EFFECT OF PROCESS INNOVATIONS ON FINANCIAL PERFORMANCE OF MICROFINANCE INSTITUTIONS IN NAIROBI COUNTY, KENYA

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A Thesis Submitted to the School of Business and Economics in Partial Fulfillment of the Requirements for the Conferment of the Degree of Masters in Finance and Investment of Kenya Methodist University

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DECLARATION AND RECOMMENDATION

Declaration

I declare that this thesis is my original work and has not been presented in any other university.

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Recommendation

This thesis has been submitted to the university panel with our recommendation as university supervisors.

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DEDICATION

Dedicated to my husband Peter Nyaga and my children Mark, Michael and Martin. To my

dear parents Justus Mwirichia and Veronica Mwirichia for the financial and moral support.

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ABSTRACT

Micro-Finance Institutions in Nairobi County have experienced intense pressure to adapt to new developments during the past ten years because of market rivalry, advancements in computer technologies, and varying employee demographics. Micro-Finance Institutions that do not innovate run the risk of being surpassed by rivals. The financial sector has been affected by globalization and technological advancement. Locally in Kenya the performance of MFIs has declined. The study's objective was to define the process innovation effects on the financial performance of microfinance institutions in Nairobi County, Kenya. The process innovation variables used were remote data processing, digital cards, point-of-sale terminals, real-time gross settlement, and their effects on the financial performance of MFIs. Task-technology fit theory, diffusion of innovation theory, and theory of financial innovation are the theories on which the study is based. Cross-sectional survey research approach was em`1ployed. The current study concentrated on the head employees of finance, information technology, operations, and credit control from 12 MFIs in Nairobi County that are registered with AMFI. Stratified random sample technique was used. An initial sample of 44 individuals was selected using the Yamane statistical technique. Structured questionnaires were used to gather in-depth data. Pre-testing was conducted to assess validity and reliability of the data collection techniques. Version 26 of the SPSS was used to evaluate the data and guarantee its accuracy. Mean and standard deviation were used to determine descriptive analysis, whereas model brief, ANOVA, and coefficients of regression were used to determine regression analysis. According to the correlation analysis, real-time gross settlement, digital cards, point-of-sale terminals, and remote data processing were all positively correlated with financial performance. The outcomes of the regression showed that every predictor had a favourable, significant effect on financial success. The research concluded that the processes of the MFI have been automated to improve MFIs operations. The study concludes that digital cards introduction in to the Microfinance institutions has attracted more retail depositors to the MFIs. Also the Microfinance institution offers debit cards to its customers. Further, it is concluded that the MFI has sufficient POS infrastructure and the MFIs have put in place security measures on point of sale transactions. The study concludes that the Microfinance institution uses Real time gross settlement to minimize risk related to high value payment settlements. The findings of the study endorsed that in addition to automating core processes, the Microfinance institutions should make it possible for the clients to open and operate accounts remotely. In order to ensure maximum benefits through digital cards use, the Microfinance institution should encourage their customers to use digital cards.

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LIST OF ACRONYMS

ATM   Automated Teller Machine

CBK   Central Institution of Kenya

ICT   Information Communication Technology

IT   Information Technology

KBA   Kenya Bankers Association

KWFT   Kenya Women Finance Trust

MFIs   Microfinance Institutions

POS   Point of Sale

PwC   Price Water Coopers

RTGS   Real Time Gross Settlement

ROA   Return on Assets

SPSS   Statistical Package for Social Sciences

WEF   World Economic Forum

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Businesses have experienced intense pressure to adapt to new developments during the past ten years because of market rivalry, advancements in computer technologies, and varying employee demographics (Nepal, 2021). Companies that do not innovate run the risk of being surpassed by rivals. The fiscal sector has been affected by globalization and technological advancement. The fiscal institutions sector is utilizing these expansions to enhance client service and guarantee profits on these investments. Spielman (2017) asserts that innovation is the continuing adoption of new practices, including the development of new goods and procedures from those already in use as well as the revision of institutional and commercial norms.

