saccos in Kiambu County. SACCO size was found to have a significant moderating effect when combined with ATM and RTGS. However, there was no significant moderating effect in the interaction of SACCO size with internet banking and mobile banking. The study concluded that automated teller machine, internet and mobile banking have positive and significant effect while real time gross settlement did not demonstrate any significant effect on financial performance of Kiambu County Saccos. It was concluded that SACCO size significantly moderates the relationship between financial innovation and financial performance when RTGS and ATM are included in the model. A recommendation was made that Kiambu County Saccos should embrace partnership with Cooperative Bank to expand the reach of ATM to the members. It is recommended that security of internet banking be reinforced to deter any cybercrime and enhance member education. The study recommends enhancement of mobile banking services, regular updates and introduction of new innovative transaction services to meet the growing and emerging member needs thus enhance financial performance. Future research may target non-withdrawable deposit taking Saccos in Kiambu County and exclusive involvement of the members or employees for in-depth analysis.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study.

Financial performance is the general well-being of a Deposit Taking Credit and Cooperative Society through the utilization of critical resources to achieve objectives in a given time frame (Thuita, 2021). Financial innovation is the profitability of the organization in relation to its total assets which is measured in terms of; return on assets and investments determined through quality of service delivery, personnel and recruitment of competent professionals (Wanyonyi et al., 2019). Financial innovation has been considered a significant solution to an organization's financial performance as it reduces high costs of operations and risks, and enabling environment for long-term performance hence its adoption within the Deposit Taking Saccos in mobile banking, internet and agency banking. Additionally, financial innovation plays a crucial role in the improvement of service delivery and access to financial services (Maina et al., 2020), enhancing liquidity, operations and asset quality thus supporting financial performance (Moki et al., 2019).

Globally, Saccos are making significant contribution as they fill the gap left by banks in the provision of financial services to the unbanked of the society through affordable credit facility. With almost 760 million members of the sector, the USA is one of the largest with \$93 billion gross business from 4 million members. In France and the Netherlands' Robobank, the sector has continued to register impressive performance while in South America, Saccos are highly developed in countries such as Brazil, Argentina, Chile and Uruguay (Mmari & Thinyane, 2019). The contribution of the cooperative sector in Greece is evidenced in economic growth and financial empowerment of its membership. However, the sector is presented with dynamic challenges and hostile environment; growing population, emerging technology and societal expectations. Even though the sector has recorded significant achievement, the harsh economic conditions and volatile environment

has had significant effect on internal structure leading to performance failures (Kaloglannides, 2020).

In most developed and developing countries, the sector is proving essential in the socio-economic development where in Japan, it is considered the backbone of the small enterprises and dominates the agricultural sector while in Malaysia, the cooperative sector commands strong membership serving the majority population that are highly exposed to poverty. However, the performance of Malaysian Saccos is hampered by fierce competition which has reduced income stream, there is low management commitment, integrity issues, inadequate member support and expertise within the Sacco board of directors (Omar et al., 2022).

Within the African continent, Performance of Malawian Saccos is hampered due to inability to meet member needs leading to massive withdrawal of deposits. The sector is also experiencing poor asset quality, governance and reduced profitability (Mmari & Thinyane, 2019). Even though there is increasing number of Saccos in Eastern Ethiopia reaching 395, only 46 of them are subjected to auditing as majority of the Saccos are dormant while some are managed informally without proper accounting system thereby giving room for mismanagement (Henock, 2019). The same experience is witnessed in Tanzania where the cooperative movement has recorded poor financial performance attributed to inadequate training with majority of the Saccos in Ukerewe being managed by people with informal education with very few attending primary education. Additionally, the emerging technology adopted by the cooperative sector in Tanzania is proving challenging for the uneducated personnel to adopt ICT in the modern business environment hence unstable performance. This has lead to dormancy evidenced in 13 registered Saccos in Ukerewe District where only 3 are still in operation. In Sengerema, only 13 Saccos are still in operations from 19 registered hence impacting on the cooperative prosperity (Lawrence,

2023).

In Kenya, Saccos are considered as vehicles of investment and savings in comparison to the banks where performance is due to their attractiveness to customer through service provision, reduced collateral requirement, accessibility and their extent in meeting the needs of the informal sector. However, the sector is experiencing challenges that hinder its performance where 64% of Saccos lack product strategy for competitiveness with low quality products that reduces turnover (Gitau, 2020). The author adds that with 7000 Saccos registered, only 32.5% are operating effectively while 21.4% have collapsed as a result of inadequate technology adoption and inability to meet customer needs. In Narok County, the sector recorded poor performance with 20 Saccos registered but only 17 are active due to lack of capital hence lagging behind. Saccos such as Jua Kali have since collapsed due to loss of membership (Salaton et al., 2020). Financial performance of the Western Kenya Saccos has also been hampered by non-performing loans which has risen from 5.12% (2015), 5.23% (2016) and 6.14% (2017). Saccos are also facing liquidity issues, credit risk and operational inefficiencies that has negatively impacted performance. In 2016, two Saccos from the region were put under restricted license due to liquidity and high non-performing loans (Kemunto et al., 2020).

Performance of Kiambu County Saccos has been low evidenced in year 2014 when return on assets was 8% which did not reach the 10% target. The minimum statutory return on deposit was 7% against 5.4% reached by the Saccos. It is also reported that 44% of the Saccos in the region did not meet the regulatory minimum requirement. In the following year 2015, return on deposits reduced further to 5% while return on assets was 7.5%. There were also Saccos that were placed under SASRA management; UNES, Ekeza, Orient and Jitegemee as they were not giving members dividend (Matu & Muturi, 2019).

Other observations have also been made on the significant number of agricultural cooperatives that are increasingly becoming dormant as a result of mismanagement, competitive pressure, indebtedness and reduced sales from 732,761,561 (2016) to Kshs 667,889,159 (2017) hence affecting their financial performance (Omondi, 2020). The sector is not fully able to meet member needs evidenced in non-paid dividends and loans, low multiplying factor and lack of appropriate technology to enhance their operations for improved efficiency (Miano & Gitonga, 2020).

1.1.1. Financial Innovation

Financial innovation is the formation and use of new financial products, services, processes and products, institutions and markets (Khraisha & Arthur, 2018). Financial innovation in the present day is considered essential element that brings about competition among businesses and good service delivery to members of savings and Credit Cooperative Societies (SACCOs). From a wider angle, it is seen as an essential component of the competition (Mention, 2019).

Financial innovations allude to the creation of unused ways of conducting business by coming up with new financial services, the establishment of modern institutions, receiving the most current innovations and other aspects that portray creativity within the monetary markets (Sampasis & Mention, 2018). Financial innovations moreover allude to the creation of modern financial instruments and items, for example, phone managing an account via various platforms with access to the internet foundation of unused administrations, web managing an account, new-fangled generation handle Electronic Fund Transfers (EFT) or modern corporations' frameworks (Frame & White, 2014). As a financial institution, SACCOs use member deposits to issue loans which are priced at affordable interest rates that are considered cheaper than the average market rates used by banks,

micro finance and other financial institutions. As major players in the money-related division, SACCOs oversee the mobilization of Kshs.200 billion, roughly 31% of the entire reserve funds within the Kenya Central Bank (CBK, 2015).

Over 81% of the locals in Kenya depend on SACCOs to access loans and a platform where they can manage their money through savings. This makes SACCOs a primary player in Kenya's money division. Compared to other cooperatives such as housing and marketing cooperatives, SACCOs have developed at a rapid rate (Kamau, 2018).

The expansion and development of the financial sector has resulted in the demand for sophisticated, real-time financial products and services in both developed and developing nations. Financial innovation is putting ideas into practice that offer different approaches to particular issues, adding value for members and institutions which affects how people save, borrow, and spend in the global economy. It also affects the amount of activity that financial institutions do, which in turn affects how businesses behave and innovate (Qamruzzaman & Jianguo, 2017).

In the current changes and the stiff competitive business environment, a cooperative must continue developing products daily to effectively satisfy the constant ever-changing wants, needs and issues brought up by members. Data accuracy, quality, speed, efficiency, flexibility, and the ability to conduct business are critical factors to the firm's product and process innovation performance (Kimani, 2016). With the advancement of successful financial incorporation and money-related development deepening, SACCOs in the world recently have undergone significant changes of financial innovation as they strive to offer good, effective financial services to the less unfortunate poor persons, middle-income earners and members of society (Duguma & Han, 2018).

1.1.2 Financial Performance

Members own SACCOs; they usually finance themselves without the need for grants and donors, and they do not rely on any funds outside their scope of business to sustain themselves or for sustainability purposes to conduct their daily operations (Tumwine, 2015). Under this, SACCOs will have different products; savings products, deposits, share capital and credit products which entail different categories of loans depending on the needs and wants of members. Developing innovative savings products has assisted SACCOs in pooling resources, increasing deposits, and making them financially sustainable. SACCOs automating and digitizing their operations in their daily business processes has made transactions quicker and more effective. Paperwork is avoided; hence, it is open in the country for anyone to use which helps with efficiency, smooth service and reduces operational costs (Duguma & Han, 2018).

SACCOs have enhanced business procedures, giving their members access to unsecured personal loans, flexibility, and speedy cheque clearing. Members are now able to do more transactions, such as paying bills with M-Pesa or Airtel money services. Transaction efficiency has increased as a result, and customer satisfaction has increased (Tambasi, 2019).

1.1.3 Savings and Credit Cooperatives in Kiambu County.

As a financial institution controlled, governed and owned by its members, SACCOs mobilize savings as a pool through a savings platform, and thereby offer members the opportunity to access loans at competitive rates (Mbugua & Kinyua, 2019). SACCOs, being majorly distinguished as financial institutions, have taken up financial innovation to aid in their overall objective to achieve their goals. SACCOs are credited worldwide for improving people's lives through socio-

economic status by helping them save funds and, in return, get affordable loans and also creating social capitalism between members. SACCO development in Kenya controls over Ksh490 billion (\$5.5 billion) in the shape of resources and investment funds, a sum comparable to 35% of the national budget (Kamau, 2018).

Based on data from the SACCO Societies Regulatory Authority (SASRA, 2022), Kiambu County draw their membership from locals in the region and also with extended branches outside the county with examples of K-unity SACCOs with branches in Suswa, Maimahui and Gikomba. The majority of the members who cannot access the main office or offices at the branches tend to make or apply for transactions through their mobile phones or computers, reducing the number of walking-in clients and increasing the efficiency of both the member's and the SACCOs' financial performance.

1.2 Statement of the Problem

The Deposit Taking Sacco sector is a significant contributor to Kenya's economic development and socio-economic well-being of their members. However, Kiambu County Saccos are experiencing challenges that has been affecting their financial performance evidenced in low return on assets which was 8% against the targeted 10% in 2014. The Saccos have also recorded low deposit which was 5.4% in relation to the minimum of 7% required by the regulator. Additionally, 44% of the Saccos in the region are not able to meet the regulator's minimum requirement prompting some Saccos to be placed under SASRA management; Ekeza, UNES, Orient and Jitegemee as they were not able to meet members' needs. Studies have recognized the increasing dormancy of Kiambu County Saccos due to indebtedness and mismanagement where sales went down from Kshs 732,761,561 in 2016 to Kshs 667,889,159 in the financial year 2017 thereby affecting the Saccos' financial performance. Even though there have been studies on how financial innovation influence

financial performance, there is scanty research that specifically targeted Kiambu County Saccos' financial innovation hence this study investigated how financial innovation impacts financial performance of savings and credit cooperatives in Kiambu County.

1.3. General Objective

To evaluate the influence of financial innovation on financial performance of Savings and Credit Cooperatives Societies in Kiambu County.

1.3.1. Specific Objectives.

- i. To determine the effect of automated teller machine adoption on financial performance of Kiambu County' Savings and Credit Societies.
- ii. To establish the effect of real-time gross settlement adoption on financial performance of Savings and Credit Societies in Kiambu County.
- iii. To find out the effect of internet banking adoption on financial performance of Savings and Credit Societies in Kiambu County.
- iv. To determine the effect of mobile banking adoption on financial performance of Savings and Credit Societies in Kiambu County.
- v. To establish the moderating effect of SACCO size on the relationship between financial innovation adoption and financial performance of Savings and Credit Societies in Kiambu County.

1.4. Research Questions

- i. What is the effect of Automated Teller Machine adoption on financial performance of SACCOs in Kiambu County?
- ii. How does real-time gross settlement adoption affect financial performance of Savings and Credit Societies in Kiambu County?
- iii. What is the effect of internet banking adoption on financial performance of Savings and Credit Societies in Kiambu County?

- iv. How does mobile banking adoption affect financial performance of Savings and Credit Cooperative Societies in Kiambu County?
- v. What is the moderating effect of SACCO size in the relationship between financial innovation adoption and financial performance of SACCOs in Kiambu County?

1.5. Significance of the Study

This study explores the impact of financial innovations adoption on financial performance of Kiambu County SACCOs. The findings may inform the policymakers on the effect of financial innovations on financial performance in Kenya, thereby develop efficient policies supporting innovation within the sector to improve financial performance.

The findings may offer insight to the practitioners on the most effective and efficient innovation strategies that will enhance operations and service delivery thereby improve financial performance. The management will also obtain possible insight on the status of their financial performance and therefore use the feedback to proactively respond, offer training to employees, engagement with key stakeholders and compliance to statutory regulations to enhance financial performance. The management will incorporate the findings of the study to create an enabling environment that stimulates innovation, allocate adequate resources to support financial innovation and hence improve financial performance. The findings are likely to create opportunity to innovative and creative employees to participate in their organizational innovation hence develop their talent and support Deposit Taking Saccos financial performance.