Technology advancements have simplified the manner that organizations and financial institutions conduct their business (Nepal, 2021). Given the difficulties of fierce rivalry and quick technological development among others, it is still mainly uncertain if institutions are sufficiently inventive in operating their operations. Institutions cannot survive if they reject innovation; therefore, performance and innovation are intertwined. Despite the fact that the tasks carried out by business institutions have remained largely unchanged over the past few decades, the sector's organizational structure has undergone tremendous modifications. Financial process innovations in financial institutions have the strategic capabilities to outdo any arrangement of rivalry, making them an operational way for institutions to both enhance their performance and maintain their marketplace competitiveness (Lazo & Woldesenbet, 2006).

According to Macnamara (2016), process innovation is essentially an alternative institutions channel that enables commercial institutions to operate at a cheap cost when it comes to service delivery. Process innovation has seen tremendous growth among commercial institutions since the 1970s as a result of globalization, market competition, and a dynamic shift in client needs, which has improved their performance (Dawood, 2014). Short message services (SMS), also known as SMS institutions by European institutions in 1999, were the source of the early generation of process innovation in the institutions industry (Macnamara, 2016). According to the three ideas of mobile accounting, mobile brokerage, and smartphone financial information services, the service allowed institution clients to review their account transactions (Hiyam & Boutheina, 2017). According to the report, creativity, adaptability, and a willingness to change are now more crucial for a company's success than productivity and cost-cutting. These strategies can speed up the expansion and growth of every economy. According to Nugroho and Saritas (2009), adopting innovation in processes and products has the particular advantage of meeting customer wants and happiness, which rural customers are unable to realize and cannot obtain.

The goal of microfinance is to create financial institutions and systems of finance to lessen poverty by figuring out efficient ways to lend money to the less fortunate and underprivileged members of society (Morduch, 2000). Three distinctive characteristics have always set microfinance apart from rival financial organizations. Modest loans issued, modest savings deposits, and a lack of collateral for loans required as security are these differentiating traits.

Process innovations require giving a business's service operations new features. The introduction of unique or significant improvements to production or service delivery systems is also included in the innovation process (Kiveu et al., 2017). Financial performance is improved by process innovations like Pesa-link, mobile Institutions apps, and digital field applications that lower the cost per unit of money service delivery. According to Rosli and Sidek (2013), the innovations may include adjustments to tools, processes, or a service or production structure. Process innovations seek to increase the company's capability and knowledge. Adoption of process innovations lowers the cost of providing financial services while having no effect on the goods. Successful process innovation applications also reduce product costs and pricing (Kaloki, 2018).

According to Spielman (2017), innovation is a process that involves applying new information or skills that may be unique to a local location in command to improve the creation of commodities and the delivery of services. Process origination is the adoption of a very new enhanced production. Procedure enhancements can be done to increase productivity, develop wholly new or meaningfully better products, or lower the cost per unit of making or distribution. Not simply new or considerably enhanced procedures, instruments, and software are included in process innovations; they also include ancillary support tasks like buying, keeping track of, computing, and maintenance. According to Matayo (2017), new product development concepts have resulted from organizational structure and procedure advancements in microfinance institutions.

In order to process information remotely, a mix of computing and telecommunications methods is used (Hiyam & Boutheina, 2017). Using digital tools to offer online Institutions

services to customers in a more individualized way while avoiding having them visit a institution branch in person is known as remote data processing. By offering numerous improvements to the Institutions experience, remote Institutions solutions assist in bridging the gap between traditional branches and online Institutions. Digital cards are those that may be registered in a digital wallet on a suitable computer or device and are the digital or electronic equivalent of a physical card or debit card. Digital cards, such as debit and ATM cards, are connected to an institution account.

With the help of the POS, MFI loan officers will be able to transfer transaction data from the field straight to the management information system of the microfinance branches across the nation. In many developing nations, microfinance institutions (MFIs) are crucial to the growth of their economies. They provide low-income communities in emerging nations with financing and technical assistance for company development (Njoroge, 2017). They provide a variety of financial products to those with low incomes in the Institutions system, including microloans, saving and other savings goods, remittances and payments, payment services, coverage, and any other economic service or product that a commercial institution provides not. The relevance of microfinance institutions is highlighted by the effect they make to each nation's economy. Process innovation benefits the organization's overall quality management. Santos- Vijande et al. (2022) hypothesized that process innovation leads to flexibility and cost efficiency in addition to improving speed and quality. According to the report, process innovation that results in cost reductions makes it possible for businesses to sell their goods at competitive pricing. On the other side, Wang et al. (2019) found that process improvements raise overall customer satisfaction and boost businesses' market shares.