The Sacco members have experienced dissatisfaction owing to poor financial performance of their Saccos, non-payment of loans and reduced dividend. The

findings may lead to the application of strong innovation principles by the Sacco sector that will raise financial innovation and hence improve service delivery to the members. The results will also enhance financial performance of the Saccos which will lead to timely provision of loans and dividend payout to the members thus enhanced satisfaction.

The sector may benefit from the findings by adopting effective innovations and incorporate the results as the benchmark of financial services innovation. Future researchers stand to gain from the results of this study through the incorporation of the content in their studies, providing citations and references. The results may offer knowledge in the field of financial innovation therefore stimulate discussion among the financial industry practitioners for improvement within the sector.

1.6. Scope of the Study

The financial performance of Kiambu County Saccos have been declining evidenced in reduced sales, return on assets and deposits, low payment of dividend and delay in loan disbursement. Even though there are many factors that may be attributed to enhancing financial performance, this study focused on financial innovation which was the independent variable. Further, there are multiple dimensions under which financial innovation may be defined. The study was mainly aimed at four elements which consisted the objectives; automated teller machine adoption, real-time gross settlements, internet banking, and mobile banking adoption in the enhancement of financial performance.

The location was Kiambu County owing to the increasing poor performance with 44% of registered Saccos not meeting the minimum regulatory requirement and hence put under the regulator's management. The study also

considered the moderating variable-Sacco size while the dependent variable was financial innovation. Despite many theories that could be applied in the current study, the use of transaction cost innovation, agency and diffusion of innovation were considered in this research due to their suitability in analyzing the study variables. The study used descriptive research design that target management employees of 14 Saccos located in Kiambu who provided their feedback in May 2024.

1.7. Limitations of the Study

The research experienced a few limiting circumstances during the course of carrying out research. Some respondents were concerned about how the data provided would be used, which led them not to provide precise information. The researcher introduced the purpose of the research to boost their confidence and undoubtedly alternate their thinking toward the study. Similarly, visiting them created a good rapport. There were some Saccos that did not allow access to their premises due to security reason. The researcher obtained authorization letter from relevant bodies and sought permission from the Human Resource Department that enhanced trust and thus permission was granted to access Sacco offices for data collection.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter is based on a literature review touching on study concepts. It also discusses key models fundamental to SACCO innovations, develops a conceptual framework, and provides prudent information on the research gaps in SACCO innovations and financial performance.

2.2. Theoretical Review

2.2.1. Transaction Cost Innovation Theory

According to Coase (1937), the transaction cost theory defines the boundaries of firms and explains why they exist. The theory argues that customers may incur costs when making purchases during the transaction; hence, economic factors are examined through the theory as cost defines and evaluates relationships in transaction partnerships (Lit et al., 2019). Additionally, the theorist observed that previously, people were in the agricultural era. However, with the industrialization age, companies and corporations were established that created a transaction market. In the modern era of the Internet, transaction costs have been reduced due to networked systems (Lu & Wung, 2021).

Williamson (1975) notes that transaction costs arise due to market failures caused by interactions between different factors and human nature within the environment, making transactions cumbersome. Dahlman (1979) conceptualized transaction cost theory into trading activities such as costs related to information search, supervision, contracts, execution, decision-making, conversion costs, and negotiation (Lu & Wung, 2021).

Williamson (1985) also classified transaction cost theory into two explicit elements that could be easily observed and implicit elements that were hidden. These included handling, transport, packaging, and storage, while the unobservable elements were information cost,

bargaining, searching, screening of customers and partners, coordination, monitoring, and enforcement (Koker, 2021).

The theory has been applied in financial innovation to determine the possibility of reducing the apparent costs of transactions and diminishing the cost of operation. Furthermore, according to Muriuki and Kiiru (2019), decreasing exchange costs will enhance economic innovation and service provision. The theory was used as a guideline to analyze financial performance.

2.2.2. Diffusion of Innovation Theory

The theory of diffusion of innovation (DOI) was proposed by Rogers (2003) as a process that involves communication of innovation in different platforms in a given period amongst members of a given social system. According to the theory, diffusion may incorporate four elements; innovation-which is an idea or an object that is perceived as new and adding value to the organization. Diffusion, however, is communication in specific channels to create awareness hence increase the adoption. Rogers (2003) added that these channels may consist of mass media where many individuals or a society may obtain information regarding the innovation. The author added that interpersonal communication may also be used incorporating face to face for more understanding of the innovation. The time element has also been considered important as it communicates the duration it will take for complete diffusion of a particular innovation. This may vary from an individual, an organization and a society. The social system is another element of the diffusion process where the new product is developed by a small group of individuals that are related with an aim of solving a common problem (Hains & Hains, 2020).

Diffusion of innovation theory argues that innovation may be diffused in five groups through an inverted U-shaped process from its initial stage to the end of the innovation cycle. At the beginning, there is 2.5% of group consisting of inventors which grows to 13.5%

individuals who take early adoption leading to 16%. The stage that follows consists of early majority at 34% hence perceived as self-sustaining while the late majority include 34% where adoption is at its peak resulting to 84%. It is at this stage that decline begins leading to the final stage of 16% group considered laggards (Rogers, 1995) where new innovations may emerge that have more value to current innovations.

The adoption process however is determined by compatibility, relative advantage, trialability, complexity and observability. The relative advantage is the value that new innovation brings over existing products hence must perform better than existing service. Compatibility is the consistency of the innovation with existing values and norms, complexity is the perception of the innovation as simple hence minimizing risks, trialability is the ability to test the innovation before using it while observability is the outcome that may be communicated to potential adopters. Tornatzky and Klein (1982) noted that complexity, relative advantage and compatibility were significant determinants in DOI while Al-Jabri and Sohail (2012) indicated that mobile phone adoption in financial access was due to its relative advantage, complexity and compatibility.

The theory of technology acceptance model (TAM2) proposed by Davis et al (1989) added that compatibility and complexity enhanced DOI hence referred as perceived-ease of use and usefulness of innovation. Venkatesh and Davis (2000) noted that TAM2 tried to overcome the weaknesses of DOI through risk introduction, (Abramora & Bohme, 2016) trust and benefits as customers may avoid using an innovation due to risks and fear of losing finances (Okoli & Twari, 2021).

The theory was used in the study to analyse the financial innovation that have been adopted by Kiambu County SACCOs, looking at the adoption of different products and services, the relative advantage derived from financial innovation, the complexity and compatibility with existing values of the customers hence improved adoption that leads to financial

performance. The theory was therefore critical in analysing ATM innovation, internet banking, RTGS and mobile banking which were the study's independent variables.

2.2.3. Agency Theory

Jensen and Meckling (1976) were the proponent of agency theory proposing a relationship between the principal who is the owner and the agent. This relationship, according to the theory, the principal, gives directions to the agent to perform certain activities and decision making on behalf of the principal. The agent undertakes the directives for the interest of the principal. However, in the course of relationship, a conflict may arise due to separation of power of ownership and firm control. This makes the management to have control over information which may not be fully accessed by the principal leading to agency conflicts (Tekin & Polt, 2020).

An observation by Santoso et al. (2022) views two types of conflicts in an agency-principal relationship; the first conflict according to the authors, is the conflict of interest as the principal finds it hard to access information. The second conflict is risk sharing which happens when both the agent and the principal have varying risks attitude. Eisenhardt (1989) note that people tend to act in their own interest and benefits hence resulting to conflict (Santoso et al., 2022).

Sayed et al. (2017) considered the use of agency theory to establish its applicability in CSR within the Pakistani financial sector. The authors noted that CSR practice by the management was an added cost hence reduced financial performance and benefits to the principal. Having been used previously in Pakistani financial services, the theory was applied within the Kenyan context to establish if management practice of financial innovation using agency theory, enhances financial performance. The study used the theory to analyse the agency relationship existing between SACCO owners and the management where the owners direct the management to innovate for purposes of reducing costs and improve shareholder

returns. The study noted that financial innovation, a management decision, enhances financial performance thereby creating value to the principal.

2.3. Empirical Review.

This section reviews previous empirical papers in which the researcher describes the objectives, methods, and findings. The study also identifies previous gaps within the literature.

2.3.1 Automated Teller Machine and Financial Performance.

An investigation by Ezekiel et al. (2021) was based on analyzing the penetration of automated teller machines and financial inclusion in Nigeria. The study obtained data from the World Bank (2019) and the CBN data bank. The researcher considered loans, ATM and bank branch penetration, while financial inclusion was measured using the number of internet users. Multivariate regression was adopted in the analysis, and the period under review was 1990- 2019. The findings demonstrated that ATMs accounted for the variation by 67% in financial inclusion; hence, the more extensive the geographical coverage of ATMs, the more financial inclusion in Nigeria. However, the study did not find a significant effect of ATMs on financial inclusion. This study did not find a significant effect when the dependent variable was financial inclusion. The current study used Financial Performance as the dependent variable.

Automated teller machines allow customers to access financial transactions without a physical presence at the Bank, which has been considered a critical innovation within the banking system (Tewodros & Debela, 2019). An analysis by Wagbara and Nwovuhoma (2022) considered a survey research design with a population of 303 bank managers drawn from 11 commercial banks in Port Harcourt, River State. The study adopted a census method involving randomly selected bank employees. A structured questionnaire was distributed to all respondents. Face-to-face communication was used to administer the questionnaire.

Cronbach alpha was used to test reliability, which yielded a 0.98 coefficient. Correlation was performed, as well as descriptive statistics. The findings showed a moderate relationship with a correlation coefficient of 0.477 of ATM and debit card services, electronic transaction skills, and timelines of banking professions. It was established that ATMs had a significant relationship with debit card service electronic transaction skills and timelines of accounting business graduates in River State banking jobs. This study used a structured, standardized questionnaire, which was easy to analyze. However, a structured questionnaire limits respondents' opinions. The current study incorporated semi-structured data that allowed for more data from respondents, thereby enriching the findings.

An investigation by Anusi and Igbojika (2019) used an exp-post facto research design to analyze data from 2010-2018. The study used secondary data sourced from Nigerian Deposit Insurance Corporation. Performance was measured using ROE, while ATM was measured using value generated from ATM. Point of sale was used as a control variable. The Granger causality test was used to analyze the effect of ATM on performance. The findings indicated a unidirectional relationship between ATM and return on equity. This showed that ATMs had an effect on the performance of deposit money banks in Nigeria; hence, investments and transactions using ATMs determine performance. The study adopted point of sale as the control variable. The current study considered Sacco size as the control variable and had a different geographical location.

2.3.2 Real-Time Gross Settlement and Financial Performance

Makena et al. (2023) investigated the effect of RTGS on the performance of MFIs in Nairobi City County, where a cross-sectional survey design was adopted working with 12 licensed MFIs. The study used a structured questionnaire to collect primary data. Yamane (1967) was used to generate a sample of 44, where a 93.2% response rate was achieved. The findings indicated that MFIs were using RTGs to reduce risks related to high-value payments, with a

mean of 4.52. It was found that RTGs influenced MFI's financial health. There was a solid and positive relationship between RTGS and financial performance where $r=0.635$ with a p-value of 0.05. The study indicated that RTGS significantly affected financial performance of MFIs in Nairobi City County. This study had a different target population and was based in Kiambu County focusing on savings and cooperative societies.

Hillowle and Warui (2021) analyzed innovative banking practices and the performance of commercial banks in Kenya, where an explanatory research design was used targeting 41 banks. The study identified 41 marketing and 41 information technology managers who received questionnaires. Descriptive and inferential statistics were used in the analysis. The results showed that RTGS was related to financial performance with conclusion that RTGS contributes to more sales, growth in market share, customer loyalty and profitability, thereby leading to financial performance. This study had a broad scope investigating commercial banks in Kenya. The current study narrowed to cooperative societies in Kiambu County.

Grayson and Hodges (2017) observed how the technological progress in the past ten years has shaped the operations of business processes where financial institutions have been affected by providing benefits to the customers and altering how the banks work. An investigation by Sapkota (2022) determined that financial innovation had affected the financial performance of banks in Nepal, where 30 commercial banks were targeted. The study used a causal research design incorporating secondary data from financial statistics, reports and archives. Regression was used to analyze primary data. The results showed that the RTGS coefficient was 0.775, with a p-value of 0.00, indicating a significant effect on banks' financial performance. The study had a different geographical location and targeted commercial banks. This study was based in Kenya and targeted cooperative societies.

To overcome dynamics and volatility within the business environment, financial institutions are implementing innovative strategies to enhance their competitive advantage and sustain

their growth and performance (Mutuku, 2014). An analysis by Okoth and Muia (2020) used descriptive research to investigate the effect of financial innovation and financial performance of banks in Kenya targeting Equity bank-Kitengela branch. The study did not carry out sampling due to the small population. Secondary data was considered where profitability was used to measure financial performance, while RTGS turnover was generated from CBK annual statistics where retail payment and payment systems statistics were used. The findings showed that RTGS positively affected financial performance, with a coefficient of 2.945 and a p-value of 0.020. Correlation indicated that RTGS had a solid and positive relationship with a coefficient of 0.887 (Okoth & Muia, 2020). This study used Equity Bank as a case study that limited generalization into other populations. The current study consisted of multiple financial institutions that allowed generalization of the findings to different populations.

2.3.3 Internet Banking and Financial Performance

In the 21st century, the financial industry operates in a competitive and complex environment characterized by unpredictable and changing conditions. Internet banking is one of the conditions that has brought changes in how financial banks meet the needs of their customers (Murat & Opusunju, 2019). The authors performed survey research with a questionnaire targeting employees of First Bank Nigeria, where 41 branches comprised the study. Internet banking was measured in 24 hours of Internet, internet service, cheaper Internet cost, and customer information and communication technology competencies. The population were 2231, and Yamane (1967) was used to generate 339 respondents. Simple random sampling was used to identify respondents. A structured questionnaire was developed using the Likert scale. A reliability test was done while regression aided in primary data analysis. The results showed that First Bank enjoyed reduced internet costs that enhanced client coverage, hence distinctive competencies. The study noted that internet operations were efficient, hence

saving time. This study targeted one Bank in Nigeria; hence, the Bank could only use the findings due to internal features that may differ from other populations. It, therefore, limited the generalization of the findings to other populations. The current study used multiple organizations, hence allowing generalization of the findings.

An investigation by Noah et al. (2019) used a descriptive research design targeting tier-one commercial banks in Nairobi City County. Internet banking was measured using total cost and total sales, while financial performance was analyzed using return on assets, cost-to-income ratio and return on investment. The Census technique involved 6 tier one banks with 51 business development managers in the headquarters. A structured questionnaire was used to collect primary data. The researcher obtained a permit to collect public data. Cronbach alpha and experts' opinions were used to determine the validity and reliability of the instrument. Descriptive and inferential analysis was used with the aid of SPSS. The results showed that Internet banking reduced transaction costs with a mean of 4.33 and a standard deviation of 0.909 and resulted in distinctive competency with a mean score of 3.824 and a standard deviation of 0.654. It also found that Internet banking offered a strategic advantage and the likelihood of customer loyalty. Even though the study was based in Kenya, the location was different from the current study location. The study also targeted tier-one banks, while the current study considered savings and cooperative societies.

Iyke-Ofoedu et al. (2022) analyzed how Internet banking contributed to the performance of small and medium enterprises in the Enugu Metropolis using a descriptive research design with a structured questionnaire. The study identified 6050 employees, who comprised the target population, and 264 samples were generated. The study used frequency tables, mean and standard deviation, and single regression for analysis and presentation. The results indicated that due to internet banking effectiveness, there was an extended reach of customers, more access to information quickly and significant to the expansion of business.

This study worked with SMEs and reported a significant effect of internet banking on business expansion. The current study used cooperative societies and considered financial performance as the dependent variable.

2.3.4 Mobile banking and Financial Performance

Mobile banking determines cashless transactions in Kenya (Maina & Mungai, 2019). Using a descriptive research design, the authors investigated how mobile banking affected financial performance of tier-one banks in Kenya. The study targeted 8 tier one commercial banks using secondary data generated from the websites of the banks where the ROE of the past five years was obtained. Mobile banking was measured using mobile banking loans, payments, bills, and funds transfers. Descriptive and inferential statistics were used to analyze primary data. The results indicated that mobile banking withdrawal positively and significantly affected financial performance. It also showed an increase in mobile banking withdrawal yearly, hence the adoption of the innovation due to flexibility and convenience. The study concluded that mobile banking is significant to the performance of tier-one banks in Kenya (Maina & Mungai, 2019). This study was based on tier-one banks in Kenya. The current research targeted cooperative societies based in Kiambu County.

An investigation was conducted by Millan et al. (2023) to determine how financial innovation affected loan performance using a descriptive research design, and tables, graphs, and charts were adopted to present the findings. Descriptive analysis was used to explain data patterns, while inferential statistics enabled the generalization of the findings. Loan transaction volume, disbursement and transaction cost were considered. The population consisted of 190 board members and employees of 6 DT Saccos based in Mombasa County, a stratified sampling technique aided in selecting respondents. The questionnaire was used in data collection. The study achieved a response rate of 90%. It was found that mobile banking led to very high loan repayment deposits and withdrawals and there was high loan

disbursement through mobile banking. The study concluded that mobile banking is widely used in loan-related transactions. The study was based in Mombasa County and used only 6 DT Saccos. This study enhanced the number of Saccos to 14 and targeted a different geographical location of Kiambu County.

Mobile banking technology has allowed financial institutions to showcase their financial products conveniently to their customers through digital devices (Mugo et al., 2019). The positivist philosophy guided the authors to formulate a hypothesis in the study working with a target population of 110 DTS licensed as of 31st December 2011, where 86 were selected. Independent variables were mobile money transfers, bill payments, deposits, enquiry services and mobile statements. Simple random was used to identify saccos, while purposive sampling aided in selecting two technology managers and finance managers. Multiple linear regression consisted of the analysis of the variables. The findings showed that mobile money transfer service was insignificant. However, mobile deposit service, bill payment and statements were significant, while mobile enquiries were insignificant. This study used purposive sampling, which may have introduced sampling biases. The current study used probability sampling to enhance the validity of the findings.

2.3.5. Sacco Size, Financial Innovation and Financial Performance

Gachenga et al. (2023) focused on lending decisions, sacco size, and liquidity of farmer-based Deposit-taking Saccos in Kenya using 49 finance managers and 49 credit managers of all 49 DT saccos. Yamane sampling formula was used to determine 78 respondents. Secondary data was generated from 2019 audited financial reports while hierarchical regression aided in analyzing the moderating variable. The results showed that a rise in one unit of natural lending, group lending and institutional lending would result in an increase in Sacco liquidity. An introduction of the Sacco size as a moderating variable improved the coefficient of the parameters. However, the coefficient was reduced when the moderating

variable was introduced in institutional lending. The study found that Sacco's size led to an improvement in the model, an indication of a significant effect on the relationship between lending decisions and liquidity. This study targeted farmer-based DT Saccos in Nairobi. The current research incorporated all the Saccos in Kiambu County, hence providing broad findings.

Kyenze and Oluoch (2022) analyzed financial management practices and the performance of cooperative societies in Nairobi City County, where explanatory research was adopted. The sample was 41 identified from licensed Saccos in 2015-2019. Census was adopted due to the small number of licensed Saccos in Nairobi City County. Panel regression was used to analyze the data, while descriptive statistics consisted of data features analysis. Inferential statistics was used to test the hypothesis. The results showed that Sacco size was satisfactory in moderating the relationship between financial management practices and financial performance. The study considered census, while the current study used a probability sampling technique.

An investigation by Maina et al. (2021) sought to establish the moderation effect of Sacco size on the nexus between governance cost and financial soundness of cooperative societies in Nairobi City County. The study adopted cross-sectional research involving 42 DT saccos using secondary data that was generated from the period of 2014-2018. Descriptive statistics and binary logistic regression were used to analyze the moderation effect. The findings revealed that an increase in the cost of governance would lead to a decrease in the financial soundness of DT Saccos, and there was no significant effect of governance cost on financial sustainability. The addition of Sacco size to the model changed from 15.6% to 18.3%, indicating more variation in the dependent variable and financial soundness. When the interaction term was added, the change in the model was from 15.6% to 19.3%, hence the significant increase (Maina et al., 2021). The study's independent variable was governance

cost. The current study used financial innovation as the independent variable.

Maina et al. (2020) investigated financial innovation, Sacco size and financial sustainability of Deposit Taking Saccos in Kenya using descriptive research design. The study involved five clusters of DT-Saccos, where 119 respondents were identified. Email was used to distribute the questionnaire. Cronbach alpha aided in the determination of reliability. Binary logistic regression was used to determine the relationship between the variables. The findings showed that Saccos had embraced financial innovation, as evidenced by the digitalization of services, and new products were developed regularly to meet customer preferences. The findings showed a hierarchical moderation effect of Sacco size on financial innovation and sustainability. The model also changed from 12.6% to 12.8% when introducing the moderating variable, indicating that Sacco size had a significant moderation effect (Maina et al., 2020). This study used email in the distribution of the questionnaire, which has the weakness of a low response rate. The current study used a face-to-face questionnaire to enhance the response rate.

2.4. Conceptual Framework

In this study, the dependent variable was financial performance, while the independent variables were automated teller machines, cellular banking, internet banking, and real-time gross settlement. The conceptual framework was used to demonstrate the relationship between the variables. The number of ATMs, Functionality, user-friendliness, Relative advantage, efficiency, improved performance, Authentication, privacy, security, Ease of interaction, different terminal devices and ease of operation. Financial performance was measured through quality of service, efficiency, profitability, and transaction cost as shown in Figure 2.1.

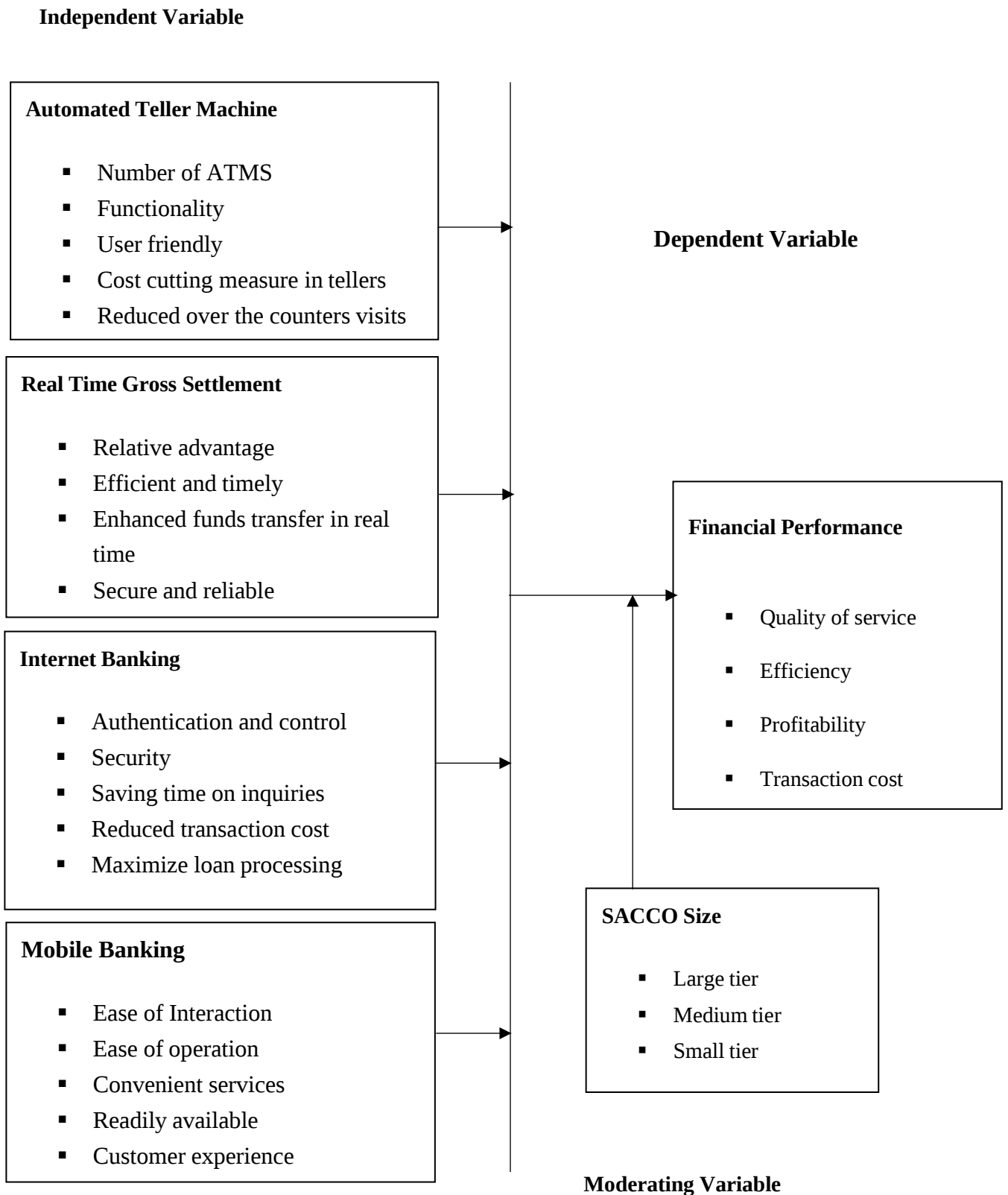


Figure 2.1. Conceptual Framework

2.5.Literature Review Summary and Research Gap

Table 2.1. Summary of Literature Review and Research Gaps

Author	Topic	Findings	Research gap	Objective
Ezekiel et al. (2021)	The impact of ATM penetration on financial inclusivity in Nigeria. The relationship between automated teller machine (ATM) penetration and financial inclusivity in Nigeria.	There is a 67% variation in financial inclusiveness due to ATM penetration.	Targeted financial inclusiveness in Nigeria.	They targeted financial performance in Kenya.
Wagbara and Nwovuhoma (2022)	To determine how ATM predicted the performance of students in the banking sector.	There is a moderating relationship between ATM and debit card transaction skills of banking students.	They targeted the students.	Targeted both members and employees of cooperative societies in Kiambu County.
Anusi and Igbodika (2019)	The effect of automated teller machines on the performance of deposit money banks in Nigeria.	ATMs affect the performance of deposit money banks in Nigeria.	Used deposit money banks in Nigeria and found a significant effect.	Used cooperative societies in Kiambu County.
Hillowle and Warui (2021)	Commercial banks' banking practices influence financial performance in Kenya.	There exists a correlation between RTGS and financial performance.	It consisted of all the banks in Kenya, hence a broad scope.	It narrowed to cooperative societies in Kiambu County.