Process innovation and MFI growth are directly related, according to Mamoghli and Daboussi (2010). This calls for using automated procedures for efficiency and having a successful and effective procedure design that would improve service delivery. According to Santos- Vijande et al. (2022), process innovation significantly affects an institution's overall quality management. The report also found that process innovation increases efficiency and cost-effectiveness by enhancing speed and quality.

Globally in Pakistan as per Ssekiziyivu et al. (2017) MFIs are critical to the economy of country in that they improve the degree of exchanging practices the region. However, Ssekiziyivu et al. (2017) note that performance of MFI is undermined by the low capital enrichment, high pace of default rates and fierce opposition from the average banks. In Asia, the performance of the MFI is impacted by the institutional prerequisites (Lam et al., 2019). This means that performance of MFIs is looked as a measure of financing many elements. Maybe, this can be credited to the idea of the business they work in. The financial sector is directed because of the way that it manages a wide population. Hence, MFIs are in many cases under severe functional rules to safeguard the savings (Njeru et al., 2015). In Germany, innovation in processes was established to have a significant effect on cost savings, according to Wang et al. (2019). According to the report, process innovation that results in cost reductions helps businesses sell their goods at competitive pricing and grow more effectively.

Silva and Chavez (2015) highlighted that maximum MFIs are currently seeking to implement new tactics in their operations, products, and markets as they become more innovative. The majority of private commercial institutions are now becoming MFIs in

many nations, including Pakistan, Nepal, Thailand, and Malaysia, while others are now acting as their funders (Janda et al., 2014). According to Wagner (2013), the fundamental goal of creating MFIs worldwide was to help reduce poverty. MFIs were regarded as innovative leaders in the delivery of monetary facilities to the population of low cadre thanks to their unique financial offerings. It gave low-income borrowers who lacked collateral a way to get small loans from MFIs to finance their small and medium-sized businesses.

According to evidence supplied by Yin and Zhengzheng (2016). Pooja and Singh (2017) assert that internet institutions in India outperformed non-internet institutions in terms of size, performance, asset quality, administrative costs, and efficiency. In the study carried out in Jordan, Siam (2016) discovered that e Institutions produced a higher number of clients who were content with better long-term saving methods. A Digital Financial Environment 3.0 Initiative was established and put into action by the Taiwanese government in 2016 to encourage the innovation and development of financial technology (Wang et al., 2022). Chen et al. (2017) financial institutions in the United Kingdom have used institution tactical advances as a tactic to provide guidance that understands benefit in changing circumstances through its creation of skills and assets with the aim of sustaining the demands of stakeholders in the institution. The Institutions industry in Malaysia has been significantly affected by technological advances in information and communication technology (ICT). Microfinance companies in Malaysia are now competing for clients based on service rather than material items. Beyond the conventional limits of product innovativeness, service innovation entails incorporating improved service procedures through the design and enhancement of delivery systems (Tan et al., 2017).

According to Zeller and Mayer (2002), microfinance organizations in Africa were first exclusively funded by endowments, giver supports, and low-interest loans. They also made sure that the majority of the poor could use their financial services by keeping their fees as low as possible. The majority of microfinance in Africa is supported by donors, the government, and development organizations because they generate little to no profit (Armendariz & Morduch, 2005).

The demand for microfinance arose in the 1990s as a result of fiscal restructurings in East Africa, which had as their objectives the creation of effective and efficient financial institutions that are sustainable, aid in the decrease of lack, and stimulate economic growth for the poor. Since then, the number of MFIs in East Africa has dramatically expanded. The demand for microfinance arose in the 1990s as a consequence of fiscal restructurings in East Africa, which had as their objectives the creation of effective and efficient financial institutions that are sustainable, aid in the decrease of poverty, and stimulate financial growing for the poor. Since then, the number of MFIs in East Africa has dramatically expanded.

In Ghana, technology has become increasingly valuable to Ghanaian MFIs, transformed how MFIs provide services to their clients more effectively, improved profitability, and raised competitiveness, with ATMs emerging as the most cutting-edge technical development in Ghana and the rest of the globe (Abor, 2017). According to the study, process innovation in mobile and the web institutions has significantly improved the performance of financial institutions through bigger income, decreased operational costs, improved productivity, an increase in the quantity of new clients, and steady progress is

seen in MFIs. South Africa's microfinance industry is being gradually shaped by the quickly approaching arrival of new digital enterprises that are challenging the industry's status quo and encouraging rising levels of innovation (Kenya Bankers Association [KBA], 2020).