Makena et al. (2023).	The effect of RTGS on MFIs' performance in Nairobi City County.	A robust and positive correlation exists between RTGS and financial performance.	Different population.	They targeted cooperative society members and staff.
Hillowle and Warui (2021)	Commercial banks' banking practices influence financial performance in Kenya.	The relationship between RTGS and financial results is there.	It consisted of all the banks in Kenya, hence a broad scope.	It narrowed to cooperative societies in Kiambu County.
Sapkota (2022)	The impact on the performance of Nepal's commercial banks due to finance innovation.	RTGs have a significant effect on the performance of Nepalese banks.	Different geographical locations.	Targeted Kenyan cooperative societies based in Kiambu County.
Okoth and Muia (2020).	Equity banks' financial innovation and financial performance.	RTGS's relationship with the performance of equity banks is very strong.	A case study was used, which limited the generalization of the results.	Incorporated multiple organizations.
Murat & Opusunju (2019)	Internet banking on First Bank.	Internet banking has a significant effect on First Bank.	Used a case study.	They are considered different cooperative societies based in Kiambu County.
Noah et al. (2019)	In Kenya, Internet banking has an influence on the financial performance of commercial banks.	A positive relationship between financial performance and Internet banking.	They targeted commercial banks in Kenya.	They targeted cooperative societies in Kiambu County.
Iyke- Ofoedu et al (2022)	The influence of Internet banking on SME's performance in Enugu, Nigeria.	Internet banking has a significant effect on business expansion.	Targeted SMEs in Enugu state. Used business expansion as the dependent variable.	Targeted cooperative societies in Kiambu County and used financial performance as a dependent variable.

Maina and Mungai (2019)	An analysis of mobile banking's impact on the performance of Kenya's tier one business banks.	Mobile banking has a significant impact on the performance of Tier One banks.	They targeted tier-one banks.	I have narrowed it down to cooperatives societies in Kiambu County.
Millan et al. (2023).	Mombasa County DT SACCO mobile banking and loan performance.	Mobile banking enhances loan performance.	It was done in Mombasa County.	The study location was in Kiambu County.
Mugo et al. (2019)	An examination of the financial performance of DT SACCOs in Kenya on the basis of Mobile Banking influence.	Mobile banking bill payment is significant to financial performance.	Purposive sampling may have introduced sampling biases.	Adopted probability sampling.
Maina et al (2020)	There is a moderate relationship between DT SACCO size and financial innovation and sustainability.	A SACCO's size affects lending decisions and liquidity in a significant way.	Used email to distribute questionnaires.	Used face-to-face that enhanced response rate.
Gachenga et al (2023)	The effect of the lending decision, SACCO size and liquidity of DT SACCOs in Kenya.	There is an improvement in the model when the SACCO size is introduced.	The only farmer-based DT SACCOs was identified as located in Nairobi City County.	All the cooperative societies in Kiambu County were incorporated.

Maina et al (2021)	DT SACCOs based in Nairobi City County and their governance costs are moderated by the size of the SACCO.	There is an improvement in the model when SACCO size is added.	Governance cost was the independent variable.	Financial innovation was the study's predictor variable.
Kyenze and Aluoch (2022)	Management practices SACCO performance.	The relationship between financial performance and business practice is substantiated by satisfactory evidence that the size of SACCO limits its influence.	Census used.	They are considered probability sampling techniques.

2.6 Research Gaps

Based on this review of the relevant literature, it appears that few inquiries have been made broadly about SACCO innovation research. Comprehensive studies and research on financial innovation's effect on SACCOs' financial performance in Kiambu County in Kenya need to be done. Thus, this study attempted to fill these gaps.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter outlines the adopted research methodology, covering aspects such as study design, population and sampling, study instruments, techniques and presentation.

3.2. Research Design

As per Van et al. (2021), the study employed descriptive study to illustrate the characteristics of financial innovation and to predict financial performance of Deposit Taking Saccos in Kiambu County. The design was chosen since it was less time-consuming and allowed the inclusion of both subjective as well as quantitative methods. Descriptive design is most suitable when a researcher intends to describe events or objectives. The design was also preferred as due to its use in generalization of the findings across other population (Omar, 2015).

3.3 Target Population

The target population encompassed all 14 SACCOs operating in Kiambu County, Kenya, as of December 31, 2022. All SACCOs with headquarters in the County were selected as indicated in the SASRA (2023) report. The unit of analysis consisted of all Sacco managers and members where 3 were selected from each category from the 14 Saccos. The population was chosen as SACCOs in Kiambu County have experienced challenges related to financial performance leading to delayed loan processing, long waiting time in FOSA services, poor governance and low product uptake (Gacheru and Muturi, 2018). The inclusion of staff in the population was considered suitable as they participate in innovative activities while the members are the main adopters of the SACCOs products and services hence were found to be critical in providing responses according to the research interests.

3.4. Sample Size and Sampling Techniques

The researcher utilized census data to study the entire population or each unit within it. It's a complete list, which means a complete dependence, (Behrisch, 2016). If the whole population is small, or if it is reasonable to include, the whole population for other reasons, a census will be carried out. In this case, all 14 SACCOs in Kiambu County took part in the project. A random selection of SACCO members, and staff was done.

3.5. Data Collection Instruments

Primary data was gathered by questionnaire in this study. The respondents were SACCO members and departmental managers. The questionnaire involved semi-structured questions which were administered through drop and pick. Data from secondary sources such as financial statements, published journals, annual reports, library holdings, university libraries, and other research projects was collected. Due to its simplicity of development and easy to follow rules and principals, the questionnaire was used by the researcher as a tool. Moreover, copies of the questionnaire reached an impressive number of respondents by mail and individual means. Generally, responses by questionnaires were considered objective and standardized, making tabulation easy (Aithal & Aithal, 2020).

3.6. Pilot Test

Abshir (2021) describes a pilot test as administering research instruments to non-sampled members of the target group in an effort to verify reliability and validity of the instrument. Connely (2008) advice that pilot study should consider 10% of the main study sample. The researcher carried out a pilot test on two SACCOs in Nairobi City County where 4 members and four staff were selected randomly. The findings of the pilot test enabled the improvement of the instrument before the actual collection of data.

3.7. Data Validity and Reliability

The assessment of trustworthiness is crucial for ensuring immovable quality in subjective research (Kaivo-oja, 2017). In research, building great quality studies through reliability and validity states that trustworthiness is a key component of validity and reliability issues. Strauss et al. (2018) suggest that in order to judge (test) qualitative work, the usual canons of great science need to be redefined. Reliability, validity, trustworthiness, quality, and rigor are the criteria for distinguishing between excellent and poor research. Research across all paradigms requires testing and improving these aspects. As outlined in Table 3.1, the Cronbach alpha coefficient was used to determine reliability.

Table 3.1. Reliability of the Instrument

Variables	Alpha Values	No. of Items
ATM	0.82	5
RTGS	0.75	5
Internet Banking	0.67	5
Mobile Banking	0.74	5
Financial performance	0.76	5
SACCO Size	0.81	6
Total	0.76	31

Source: Research (2024)

From the findings indicated in Table 3.1, automated teller machine had reliability of 0.82 with five items which signified a high reliability of the variable. Equally, Real time gross settlement was 0.75 which also demonstrated that the independent variable could be used for analysis due to the strong reliability. It was found that internet banking scored 0.67 with five questions, further demonstrating moderate reliability, mobile banking had 0.74 signaling strong dependability while mobile banking achieved 0.74 reliability statistics. The

dependent variable-financial performance scored 0.76, which also demonstrated a reliable variable while SACCO size recorded 0.81 Cronbach alpha value. The aggregate reliability of the instrument was 0.76, with a total of 31 items.

Measuring instrument reliability is essential when using evidence to validate the inference. Without reliability, there is no consistency and precision; reliability communicates the quality of test scores, indicating measures are free from any error, hence useful in analysis (Amirrudinet al., 2021). Reliability is measured using Cronbach alpha values ranging between 0.00-1.0, with those closer to 1 considered firm and perfect reliability with an acceptable threshold of 0.7 (Adeniran, 2019). From the findings, the aggregate reliability of the instrument was 0.76, which was considered acceptable and hence used in the analysis.

3.8 Data Analysis.

Inferential and descriptive statistics were used in data analysis. In order to assess dimensions with the highest concentrations, descriptive statistics were used, such as frequency distribution tables and percentages. Additionally, a multiple regression analysis model was employed to compute mean scores and standard deviations, facilitating the determination of financial performance attributes from the predictor variables. This research was conducted using version 23 of the Statistical Package for Social Sciences. Analysis of data provided answers to research questions. The model used in this study to predict financial performance was:

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

Whereby Y = Effect on Financial Performance

α = Constant

X1 = Automated Teller Machines X2 = Mobile Banking

X3= Online Banking

X4 = Real Time Gross Settlement

β_i (i=1,2,3,4) = Regression coefficients e=Error term

The study used SACCO size to mediate the relationship between financial innovation and financial performance (Namazi & Namazi, 2016). Multiple regression aided the analysis.

$$\text{Financial Performance} = B_0 + B_1X_1 + B_2M + B_3XM$$

The first regression analysis, used SACCO size as an independent variable, the subsequent analysis considered SACCO size as a mediating variable where the product of SACCO size and each independent variable was used to determine the mediating effect in the relationship between financial innovation and financial performance of Kiambu County-based SACCOs.

The variables that were used in the analysis were presented in Table 3.2.

Table 3.2. Study Variable Measurements

Variables	Indicator	Measures	Empirical Studies	Measurement Levels
Financial Performance	Quality of Service	Efficiency	Ibenta (2021)	Ratio
	Efficiency	Quality		
	Profitability	Profitability Transaction Cost		
Automated Teller Machine	Transaction Cost			
	Number of ATMS	Number of ATM Transactions	Chukwunulu Ibenta (2021)	&Ratio
	Functionality			
	User Friendly			
Real-Time Gross Settlement	Relative Advantage	Number of Real-Time Gross Settlement Transaction	Chukwunulu Ibenta (2021)	&Ratio
	Efficiency			
	Improved Performance			
Internet Banking	Authentication	Number of Internet Banking Transaction	Chukwunulu & Ibenta (2021)	Ratio
	Privacy Security			
Mobile Banking	Ease of Interaction	Number of Mobile Banking Transaction	Chukwunulu Ibenta (2021)	&Ratio
	Different Terminal Device			
	Easy To Operate			
SACCO Size	Total Assets	Number Of Assets	Maina, Kiai Kyalo (2020)	&Ratio

Source: Research (2024)

3.9. Ethical Consideration.

The project was subjected to participants who were willing to participate. The respondents confirmed their consent and gave consent in writing. The subjects' anonymity was treated with respect, and hence, confidentiality was maintained throughout the project. The Researcher maintained independence and, hence, avoided and was clear of any conflict of interest in this project.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATIONS AND INTERPRETATION

4.1. Introduction

This chapter comprises four sections. The first section delineates the research objectives aligned with the study concept. The second section will outline the demographic characteristics of the respondents. Following this, section three will provide descriptive statistics according to the objectives of the research. The final section will deal mostly with inferential statistics. To ascertain the moderating role of DT SACCOs' size on the relationship between financial innovation and financial performance in Kiambu County.

4.2. Response Rate

In all 14 DT SACCOs in Kiambu County, the researcher distributed 84 questionnaires to 42 management staff and 42 Sacco members. Table 4.1 presents the results.

Table 4.1. Response Rate.

Response	Frequency	Percentage
Management staff	38	49%
Sacco Members	40	51%
Total response	78	93
Not responded	6	7
Total	84	100

Source: Research (2024)

According to the data presented in Table 4.1, it was found that 49% of employees and 51% of members responded to the study. The overall response rate reached 93% after 78 respondents duly completed and returned the questionnaire. Mugenda and Mugenda (2003) suggest that responses above 70% are considered excellent, while responses between

50%-60% are considered sufficient hence acceptable for analysis (Mugenda & Mugenda, 2012). A response rate of 93% was achieved in the study which was considered excellent. A previous study by Mathu and Kyongo (2017) on strategic innovation and competitive advantage found an 80% response rate, which the current study has exceeded by recording a 93% response rate. Lavidas et al. (2022) recognize the importance of response rate in research necessary for making inferences about the population. Having received 93% responses, the instrument was considered valid and reliable for making inferences.

4.3. Demography of Respondents

Demographic characteristics have been analysed in this study for the purpose of determining the distribution between respondents. Gender, age, level of education and experience were the specific characteristics.

4.3.1. Gender

Gender is the difference between male and female respondents. The study analyzed respondents' gender with findings presented in Table 4.2.

Table 4.2. Gender of Respondents.

Gender	Association		Total	Percentage
	Employees	Members		
Male	20	22	42	54
Female	18	18	36	46
Total	38	40	78	100

Source: Research (2024)

The findings indicated in Table 4.2, showed that 54% of respondents were male while the female consisted of 46%. This demonstrated that both male and female contribute to financial innovation due to their different cognitive skills which enhance financial performance of cooperative societies in Kiambu County. Hoffman (1965) indicated that

combining the cognitive abilities of women and men might enhance innovation and creativity in work and provide high-quality output (Kharroubi, 2021). Combining men and women in survey recognized the value of their cognitive thinking which improved response quality. An observation by Kossek et al. (2006) showed that there were only 20% of women in the workplace while the men were 80%, which the current study disagrees with as the gap is reducing when male and female employees are compared. The current study involved employees and members of cooperative societies and found that the gap has reduced from 20% to 46% in the representation of women in workplaces and economic activities indicating improvements in bridging the gender gap in socio-economic activities within the cooperative sector.