According to Fauzel et al. (2017), modern technology usage has enhanced the financial health of microfinance organizations in Mauritius. Gardachew (2017) asserts that Ethiopian microfinance businesses have been unable to grow productively due to a weak introduction to technology improvements (Bayai & Ikhide, 2016).

Regionally, In Ethiopia, MFIs are essential in that they make it workable for the poor to contribute in country building (Mohammed & Wobe, 2019). In any case, the monetary performance of the MFI is impacted by size of client's served, low monetary limit and a quickly evolving climate (Mohammed & Wobe, 2019). Therefore, it is consistent with the internal and external culture of the MFI's foundations and its ability to increase revenue. That notwithstanding, repayment of loans among MFIs in Uganda is low and subsequently prompting low benefit because of loss of interest paid and principal because of credit defaults.

Locally in Kenya, the MFIs are controlled by the CBK under the Microfinance Act of 2006 (Central Bank of Kenya [CBK], 2021). The Act defines what activities MFIs can engage in and sets the term for issuance of licenses to such financial institutions. It is important to note that MFIs are not strictly commercial banks but are supposed to adhere to similar legal requirements as those followed by commercial banks. For this reason, the day-to-day

operations of the microfinances ought to be in line with the requirements of Act and other necessities as required by the Central Bank of Kenya.

Process innovation has made great strides in Kenya toward financial institutions' market penetration. In 1989, Standard Charted Institution offered the first process innovation in the financial sector, allowing institution clients to conduct cash withdrawals and deposits through Automatic Teller Machines (ATMs) without service from the institution tellers (Ongore & Kusa, 2013). By introducing mobile and internet Institutions in late 2009, the service delivery developed more in electronic institutions. Due to system changes, mobile Institutions enabled clients to check account balances, debits, and credits, and the response was immediate. The usage of mobile institutions and agency Institutions, which allows clients to complete all institutional transactions without visiting the institutional branches, is a recent process innovation (Malhotra & Singh, 2010). The Institutions mindset has undergone a complete transformation because to sophisticated technologies in Kenya's financial sector. Due to difficulties encountered inside the Institutions sector, there has been an increase in product, process, and market innovation. The changes that have been occurring are the result of quick advances in both technology and the economy. Mobile and internet Institutions, RTGS, cash outs and savings, web-based account opening, unsecured lending, trading in stocks, and insurance services are just a few of the contemporary technologies that have affected institutions' financial performance. Commercial institutions have started purchasing stock brokerage firms and Islamic Institutions, which is governed by Islamic (Sharia) law, among other things (CBK, 2017).

As a result, the microfinance sector continues to use simpler, safer, and more secure technologies at its cash points to lessen insecurity and inform their clients. In response to the COVID-19 pandemic, MFIs accelerated their digital initiatives, based on the CBK Microfinance Sector Innovation Study. 56% of the MFIs polled said that boosting the adoption and usage of numerical channels, notably mobile and internet Institutions is a key objective in the COVID-19 era. Fighting the COVID-19 endemic required innovations in digital funding. Financial technology (Fintech) has allowed for business continuity and a quick expansion of aid for underprivileged populations.

1.1.1 Microfinance Institutions in Kenya

Microfinance institutions offer fiscal amenities to low-income people and families that traditional institutions have declined to do (Monyi et al., 2016). They provide health training and instruction, as well as advice on insurance, businesses, and investments, in addition to financial assistance (Kaloki, 2018). It was created with the intention of reducing poverty, increasing economic development, and reducing unemployment (Wieneke, 2016). It is supervised by the Kenyan Central Institution, the Microfinance Act of 2006, and the Microfinance Regulation of 2008. Since MFBs use deposits from consumers to raise money for independent lending, they are not completely recognized as institutions (CBK Report, 2018). The processes, goods, and markets of the financial system changed along with the business environment (CBK, 2016).