4.3.2. Age

Age describes the differences among respondents, which shows their composition. The study analyzed respondents' age, with findings indicated in Table 4.3.

Table 4.3. Age of Respondents

Age in years	Frequency	Percent
26-30	13	17
31-35	25	32
36-40	8	10
Over 40	32	41
Total	78	100

Source: Research (2024)

The results of the study showed that no respondent was less than 25 years old in Table 4.3. However, 17% of respondents were within 26-30 years, 32% were 31-35 years old, there were 10% of respondents who were 36-40 years, and there were 41% of respondents who were over 40 years old. The results indicate that most of the Sacco management and members were between 31-35 and over 40 years which was showed diversity in age that brings in a mixture

of experience, creativity and innovation needed in the enhancement of financial performance. Bohen and Kunze (2015) recognize how age heterogeneity may produce multiple skill sets and intellectual abilities, thereby improving productivity (Khan et al., 2019). The age composition of respondents included the old and the young, which brought diversity and uniqueness in financial innovation. Additionally, the diversity in respondents demonstrates that the SACCO sector has incorporated both the young and the old as employees and members. Incorporating the different age composition of the members ensures that the SACCO sector continues to serve the members' needs in different life cycles.

4.3.3. Highest Education

In view of the fact that education enhances knowledge, skills and abilities, the study looked at respondents' highest level of educational attainment. The findings pertaining to the respondents' education levels are presented in Table 4.4.

Table 4.4. Highest Education Level of Respondents

Education Level	Frequency	Per cent
Certificate	0	0
Diploma	15	19
Bachelor	28	36
Post-Graduate	35	45
Total	78	100

Source: Research (2024)

From the findings in Table 4.4, no respondent had achieved a certificate level as the highest education level, 19% had attained a diploma level as the highest education, and 36% had achieved a bachelor level of education. In comparison, 45% of respondents had post-graduate as their highest educational level. The findings also show that the SACCO sector stakeholders are highly educated and capable of adopting financial innovation to enhance

financial performance. Maingi (2015) indicated that education enhances one's cognitive strength, ultimately increasing productivity. Most respondents attaining high levels of education were able to comprehend the questionnaire and provided reliable responses.

4.3.4. Experience of Respondent

The study analyzed experience of respondents with findings displayed in Table 4.5;

Table 4.5. Respondents' Experience.

Experience	Frequency	Percent
Below five years	20	26
6-10 years	35	45
11-15 years	14	18
Over 16 years	9	12
Total	78	100

Source: Research (2024)

The results showed that 26% of respondents had below five years' experience, 45% had 16-10 years of experience, a total of 18% had 11-15 years while 12% had accumulated experience for more than 16 years as described in Table 4.5. This indicates that all respondents had significant tenure with their DT SACCOs, allowing them to accumulate the necessary experience to assess their DT SACCO's financial innovation and financial performance. Their experience also contributed in the understanding of financial performance and hence provided responses on effective and efficient financial innovation adopted by Deposit Taking Saccos to improve financial performance.

4.3.5. Financial Innovation Adopted by SACCOs in Kiambu County

The study analyzed the different financial innovations adopted by SACCOs in Kiambu County as shown in the table.

Table 4.6. Financial Innovations Adopted by DT SACCOs

Financial Innovations	Frequency	Percent
Real-time gross settlement	35	50
Mobile banking	22	32
Automated Teller Machine	4	6
Internet banking	8	12
Total	69	100

Source: Research (2024)

The results show that 50% of respondents had real-time gross settlement as their financial innovation, 32% had adopted mobile banking, 6% said that they had an automated teller machine, and 12% noted that they had internet banking. The findings showed that majority of the SACCOs had adopted RTGS and mobile banking to enhance their financial performance. This is because RTGS offers security in the transfer of large sums of money while the mobile banking enhanced service delivery to the members as well as reducing operational cost thereby improving financial performance. According to Muiruri (2014), financial innovation such as credit cards have been adopted by commercial banks in Kenya while Kibugo and Maina (2016) indicated that microfinance institutions are using partnership to open new branches as financial innovation strategies which agree with the current findings as Saccos are adopting RTGS, internet banking, mobile banking, and ATM financial innovation to improve their financial performance.

4.4. Descriptive Statistics

4.4.1. Automated Teller Machine and Financial Performance

Automated Teller Machine (ATM) is a computer-controlled financial innovation that dispenses cash and supports other service provisions anytime and may be located in multiple places such as stores, fuel stations and shopping malls (Ibekwe, 2021). An analysis was done on the impact of ATMs on SACCOs financial performance where questionnaires were distributed to gather respondents' opinions regarding the impact of financial innovation on SACCOs' Financial Performance. A five-point Likert rating scale was devised, where 1=Very Low, 2=Low, 3=Moderate, 4=High, and 5=Very High, prompting respondents to select an option corresponding to their viewpoint as illustrated in Table 4.7.

Table 4.7. Automated Teller Machine and Financial Performance

Statement	VL	L	M	H	VH	Mean	SD
The SACCO has up to 5 ATM outlets in the country.	5.8	7.2	15.9	49.3	21.7	3.74	1.06
The ATM functionality provides a variety of services to the members.	1.4	8.7	31.9	43.5	14.5	3.64	0.83
The ATMs are user-friendly to the members.	10.1	18.8	26.1	27.5	17.4	3.23	1.23
ATMs have reduced the costs of tellers to the SACCO.							
It is convenient for members who use ATM services.	4.3	8.7	13.0	37.7	36.2	3.93	1.11
	15.9	13.0	17.4	29.0	24.6	3.33	1.40
Total	7.5	11.28	20.86	37.4	22.88	3.574	1.13

Source: Research (2024).

From Table 4.7, 5.8% of respondents noted very low extent to the statement that "My SACCO has up to 5 ATM outlets in the country", 7.2% indicated low, 15.9% recorded moderate extent, 49.3% indicated high. In comparison, 21.7% said that there was a very high extent of SACCO having up to 5 ATM outlets in the country. The mean score for the variable

was 3.74, with a standard deviation of 1.06. This showed that most of the Saccos had adopted automated teller machine to improve financial performance. Ezekiel et al. (2021) found that ATMs had comprehensive coverage, which enhanced financial inclusiveness in Nigeria which has been confirmed in the current study as there is a high extent of ATM coverage among cooperative societies in Kiambu County, hence enhanced financial performance.

It was found that 1.4% of respondents indicated very low that the ATM functionality provided various services to the members, 8.7% recorded low, and 31.9% were moderate, and 43.5% showed high. In comparison, 14.5% of respondents indicated a very high extent that ATM functionality provided various services to the members. The mean score was 3.64, standard deviation of 0.83. The findings in Table 4.7 showed that 10.1% of respondents noted very low that ATMs are user-friendly to the members, 18.8% registered low, 26.1% indicated moderate extent, and 27.5% showed great extent. In comparison, 17.4% recorded a very high extent that ATMs were user-friendly to the members. The average score for the statement was 3.23, with a standard deviation of 1.23. Wagbara and Nwovuhoma (2022) reported how ATMs influenced the debit card electronic transaction skills of business students looking for banking jobs, which showed that it was easy to use among the students. The current study agrees with previous findings, as ATMs were friendlier to customers hence its high adoption thereby improving financial performance of Kiambu County Saccos.

The findings showed that ATMs had reduced costs of tellers to the SACCO where 4.3% indicated very low, 8.7% of respondents indicated low extent, 13.0% showed moderate extent, and 37.7% reported high extent. In comparison, 36.2% registered a very high extent to which ATMs had reduced costs for the tellers to the SACCOs. Based on the standard deviation of 1.11, the mean score for the statement was 3.93. Tewodros and Debela (2019) reported how ATM was one of the essential innovations within the banking institutions that has resulted in customer access without face-to-face interaction, thereby reducing the costs

to the customers as well as administrative expenses to the organizations, which this study concurs with as the cooperative societies in Kiambu County incur reduced teller costs.

Research found that 74% of respondents believed that ATM financial innovation would significantly reduce the costs of tellers, resulting in improved performance for SACCOs. The findings agree with an observation by Momanyi et al. (2023), who found that financial institutions have adopted ATMs due to their low maintenance costs and reduced administrative costs of tellers.

The study found that 15.9% of respondents indicated very low extent to the statement that “There is convenience to the members who use ATM services, 13.0% indicated low extent, 17.4% registered moderate extent, 29.0% recorded high extent while 24.6% noted very high extent that ATM provided convenience to the members who were accessing their services. The mean score was 3.33, with a standard deviation of 1.40. Qualitative findings from Respondent 1 indicated;

There is more commission due to ATM transactions..... customers can receive services near them since it is a VISA card...as well as saving time.... members do not have to congest the office, and they can get cash even in non-business hours."

However, some respondents noted that;

"My SACCO has no ATM...I have not used it."

From the findings, SACCOs have adopted ATMs to enhance their services to the members, improving convenience and reducing walking time. This results in more transaction commission, thereby leading to enhanced financial performance. Fekede (2018) reported that using ATMs has reduced members' walking time when withdrawing or making deposits with their financial institutions, which the current study concurs with as there is convenience to the members who adopt ATMs to access SACCO services.

However, there are SACCOs which still need to adopt ATM financial innovation. Kibugo and Maina (2016) showed how MFIs have adopted partnerships as a financial innovation to enhance their performance. SACCOs may need to adopt innovative partnerships that allow partners' ATMs to reach its members thereby enhancing their financial performance. The aggregate mean score for the automated teller machine was 3.5, with a standard deviation of 1.13, indicating that respondents noted to a great extent of the influence of automated teller machines on the financial performance of DT SACCOs in Kiambu County. An analysis by Gambo (2020) reported that ATM innovation influenced financial performance, which this study concurs with as the findings showed a high extent of automated teller machines in determining SACCO's performance.

The theory of diffusion of innovation by Rogers (2003) note that with relative advantage of the innovation idea, individuals may adopt the innovation thereby leading to more financial performance. The current study demonstrates the advantage that ATM innovation has brought to the organization as there is reduced administrative costs resulting to increased adoption of innovation.

4.4.2. Real-Time Gross Settlement and Financial Performance

RTGS is a financial innovation SACCOs use to disburse large-value transactions, providing real-time and instantaneous settlement (Makena et al., 2023). The study obtained feedback from respondents as indicated in Table 4.8.

Table 4.8. Real Time Gross Settlement and Financial Performance

Statement	VL	L	M	H	VH	Mean	SD
Real-time gross settlement has given the SACCO a relative advantage over peers.	15.9	13	18.8	29.0	23.2	3.30	1.38
Due to real-time gross settlement, there is enhanced efficiency and timely service to the members.	7.2	1.4	10.1	47.8	33.3	3.99	1.07
The SACCO has enhanced funds transfer due to real-time gross settlement.	1.4	2.8	8.7	62.3	24.6	3.93	0.76
Real-time gross settlement is more secure and reliable.	5.8	1.4	17.4	49.3	26.1	3.88	1.00
Loan disbursement is now effective due to real-time gross settlement.	2.9	2.9	14.5	46.4	33.3	4.04	0.930
Total	6.64	4.3	13.9	46.96	28.1	3.828	1.028

Source: Research (2024)

From the results in Table 4.8, 15.9% of respondents noted very low to the statement that "Real-time gross settlement has given my SACCO relative advantage over peers", 13% indicated low, 18.8% reported moderate extent, and 29.0% indicated high extent. In comparison, 23.2% noted a very high extent. The mean score for the statement was 3.30, with a standard deviation of 1.38. The findings agree with Lakew (2020), who found that relative advantage may be achieved through RTGS based on its benefits of efficiency, customer satisfaction and reduced teller costs.

The study established that 7.2% of respondents thought that it was very low extent to the statement that "there is enhanced efficiency and timely service to the members as a result of real-time gross settlement", 1.4% indicated low extent, 10.1% were moderate, 47.8% registered high extent. In comparison, 33.3% noted a very high extent. The mean score for the statement was 3.99, with a standard deviation of 1.07. Hillowle and Warui's (2021) study

reported how RTGS contributed to more sales and enhanced market share and profitability. The current study found efficiency gain through RTGS, which agrees with the increased profitability reported by Hillowle and Warui (2021).

The study revealed that 1.4% of respondents expressed a very low extent of agreement with the statement "My SACCO has enhanced funds transfer due to real-time gross settlement", while 2.8% indicated a low extent, 8.7% were moderate, and 62.3% noted a great extent. Additionally, 24.6% of respondents indicated a very great extent of agreement. The mean score for this statement was 3.93, with a standard deviation of 0.76. Regarding the statement "Real-time gross settlement is more secure and reliable", 5.8% of respondents indicated a very low extent of agreement, while 1.4% indicated a low extent, and 17.4% registered a moderate extent. Furthermore, 49.3% of respondents indicated a great extent of agreement, and 26.1% noted a very great extent. The mean score for this statement was 3.88, while 1.00 was the standard deviation. According to Makena (2020), RTGS reduces risk during high-value payments, which is in agreement with the current study, which indicates that RTGS enhances financial performance by improving security and reliability.

The findings presented in Table 4.8 indicate that 2.9% of respondents expressed a very low extent of agreement with the statement "Loan disbursement is now effective due to real-time gross settlement", while another 2.9% indicated a low extent. Additionally, 14.5% of respondents reported a moderate extent, and 46.4% noted a high extent. Notably, 33.3% of respondents strongly agreed that loan disbursement was effective due to real-time gross settlement. The mean score for this statement was 4.04, with a standard deviation of 0.930. The overall mean score across statements was 3.82, with a standard deviation of 1.02. This suggests that respondents perceived a high degree of influence of real-time gross settlement on the financial performance of SACCOs in Kiambu County. These findings align with Sahu and Pattnayak's (2021) revelation that RTGS facilitates faster transfer of

large sums of money, as corroborated by the effective loan disbursement observed in the current study. Qualitative findings from Respondent 3 indicated;

“There is speed in loan issuance.....RTGS has made transfer very fast and convenientcustomers can easily and quickly access loans of above 1 million through RTGS...” (Respondent 3, Management Staff).

“Saves time..... reduced movement and paperwork...enhanced quick cash disbursement...access of cash in real time.... Has reduced time waiting for cheques to mature and bouncing” (Respondent 5, Member).

However, respondent 11 and 20 indicated;

“I have not borrowed yet” (Respondent 11, Member)

“Having a Fosa account, transfers are highly discouraged, mass outflow of funds” (Respondent 20, Staff).

The findings showed that even though RTGS is widely practised among the SACCOs, cooperatives that have embraced deposit-taking with FOSA services have a bank-like service, discouraging RTGS from growing their FOSA business. Coase's (1937) transaction cost theory noted how the modern era recorded reduced transaction costs due to networked systems compared to the agricultural and industrialization era. The current study found how cooperatives SACCOs in Kiambu County can disburse large sums of money securely, effectively and efficiently at minimal cost, hence agreeing with Coase's theory.

4.4.3. Internet Banking and Financial Performance

Internet banking provides financial solutions to customers, enabling information access and electronic transactions without visiting brick-and-mortar banks, thereby enhancing financial performance (Murat & Opusunju, 2019). The researcher gathered data from respondents who were presented with a five-point Likert rating scale where 1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High where they were to give their opinion by choosing one option in each statement as indicated in Table 4.9.

Table 4.9. Internet Banking and Financial Performance.

Statement	VL	L	M	H	VH	Mean	SD
Internet banking provides members with more control and authentication of their accounts.	11.6	13.0	13.0	42.0	20.3	3.46	1.27
There is enhanced security with internet banking.	7.2	14.5	13.0	26.1	39.1	3.75	1.31
Internet banking saves time on member account inquiries.	10.1	11.6	21.7	31.9	24.6	3.49	1.26
Internet banking reduces transaction costs.	4.3	5.8	24.6	34.8	30.4	3.81	1.07
There is a maximization of loan processing with Internet banking.	7.2	5.8	33.3	27.5	26.1	3.59	1.15
Total	8.08	10.14	21.12	32.46	28.1	3.62	1.21

Source: Research (2024)

According to the findings presented in Table 4.9, 11.6% of respondents expressed a very low extent of agreement with the statement "Internet banking provides the members with more control and authentication of their account", while 13.0% indicated a low extent. Additionally, 13.0% of respondents reported a moderate extent, and 42.0% noted a high extent. Moreover, 20.3% of respondents strongly agreed with the statement, indicating a very high extent of agreement. The mean score for this statement was 3.46, with a standard deviation of 1.27. The study conducted by Noah et al. (2019) reported that Internet banking provided customers with a sense of security. The current study's findings, which indicate customer authentication control, align with these previous findings, suggesting that customers feel a sense of control and security when utilizing Internet banking.

It was found that 7.2% of respondents noted a very low extent of enhanced security with Internet banking, 14.5% indicated a low extent, 13.0% registered a moderate extent, and

39.1% showed a high extent. In comparison, 3.75% noted a very high extent, (mean score= 3.75, SD=1.31). Mutisya (2019) found that there was insecurity in internet banking due to fraud. The current findings demonstrate that despite internet insecurity, SACCOs in Kiambu County have implemented effective cyber security measures in their internet banking to reduce any negative impact it may have on financial performance, hence agreeing with the study on cyber security threats to internet banking.

It was revealed that 10.1% of respondents recorded a very low level, 11.6% noted an extremely low level, 21.7% reported moderate levels and 31.9% recorded high levels, internet banking saves time for members' account inquiries. In comparison, 24.6% of respondents indicated a very high extent of agreement with the statement, with a mean score of 3.49 and a standard deviation of 1.26. The study found that there is reduced transaction cost with Internet banking where 4.3% of respondents indicated a very low extent, 5.8% registered a low extent, 24.6% of respondents noted a moderate extent, and 34.8% showed a high extent. In comparison, 30.4% showed a very high extent. The mean score for the statement was 3.81, standard deviation of 1.07. Noah et al. (2019) reported how internet banking reduced transaction costs with a mean of 4.33 and a standard deviation of 0.909, which agrees with the current study's findings.

The study found that there is maximization of loan processing with Internet banking where 7.2% of respondents indicated a very low extent, 5.8% recorded a low extent, 33.3% of respondents showed a moderate extent, and 27.5% indicated a high extent. In comparison, 26.1% of respondents noted a very high extent to the statement. The mean score for the statement was 3.59, with a standard deviation of 1.15. This aligns with the findings of Iyke-Ofoedu et al. (2022), who reported that Internet banking led to improved access to information, facilitating faster decision-making. These findings are consistent with the current study's results, which indicate that timely information on customer account status

maximizes loan processing, enhances purchase decision-making, and improves the loan application process.

Druhov et al.'s (2019) observation on financial innovation of the European banking system found that banks were able to use Internet banking to reach their customers where 86% were able to access mortgages, 62% used Internet banking to make loan applications, 68% made remittance payment while 60% opened their account through internet banking. This study agrees with Druhov et al. (2019) findings as there is maximization of loan processing due to Internet banking as members have access to all their account information thereby enhancing decision-making for faster loan processing hence improved financial performance.

It was found that internet banking had a significant impact on financial performance of SACCOs in Kiambu County, with a mean score of 3.62 and a standard deviation of 1.21. Jeruto et al. (2018) study found that Internet banking influenced corporate performance, which concurs with the current study.

Qualitative findings from Respondent 19 showed that:

"Members can apply more loans as they can see their statements of deposits and the loans they have applied before.... has created a mechanism of quick access to information.... We have short-term loans with high uptake through this platform with high-interest rates.... There is timely internal transfers, confirmation of account holders and payment of statutory deductions on time" (Respondent 19, Staff)

While a member Respondent 30 noted,

"I can access my balance at any time. There is quick access to SACCO services.... timely loan disbursement less human interaction..., and access to funds from anywhere.... It's efficient and effective in terms of reliability... It reduces the time for processing and funds. I.e., you only need to scan a form and forward it for processing, no travelling cost involved, and no postage" (Respondent 30, Member).

The findings indicated that SACCOs in Kiambu County have benefited from Internet banking as there is an increased uptake of loans. This is evidenced in faster decision-making as a result of account information.

Tornatzy and Klein (1982) observation of diffusion of innovation theory noted that one of the success factors to enhanced adoption of innovation is compatibility with values and norms of customers and organizations. The findings indicate how internet banking has provided more access to information customers needed to make informed purchase decisions while also giving customers control of their account. This agrees with Tornatzy and Klein (1982) assertion that innovations that are compatible with what customers demand are likely to experience increased adoption thereby leading to enhanced financial performance. However, Ventkatesh and Davis (2002) introduction of technology adoption model 2 noted that where customers perceive innovation to present potential insecurity, it may reduce trust leading to reduced adoption. The results showed that internet banking has potential threats to security which may limit its adoption by customers hence reduced financial performance.

4.4.4. Mobile Banking and Financial Performance

Mobile banking is a financial innovation that allows customers to access financial services through mobile devices (Njoroge & Nasieku, 2023). The study collected responses using a questionnaire instrument developed using a five-point rating scale: 1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High. Respondents were required to choose one from the options provided in each statement. Table 4.10 shows the findings.

Table 4.10. Mobile Banking and Financial Performance

Statement	VL	H	M	H	VH	Mean	SD
Members can bank with the SACCO more due to mobile banking's ease of interaction.	7.2	5.8	33.3	27.5	26.1	3.59	1.15
There is enhanced transaction due to the ease of operation of mobile banking.	0	5.8	15.9	43.5	34.8	4.07	0.86
Mobile banking is more convenient for members.	7.2	11.6	21.7	29.0	30.4	3.64	1.23
The mobile banking is readily available to the members.	4.3	7.2	15.9	33.3	39.1	3.96	1.11
Mobile banking enhances the member experience.	15.9	13.0	26.1	27.5	17.4	3.17	1.31
Total	6.92	8.68	22.58	32.16	29.56	3.67	1.13

Source: Research (2024)

From Table 4.10, it was found that 7.2% of respondents registered a very low extent that members can bank with the SACCO more due to mobile banking ease of interaction, 5.8% indicated a low extent, 33.3% moderate extent, 27.5% of respondents showed high extent. In comparison, 26.1% of respondents noted a very high extent to the statement. The mean score for this statement was 3.59, with a standard deviation of 1.15. Maina and Mungai (2019) reported how mobile banking resulted in a high number of withdrawals as a result of convenience and flexibility, which agrees with the current study results that the ease of interaction has enhanced banking with cooperative societies in Kiambu County.

The 33.3% of respondents indicating a moderate extent suggests that SACCOs in Kiambu have not fully embraced mobile banking hence agree with Chepkorir et al. (2022), who reported that 45% of respondents disagreed with the preference of SACCOs for mobile banking due to its features. Additionally, 40% of respondents disagreed with the notion that SACCOs frequently utilize mobile banking in Kericho County.

The results demonstrated that no respondent recorded very low extent to the statement "there is enhanced transaction due to ease of operation of the mobile banking", 5.8% of respondents were of low extent, and 15.9% indicated moderate extent, 43.5% of respondents showed high extent. In comparison, 34.8% of respondents indicated a very high extent to the statement (Mean=4.07, SD=0.86) which showed mobile banking's ease of operations enhances transactions by the members, which is in line with the findings of Mikae and Mogwambo (2022), who reported that mobile banking enhanced their transactions, where they were able to regularly deposit and withdraw without travelling to physical offices. This showed that mobile banking was easy to operate with enhanced regular transactions, enabling the members to transact more using their mobile devices, hence agreeing with the current findings.

The study found that mobile banking was more convenient to the members where 7.2% of respondents noted a very low extent to the statement, 11.6% of respondents indicated a low extent, and 21.7% were of a moderate extent, 29.0% indicated a high extent. In comparison, 30.4% of respondents registered a very high extent to the statement. Scores ranged from 3.64 to 1.23, with a mean of 3.64. The study's results concur with the findings of Omondi (2015), who reported that mobile banking had more reliability and convenience, which enhanced customer satisfaction.

The findings indicated that mobile banking was readily available to the members where 4.3% of respondents indicated a very low extent, 7.2% of respondents noted a low extent, and 15.9% of respondents considered the statement to be a moderate extent, 33.3% of respondents indicated a high extent while 39.1% were of very high extent. The mean score for the statement was 3.96, with a standard deviation of 1.11. This finding is consistent with the results of Njoroge and Nasieku (2023), who highlighted how mobile banking has expanded customer reach to previously unbanked populations, consequently enhancing financial

performance. Furthermore, Alqiwan et al. (2017) emphasized the importance of customer motivation in successfully implementing mobile money. Therefore, SACCO management should consider meeting customer needs to enhance adoption and reach, thereby improving financial performance.

It was established that mobile banking enhances member experience where 15.9% of the respondents indicated a very low extent, 13.0% noted a low extent, 26.1% reported a moderate extent, and 27.5% noted a high extent. In comparison, 17.4% of respondents showed a very high extent to the statement. There was a standard deviation of 1.31 with a mean score of 3.17.

Qualitative findings from Respondent 16 showed that:

"There is members satisfaction that makes them do more business with the SACCO.... there is commission due to transaction.... reduced administrative costs to the SACCO.... Members can make payments and monitor their accounts often.... Increased number of transactions, repayments and enhanced service delivery through mobile banking" (Respondent 16, Management Staff)

While observing a member, Respondent 15 indicated:

"Has brought about access to one's account reducing on time to visit the office.... services in your hands wherever you are and whenever you need.... ease of use and accessibility increasing convenience in monetary based transactions ...has enabled me to track my transactions hence more transparency (Respondent 15, Member).

The findings show that mobile banking improves customer experience and enhancing customer satisfaction. Mobile banking also reduces administrative costs incurred by the SACCOs, ultimately enhancing their performance. Members can conveniently access services anywhere and view their statements, increasing SACCO's transparency. Rono and Munene (2023) reported that 33% of respondents agreed that mobile banking enhanced 24/7 access to financial services to the members of Nakuru County SACCOs, hence agreeing with

the current study findings that there is enhanced member experience as a result of mobile banking for members of SACCOs based in Kiambu County. This demonstrates that as SACCOs increase their financial innovation in mobile banking, it will be able to provide more customer experience thereby retaining its customers and enhancing financial performance. The aggregate mean score for mobile banking was 3.67, with a standard deviation of 1.13. Chepkorir et al. (2022) established that mobile banking influenced financial performance of Kericho County SACCOs, where the mean score was 4.23 with a standard deviation of 0.66. The study findings show that mobile banking has a moderate influence on the financial performance of SACCOs in Kiambu County. Al-Jabri and Sohail (2012) on diffusion of innovation reported how mobile banking was highly adopted due to its perceived relative advantage. The current study revealed that there is increased convenience and access to SACCO products which add more value to the customer thus resulting to high adoption.