Information technology advancements have led to updated, upgraded, or new creation strategies as well as improved customer service and pleasure (CBK, 2017). In terms of creativity, dynamism, and the variety of services and items it offers, microfinance has

increased (CBK Report, 2019). Since 2015, the financial performance of Kenyan MFBs has declined. This could be explained by a decline in net income brought on by rising operating costs (Okiro & Ndungu, 2013). Three MFBs have exceeded the negligible core capital required by legislation to create a microfinance organization due to poor financial performance (KBA, 2020). Additionally, Choice MFB fell short of the mandated minimum liquidity ratio of 20%. Additionally, it has caused promotion offices and branches to close (CBK, 2020).

These financial institutions have encountered poor quality assets and declining customer numbers. Further, they have experienced unending competition from rival financial institutions to the extent of being pushed to close their branches such as the case of Faulu MFI closing its Makutano-Meru branch, Meru town branch and Maua branch at Kenya's MFIs (Microfinance Institutions) play a significant role in contributing to the country's GDP (Gross Domestic Product). MFIs provide fiscal services to the poor population, including microcredit, micro savings, and micro insurance. These services enhance financial inclusion and promote entrepreneurship and economic growth. MFIs in Kenya have also been credited with reducing poverty and improving livelihoods by enabling access to capital for small businesses and supporting income-generating activities. According to a report by the Central Bank of Kenya, the contribution of MFIs to Kenya's GDP was estimated to be around 1.2% in 2019, highlighting their importance in the country's economic development. the same financial year (Otieno, 2022).

1.2 Statement of the Problem

The MFIs tussle to thrive since they function in such a fiercely modest environment. This suggests that in order for the majority of them to remain reasonable and grow against their primary rivals, commercial institutions, they must develop novel techniques. Assumed that even net breadwinners like Safaricom have developed microcredit services, people may now access financial services while relaxing in their own homes, innovations have become quite active (World Economic Forum, 2018).

Kenyan microfinance organizations have kept making significant expenditures in technological developments. For instance, KWFT microfinance reports that more than 100,000 of its transactions—or 97 percent—take place through its mobile Institutions app rather than at physical locations. Now, 75% of Faulu microfinance transactions are aided by digital technology (CBK, 2020). Moreover, the effectiveness of microfinance organizations has been declining. For instance, in 2019 client deposits declined to KSh 624 -13824 from KSh 712 billion and marketplace share for microfinance institutions and other small banks decreased to seventeen percent from twenty one percent. (CBK supervision report, 2020). The outstanding loan portfolio for all MFIs registered in Nairobi stood at KSh 13, billion as of the AMFI report (2021), which indicates that the financial performance of MFIs is on a downward trajectory and calls for further research into the effect of process innovation on MFI performance.

Many researches have been carried out to understand the connection between process improvements and financial performance. In Pakistan, Iqbal et al. (2018) examined the effect of reomote data processing on quality of service and behavior intention. Yet, the

study's aim variable was quality of service rather than financial performance, presenting a contextual gap. Financial innovations in commercial institutions were the focus of studies by Hussein (2019), Ireri (2021) and Ngumi (2018). The study by Chelangat (2014) focused only on credit cards. However, very few studies reviewed have focused on process innovation and its effect on the financial performance of microfinance organizations. . The current research aimed to fill in the knowledge gaps left by these studies in the area of process innovations, particularly microfinance institutions (MFIs) in Kenya. An investigation on the effect of process innovations on financial performance in the context of microfinance institutions in Nairobi County, Kenya, is therefore necessary.

1.3 General Objective of the Study

The overall objective of this study is to establish the effect of process innovation on financial performance of Microfinance institutions in Nairobi County, Kenya.

1.3.1 Specific Objectives

i. To establish the effects of remote data processing on fiscal presentation of Microfinance institutions in Nairobi County, Kenya.

ii. To evaluate the effects of digital cards on fiscal presentation of Microfinance institutions in Nairobi County, Kenya.

iii. To establish the effects of point of sale terminals on fiscal performance of Microfinance institutions in Nairobi County, Kenya.

iv. To evaluate the effects of real time gross settlement on fiscal performance of Microfinance institutions in Nairobi County, Kenya.