4.4.5. SACCO Size, Financial Innovation and Financial Performance

Firm size is an organization's total assets and sales (Akinyi & Oima, 2019). SACCOs are categorized based on the total assets of large, medium, and small-tier SACCOs. The study analyzed descriptive statistics for SACCO's size as presented in Table 4.11.

Table 4.11. SACCO Size, Financial Innovation and Financial Performance.

Statement	VL	H	M	H	VH	Mean	SD
Large-tier SACCOs are more innovative	-	2.9	23.2	34.8	39.1	4.10	0.86
There is high financial performance among large-tier SACCOs.	-	2.9	20.3	33.3	43.5	4.17	0.85
Medium-tier SACCOs are innovative	-	14.5	31.9	39.1	14.5	3.54	0.91
The financial performance of medium-tier SACCOs is high.	-	11.6	40.6	31.9	15.9	3.52	0.90
Small-tier SACCOs are innovative	1.4	20.3	39.1	21.7	17.4	3.33	1.03
Small-tier SACCOs have achieved high financial performance.	2.9	24.6	34.8	1.4	13.0	3.29	1.16
Total	0.72	12.80	31.65	27.03	23.90	3.66	0.95

Source: Research (2024)

From Table 4.11, the study established that 2.9% of respondents indicated to a low extent that large-tier SACCOs were innovative, 23.2% indicated a moderate extent, 34.8% noted a great extent, and 39.1% noted a very great extent. The mean score for the statement was 4.10, with a standard deviation of 0.86. Maina et al. (2020) reported how SACCOs had embraced innovation by digitalizing their services and introducing new products to meet customer needs, which agrees with the study findings that SACCOs in Kiambu County are innovative.

The study established that large-tier SACCOs had a high financial performance, where 2.9% noted low extent, 20.3% were moderate, and 33.3% indicated a high extent, and 43.5% were of a very high extent. The mean score awarded to the statement was 4.17, with a standard deviation of 0.85. SASRA (2020) reported the high performance of large-tier SACCOs, leading to faster growth. This study has confirmed that large-tier SACCOs exhibit high financial performance, confirming previous SASRA findings (2020).

The study revealed that medium-tier SACCOs are innovative, where 14.5% of respondents noted low extent, 31.9% indicated moderate extent, 39.1% were in the category of great extent, and 14.5% indicated very great extent. The mean score for the statement was 3.54, with a standard deviation of 0.91. The findings showed that medium-tier SACCOs had a high financial performance, with 11.6% of respondents noting low extent, 40.6% indicating moderate extent, 31.9% great extent and 15.9% of respondents noting very great extent. The mean score was 3.52, standard deviation of 0.90.

It was found that small-tier SACCOs are innovative, with 1.4% of respondents noting very low extent, 20.3% indicating low extent, 39.1% moderate extent, and 21.7% great extent. In comparison, 17.4% of respondents indicated a great extent, with a mean score of 3.33 and a standard deviation of 1.03. The results of the study demonstrated that small-tier SACCOs had achieved high financial performance, with 2.9% of respondents indicating a very low extent, 24.6% low extent, 34.8% moderate extent, 1.4% great extent, while 13.0% noted a very great extent with a mean score of 3.29, the standard deviation of 1.16. The aggregate mean score for SACCO size was 3.66, with a standard deviation of 0.95, which showed that SACCO size had a moderate influence on the financial innovation and financial performance of SACCOs in Kiambu County.

4.5. Inferential Statistics

4.5.1. Correlation Analysis

The study used the Karl Pearson correlation coefficient to analyze the degree and direction of the relationship between financial innovation and financial performance. Karl Pearson was adopted in the study based on its wide application in academic research (Kafle, 2019). Table 4.12 presents the findings.

Table 4.12. Relationship Between Financial Innovation and Financial performance

		ATM	RTGS	Internet banking	Mobile Banking	Financial performance
ATM	Pearson Correlation	1				
	Sig. (2-tailed)					
RTGS	N	69				
	Pearson Correlation	0.073	1			
	Sig. (2-tailed)	0.548				
Internet Banking	N	69	69			
	Pearson Correlation	.345**	0.304	1		
	Sig. (2-tailed)	0.004	0.00			
Mobile Banking	N	69	69	69		
	Pearson Correlation	.594**	0.473	.620**	1	
	Sig. (2-tailed)	0.000	0.000	0.000		
Financial performance	N	69	69	69	69	
	Pearson Correlation	.609**	0.505**	.618**	.722**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	69	69	69	69	69
**. Correlation is significant at the 0.01 level (2-tailed).						

From the findings in Table 4.12, the Automated Teller Machine had a positive, strong and significant relationship with financial performance where the Pearson correlation coefficient was 0.609, p value < 0.05 . Even though Gambo (2020) study on technological innovation targeting Nigeria banks established a positive and weak correlation coefficient ($r=0.433$), this study reported a positive moderate relationship ($r=0.609$) between the study variables. Real-time gross settlement had positive and moderate correlation at 0.505, p value < 0.05 . Makena et al. (2023), on MFI financial innovation and performance, found a correlation coefficient of 0.635 and a p -value of 0.000. The current study considered SACCOs in Kiambu County and found a moderate correlation of 0.505 and a p -value of 0.05. However, the study showed a positive relationship between financial innovation and financial performance, agreeing with previous findings by Makena et al. (2023).

Internet banking had a positive, strong and significant correlation with financial performance, with a correlation value of 0.635 and a p -value < 0.05 . Jerono et al. (2018) found that Internet banking correlated with 0.781, with a p -value of 0.000. Shisia et al. (2014) reported a positive and strong correlation between strategic innovation and the performance of public universities in Kenya. From the previous results, the study has demonstrated that Internet banking has a strong and positive relationship, hence agreeing with Jerono et al. (2018).

Mobile banking showed a robust, positive and significant relationship with financial performance where correlation values were 0.722 and p value < 0.05 . Rono and Munene (2023) found that the mobile banking correlation coefficient was 0.817, which showed a solid and positive relationship with financial performance, while Mogwambo and Mikae (2022) reported a 0.533 correlation coefficient between mobile banking and the performance of Kisii County SACCOs. Kalemis (2022) notes that correlation measures the strength of the relationship

between two variables, where values range between -1.0 and 1.0, with positive values signifying the positive direction of the relationship and vice versa. Senthilnathan (2019) added that for interpretation of the correlation coefficient, values within the range of 0.2-0.3 may be considered weak correlations; 0.4-0.5 are moderate correlations; coefficient values between 0.6-0.7 are strong correlations, and above 0.7 are robust correlations. From the findings, mobile banking achieved a strong and positive correlation, 0.722, $p < 0.5$, which showed that mobile banking had a solid and positive relationship with the financial performance of SACCOs in Kiambu County.

4.5.2. Direct Effect Analysis

The study analyzed how financial innovation directly affected SACCOs' financial performance in Kiambu County. A model summary was generated using R, R Square, Adjusted R Square, and the Standard Error of the Estimate, with findings in Table 4.13.

Table 4.13. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792 ^a	0.628	0.604	0.50894

a. Predictors: (Constant), Mobile banking, RTGS, ATM, Internet banking

Source: Research (2024)

From Table 4.13, the R-value of 0.792 represents the multiple correlation coefficient, indicating the model's quality in predicting financial performance. The R Square value of 0.628, also known as the coefficient of determination, illustrates the proportion of change in the dependent variable (financial performance) that can be explained by the independent variables. In this instance, financial innovation accounts for up to 62.8% of the variance in financial performance, while the remaining 37.2% is attributed to factors outside the scope of the study. The Adjusted R Square value of 0.604 reflects the change in the dependent

variable after adjustments are made in the model, providing a more accurate depiction of the proportion (Dhakal, 2018).

4.5.3. Analysis of Variance

The study used F statistics to analyse whether the model was a good fit for the data to be used in the analysis. The findings were indicated in Table 4.14.

Table 4.14. Analysis of Variance

Model	Sum of df df Squares	Mean Square	F	Sig.
1 Regression	27.946 4	6.986	26.972	.000 ^b
. Residual	16.577 64	0.259		
Total	44.523 68			

a. Dependent Variable: Financial performance

b. Predictors: (Constant), Mobile banking, RTGS, ATM, Internet Banking

Source: Research (2024).

From Table 4.14, $F(4,64) = 26.972$, $p\text{ value} < 0.000$, which indicated that the model was a good fit, evidenced by the $p\text{-value} < 0.05$.

4.5.4. Regression Coefficient Direct Effect Analysis

The study used multiple regression to analyze the contribution of each independent variable to financial performance, as indicated in Table 4.15.

Table 4.15. Regression Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-0.037	0.496		-0.075	0.941
ATM	0.253	0.089	0.274	2.856	0.006
RTGS	0.081	0.086	0.074	0.941	0.350
Internet banking	0.308	0.100	0.306	3.086	0.003
Mobile banking	0.378	0.114	0.376	3.313	0.002

a. Dependent Variable: Financial performance

Source: Research (2024)

From the results presented in Table 4.15, holding all other variables constant, financial performance is expected to decrease by -0.037. However, the introduction of ATM innovation is predicted to increase financial performance by 0.253, with a p-value of 0.006. Previous studies support these findings; for instance, Gambo (2020) reported ATM with a β coefficient of 0.409 and a p-value of 0.000. Additionally, Anusi and Igbodika (2019) demonstrated a positive and significant effect of ATMs on the performance of financial institutions in Nigeria. The presentation in Table 4.15 indicates that the inclusion of RTGS (Real-Time Gross Settlement) is associated with an increase in financial performance by 0.081, with a p-value of 0.350. This finding aligns with the study conducted by Makena et al. (2023) on microfinance institutions, which reported that RTGS had a significant and positive effect on financial performance, with a β coefficient of 0.113 and a p-value of 0.004. Therefore, there is concurrence between the current study's findings and previous research, suggesting that RTGS has a beneficial impact on the financial performance of SACCOs in Kiambu.

County. The findings indicate that an increase in Internet banking is associated with a rise in financial performance by 0.308, with a p-value of 0.003. This aligns with Jeruto et al., (2018) who reported a positive and significant effect on corporate performance. Similarly, an increase in mobile banking leads to a rise in financial performance thereby confirming Chepkorir et al., (2022) findings that mobile banking had a significant and positive effect on the financial performance of SACCOs in Kericho County.

However, the study found that SACCO size did not significantly affect financial performance. An increase in SACCO size resulted in a 0.58 rise in financial performance with a p-value of 0.485, which is above 0.05. Therefore, SACCO size did not have a direct impact on financial performance.

Jensen and Meckling (1976) theory note that management have been given directives to act in the interest of the principal through their decisions and activities. The findings indicate that management decision making of financial innovation strategies have enhanced financial performance which may benefit the principal through increased returns. The findings have showed that mobile banking, ATM and internet banking are significant to financial performance hence effective management strategies that promote the interest of the principal.

4.5.5. Moderation Effect Analysis

The study analyzed the moderating effect using Baron and Kenny's two-step approach. In the first step, the researcher used the moderating variable SACCO's size as the independent variable. In contrast, in the second step, a product of the moderating variable with all four independent variables was considered as shown in Table 4.16 and Table 4.17.

Table 4.16. SACCO Size as an Independent Variable of Financial performance

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
1 (Constant)	-0.244	0.578		-0.422	0.674
ATM	0.266	0.091	0.287	2.927	0.005
RTGS	0.083	0.086	0.076	0.957	0.342
Internet Banking	0.310	0.100	0.308	3.092	0.003
Mobile banking	0.364	0.117	0.362	3.119	0.003
SACCO Size	0.058	0.082	0.055	0.703	0.485

a. Dependent Variable: Financial performance

Source: Research (2024)

The findings in Table 4.15 showed that when SACCO size was introduced in the model as an independent variable, there was no significant effect on financial performance evidenced in $\beta=0.058$, p-value =0.485. However, ATMs, Internet banking and mobile banking significantly affected financial performance as independent variables. RTGS had no significant effect as the predictor variable for financial performance. The second step was based on the interaction effect of SACCO size with the independent variable to determine its moderating effect on the relationship between financial innovation and financial performance. Table 4.16 shows the findings.

Table 4.17. SACCO Size as a Moderating Variable

Coefficients						
		Unstandardized Coefficient		Standardized Coefficient		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.559	.332		7.717	.000
	ATM	.081	.035	.395	2.294	.025
	RTGS	-.058	.024	-.296	-2.474	.016
	Internet banking	.024	.033	.120	.707	.482
	Mobile Banking	.046	.041	.240	1.109	.271
a. Dependent Variable: Financial performance						

Source: Research (2024)

From the results in Table 4.17, financial performance would rise by 2.559, a p-value of 0.000, when all factors remain constant. However, an introduction of interaction between ATM and SACCO size on financial performance would lead to an increase of 0.81, with a p-value of 0.025; hence, it was significant. Nderitu et al. (2020) found that SACCO size had a significant effect as a moderating variable between financial innovation and financial stability, which the current study confirms.

When RTGS and SACCO-size products are combined, financial performance reduces by -0.058, with a p-value of 0.016. Gachenga et al. (2023) found that the coefficient was reduced when SACCO size was introduced to institutional lending. This has been confirmed in the current study, where the RTGS coefficient is reduced.

Internet banking and SACCO size would increase financial performance by 0.024, p value of 0.482. In contrast, a product of mobile banking and SACCO would increase financial performance by 0.46, with a value of 0.271. The study by Maina et al. (2020) reported an

insignificant moderation effect when financial innovation interacted with SACCO size, which agrees with the current findings.

CHAPTER FIVE
DISCUSSION OF FINDINGS, CONCLUSIONS
AND RECOMMENDATIONS

5.1. Introduction

This chapter offers a condensed summary of the study's findings, emphasizing key conclusions drawn from the research. It discusses the implications of these findings and provides recommendations for policy, practice, and future research endeavors.

5.2. Summary of Findings

5.2.2. Automated Teller Machine and Financial performance

The primary objective of the study was to assess the impact of mobile banking on the financial performance of SACCOs in Kiambu County. The findings indicated that SACCOs in the region operate up to five ATM outlets, offering diverse services to their members. Moreover, the results highlighted a decrease in teller costs attributed to ATM financial innovation within SACCOs. Additionally, ATM services were perceived as user-friendly and convenient by members, leading to heightened satisfaction. Correlation analysis underscored a positive and robust relationship between ATM usage and financial performance, with ATM services exerting a statistically significant positive influence on the financial performance of SACCOs in Kiambu County. Furthermore, when examining ATM usage in conjunction with the moderating variable of SACCO size, the findings suggested that SACCO size had a moderating impact.

5.2.2. Real-Time Gross Settlement and Financial performance

The second objective of the study focused on determining the impact of online banking on the financial performance of SACCOs in Kiambu County. The findings revealed that Real-Time Gross Settlement (RTGS) has provided SACCOs with a competitive edge over their

counterparts by facilitating increased loan processing efficiency and timely service delivery to members. Additionally, the results illustrated how RTGS has improved SACCO funds transfer operations through its real-time nature, enhanced security measures, and efficient fund disbursement mechanisms. Pearson correlation analysis indicated a positive and moderate relationship, while regression analysis results suggested that RTGS had a positive but statistically insignificant effect on financial performance. However, the moderation analysis revealed a significant result, indicating that financial performance would significantly improve when SACCO size is considered alongside RTGS implementation.

5.2.3. Internet Banking and Financial Performance

The third objective of the study aimed to ascertain the impact of Internet banking on the financial performance of SACCOs in Kiambu County. The study's findings demonstrated that Internet banking provided members with increased control and authentication over their accounts. SACCOs also implemented enhanced security features for Internet banking, leading to time savings for members, particularly during account inquiries. Moreover, Internet banking was associated with reduced transaction costs, and SACCOs experienced improved loan processing as members had access to necessary information to support their decision-making process. Karl Pearson's correlation analysis revealed a strong relationship between Internet banking and financial performance. Additionally, regression analysis indicated a positive and significant effect of Internet banking on financial performance. However, the interaction effect between Internet banking and SACCO size did not exhibit any significant effect.

5.2.4. Mobile Banking and Financial performance

The fourth objective of the study aimed to explore the impact of mobile banking on the financial performance of SACCOs in Kiambu County. The results revealed that the introduction of mobile banking innovation enabled members to conduct more banking

activities with the SACCO, consequently leading to increased transactions due to the ease of use associated with mobile banking. Furthermore, the findings indicated that mobile banking offered convenience to members by allowing accessibility anywhere and anytime, contributing to an overall improved user experience. Pearson correlation analysis showed a positive and strong relationship between mobile banking and financial performance. Interestingly, the findings highlighted SACCO size as a significant moderating variable in the relationship between financial innovation and financial performance, with ATM and RTGS being considered alongside the moderating variable. However, a different outcome was observed when Internet and mobile banking were introduced in interaction with the moderating variable, suggesting varied effects based on the type of financial innovation being examined.

5.2.5. SACCO Size, Financial Innovation and Financial performance

The study revealed that large-tier SACCOs demonstrate a high level of innovation, as evidenced by their superior financial performance while medium and small-tier SACCOs were also found to be innovative, their performance did not reach the same level as that of the large-tier SACCOs.

5.3. Conclusion

Concerning the first objective on the effect of ATMs on financial performance, the study concludes that SACCOs in Kiambu County operate up to five ATMs, offering financial services to their members. The research concludes that ATM innovation has introduced various services benefiting the members, thereby enhancing their satisfaction through increased convenience. Furthermore, the study indicates that SACCOs have experienced reduced administrative costs due to ATM innovation, leading to a decrease in the number of tellers required hence more financial performance. Overall, the findings suggest that ATM innovation positively and significantly impacts financial performance. Additionally, when

ATM usage is considered alongside SACCO size, there is an observable enhancement in SACCO financial performance.

The conclusion drawn from the second objective indicates that SACCOs have experienced an improved relative advantage as a result of Real-Time Gross Settlement (RTGS). This enhancement in efficiency and timely service provision in real-time has contributed to the improvement of SACCO financial performance. Additionally, the study concludes that SACCOs have witnessed enhanced funds transfers facilitated by RTGS, which offers increased security and reliability. Furthermore, the conclusion suggests that RTGS enables effective disbursement of funds, thereby enhancing the financial performance of SACCOs in Kiambu County.

Regarding the third objective, the study concludes that internet banking has offered SACCO members increased authentication and control over their accounts, enabling them to access vital information for decision-making purposes. Additionally, the study makes conclusion that enhanced security features of Internet banking have bolstered members' confidence in online transactions, leading to optimized loan processing. Furthermore, it is concluded that Internet banking has reduced the time required for account inquiries, as members can self-inquire without the need for phone calls or physical visits to SACCO offices. Consequently, the study asserts that this reduction in transaction cost has contributed to improved performance for SACCOs.

Regarding the fourth objective, the study concludes that mobile banking facilitates increased transactions with members due to its user-friendly nature, making transactions easier to perform. Additionally, it is concluded that mobile banking offers greater convenience to members, as it can be utilized anywhere and at any time. Moreover, it is concluded that mobile banking is readily accessible to members, thereby enhancing their overall experience in accessing SACCO services. Furthermore, the study concludes that an increase in mobile

banking usage correlates positively and significantly with the financial performance of SACCOs in Kiambu County. Conclusion is made that mobile banking usage, when combined with SACCO size, does not significantly enhance financial performance, as the interaction effect did not yield significant results.

Regarding the fifth objective of establishing how SACCO's size moderates the relationship between financial innovation and financial performance, the study concludes that large-tier SACCOs demonstrate higher levels of innovation, which facilitates easier improvement in their performance. Additionally, the study finds that medium- and small-tier SACCOs exhibit innovation, albeit at a lower level compared to large-tier SACCOs.

5.4. Recommendation for Policy and Practice

In relation to the first objective of ATM financial innovation, the study proposes several recommendations for SACCOs to consider. Firstly, SACCOs should explore formation of partnerships with various organizations such as cooperative bank to improve the availability and accessibility of ATM outlets across the country. Additionally, enhancing ATM maintenance procedures is advised to ensure consistent service provision, thereby reducing downtime and cash out occurrences that may disrupt ATM services. Moreover, the study recommends expanding the ATM network of SACCOs, as this has been shown to decrease teller costs and other associated administrative expenses. Implementing these recommendations is expected to contribute to enhancing the overall financial performance of SACCOs in Kiambu County.

The second objective was based on RTGS on financial performance, the study suggests that SACCOs should incorporate more RTGS services as it enhances the relative advantage of SACCOs, which is crucial for improving performance. This includes prioritizing efficiency and timely service delivery to increase member satisfaction and ultimately enhance financial performance. Additionally, the study recommends that SACCOs should leverage RTGS to

improve profitability, given its capability for real-time transfer of large sums of money. However, it emphasizes the importance of enhancing the security of transactions to mitigate the risk of loss during fund transfers, thereby increasing member confidence in SACCO operations and maximizing loan processing efficiency.

The third objective focused on Internet banking and its influence on financial performance, the study provides several recommendations for SACCOs to consider. Firstly, it suggests allocating more resources to enhance Internet banking security, given that it contains member information that could be exploited by fraudsters. Strengthening security measures will provide members with greater control and authentication, thereby reducing cyber risks that could result in financial and data losses, erode member confidence, and damage the reputation of SACCOs. Additionally, the study recommends implementing comprehensive member education programs on cybersecurity issues to empower them with the necessary skills to conduct secure transactions and protect their account information online. Furthermore, it suggests improving Internet banking services by introducing new innovative features to expand financial solutions available to members online thereby improve financial performance.

In relation to the fourth objective on mobile banking, the study offers recommendations for SACCOs to consider by enhancing mobile banking services to cater to diverse member needs. This includes maintaining and updating mobile banking USSD and applications to incorporate new features that align with the evolving requirements of modern members. Additionally, implementing regular updates will not only ensure the compatibility of mobile applications with new technologies but also enhance their performance, thereby improving the overall member experience. These measures are expected to contribute to the growth and sustainability of SACCOs by meeting the changing demands.

5.4.1. Recommendation for Further Research

Future research endeavors could explore non-withdrawable deposit-taking SACCOs in the same region or even delve into other industries beyond SACCOs. While this study examined financial innovation, financial performance, and SACCO size as moderating variables, future investigations may incorporate additional moderating variables, including regulatory policies and macro environmental factors, to gain a more comprehensive understanding of their influence. Furthermore, while this study involved both employees and members, future studies might opt for a more focused approach by analyzing either employees or members exclusively to facilitate more in-depth analysis. Additionally, considering the geographical context, future studies could explore different locations such as Murang'a, Nyeri, or Nairobi to assess potential variations in findings across diverse regions.

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APPENDICES

APPENDIX III: QUESTIONNAIRE

SECTION A: GENERAL INFORMATION

1. Kindly indicate your gender

Male [] Female []

2. Please indicate your age bracket

Below 25 years []

26-30 years []

31-35 years []

36-40 years []

Over 40 years []

3. Kindly share your highest educational level

Certificate []

Diploma []

Bachelor []

Post-Graduate []

4. How many years have you been with the SACCO

Below 5 years []

6-10 years []

11-15 years []

Over 16 years []

5. Indicate your association with the SACCO

Member []

Employee []

6. Among the following financial innovations, which ones has the SACCOs adopted?(Tick appropriately)

Kind of innovation	Year of adoption		
	5 yrs ago	10 yrs ago	Above 10 yrs ago
Real Time Gross Settlement			
Mobile Banking			
Automated teller machine (ATMs)			
Online Banking			

SECTION B: AUTOMATED TELLER MACHINE

7. Kindly show your agreement according to the guiding scale; (1= Very low, 2- Low, 3-Moderate, 4- High, 5-Very High)

Automated teller machine	1	2	3	4	5
My SACCO has up 5 ATM outlets in the country.					
The ATM functionality provide variety of services to the members.					
The ATMs are user friendly to the members.					
ATMs have reduced costs of tellers to the SACCO.					
There is convenience to the members who use ATM services.					

Please explain how ATM innovation has improved the performance of your business.

SECTION C: REAL TIME GROSS SETTLEMENT

Real time gross settlement.	1-VL	2-L	3-M	4-H	5-VH
Real time gross settlement has given my SACCO relative advantage over peers.					
There is enhanced efficiency and timely service to the members as a result of real time gross settlement.					
My SACCO has enhanced funds transfer.					
RTGS is more secure and reliable.					
Loan disbursement is now effective due to real time gross settlement.					

Please explain in detail how real time gross settlement has improved performance of your SACCO.

SECTION D: INTERNET BANKING

Internet banking	1=VL	2=L	3=M	4=H	5=VH
Internet banking provides the members with more control and authentication of their account.					
There is enhanced security with internet banking.					
Internet banking saves time on member account inquiries.					
There is reduced transaction cost with internet banking.					
There is maximization of loan processing with internet banking.					

Kindly elaborate on how internet banking has enhanced the performance of your SACCO.

SECTION E: MOBILE BANKING

Mobile banking	1=VL	2=L	3=M	4=H	5=VH
Members can bank with the SACCO more due to mobile banking ease of interaction.					
There is enhanced transaction due to ease of operation of the mobile banking.					
Mobile banking is more convenient to the members.					
The mobile banking is readily available to the members.					
There is enhanced member experience due to mobile banking.					

Please indicate how mobile banking has enhanced the performance of your business.

SECTION F: FINANCIAL PERFORMANCE

Financial performance	1=VL	2=L	3=M	4=H	5=VH
My SACCO provides quality services to the members.					
My SACCO is efficient in the provision of services.					
My SACCO has achieved profitability due to financial innovation.					
There is reduced transaction costs due to financial innovation					
I am satisfied with my SACCO performance.					

Kindly explain the performance of your SACCO due to financial innovation.

SECTION G: SACCO SIZE

SACCO Size	1=VL	2=L	3=M	4=H	5=VH
Large tier SACCOs are more innovative					
There is high financial performance among large tier SACCOs					
Medium tier SACCOs are innovative					
The financial performance of medium tier SACCOs is high.					
Small tier SACCOs are innovative					
Small tier SACCOs have achieved high financial performance.					

Kindly explain on how the size of your SACCO determines financial innovation and financial performance.

Thank you.

APPENDIX IV: LIST OF SACCOs IN KIAMBU COUNTY

1. Fariji SACCO Society Ltd
2. GDC SACCO Society Ltd
3. Good Faith SACCO Society Ltd
4. Jacaranda SACCO Society Ltd
5. Joinas SACCO Society Ltd
6. Ammar SACCO Society Ltd
7. Azima SACCO Society Ltd
8. Dimkes DT SACCO Society Ltd
9. K-Unity SACCO Society Ltd
10. NRS SACCO Society Ltd
11. Orient SACCO Society Ltd
12. TAI SACCO Society Ltd
13. Besco Regulated Non- WDT-SACCO
14. Brookside Regulated Non-WDT-SACCO

Source; SASRA (2022)