1.4 Research Hypothesis

$H_0 1$: There is no significant effect of remote data processing on financial performance of Microfinance institutions in Nairobi County, Kenya

$H_0 2$: There is no significant effect of digital cards on financial performance of Microfinance institutions in Nairobi County, Kenya

$H_0 3$: There is no significant effect of point of sale terminal on financial performance of Microfinance institutions in Nairobi County, Kenya

$H_0 4$: There is no significant effect of real time gross settlement on financial performance of Microfinance institutions in Nairobi County, Kenya

1.5 Justification of the Study

The results of this study would help to clarify how much emphasis microfinance institutions should put on creating novel channels for delivering their services in command to stay competitive and advance their fiscal performance. It adds to the extensive and continually expanding body of literature on financial process innovations. The study's findings would help microfinance institution managers understand how financial process innovation affects their organizations' performance.

The study's results would help policymakers create supportive regulations that will address the changes in the financial system that would improve the MFI's financial performance. This study has a significant contribution to the empirical literature that academicians and scholars may use to enhance their future research. It also serves as a starting point for the critique, comparison, and debate that are essential for research professionals.

1.6 Limitations of the Study

The researcher took considerate efforts in ensuring the success of the study. However, despite these efforts the study encountered several limitations. Accessibility to information was not very easy because the head of departments were not easily accessible and when accessed they were not willing to give out information sought. The study also used exclusively quantitative research methods, and therefore, its rigidity should be considered. Endeavours were made to limit rigidity as much as possible by the method of analysis and the open-ended questions schedules.

Another limitation is that the questionnaires were administered to the heads of departments, rather than general employees. The research participants' subjectivity should therefore also be considered. This challenge was mitigated by designing a questionnaire so as to capture correct responses to answer research questions exhaustively.

1.7 Assumptions of the Study

The study was based on the supposition that the study participants have basic understanding of process innovations in the financial institutions. The study assumed that remote data processing, digital cards, point-of-sale terminals, and real-time gross settlement has an effect on financial performance of MFIs.

The study presumed that the study participants would provide relevant true and accurate information that would contribute towards developing and producing reliable and objective results and conclusions.

1.8 Scope of the Study

The education's possibility was restricted to examining how process innovations affect MFIs' financial performance in Nairobi County. The 12 microfinance institutions in Nairobi County that are registered with the Association of Microfinance Institutions were the study's geographic focus. The financial process innovation constructs considered in the study include point-of-sale terminals, real-time gross settlement, remote data processing, digital payment cards, and point-of-sale terminals. The financial performance for a 4-year period beginning from 2019 to 2022 was used so that to better understand current performance of the MFIs. This information was got from the audited report of the MFIS. The study took 3 months to complete.

1.7 Operational Definition of Terms

Back office automation means switching over to automated systems that link activities and using logic of enterprise to decide on matters traditionally reserved for humans (Chelangat, 2014).

Digital card is a digital or electronic debit card that can be stored in a digital wallet on a computer or other compatible device (World Economic Forum, 2018).

Financial performance is a metric that quantifies how effectively a microfinance institution uses its resources and makes money (Ireri, 2020).

Point of sale terminal is system hardware in nature used to process plastic card payments at sporadic installations (Bayai & Ikhide, 2016).

Real time gross settlement (RTGS) is a real-time, automated method of transferring money between institutions (Muhoro & Mungai, 2020).

Remote data processing is a method for processing information remotely that combines computing and telecommunications methods (Bayai & Ikhide, 2016).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The crucial topics that make up the study's backdrop are covered in this section. The theoretical literature, conceptual framework, review of the variables, criticism of the body of prior research, and research gaps are all presented in a methodical order.

2.2 Theoretical Framework

The study is anchored on theory of financial innovation, diffusion of innovation theory and task-technology fit theory.

2.2.1 Financial Innovation Theory

Financial innovation theory was propounded by Silber in 1983 and the theory holds that the growth of financial foundations is the primary driver of financial inclusion (Sekhar, 2018). According to the notion, financial innovations are new approaches or established methods that have been made available to increase organizations' liquidity and attract more applicants because of their credentials in the scenario. Financial innovation therefore plays a significant role in the financial system's operation, improving its financial literacy and competitive advantage because of recent and on-going changes.

The theory defined financial innovations as advancements made by developing new technological solutions that improve return rates and competitive edge, thereby fostering the growth of financial entities through better resource allocation, increased efficiency, and a decrease in financial and administrative costs (Radcliffe & Voorhies, 2012). This idea is essential to the study's efforts to define and catalogue the technical advancements and innovations in financial process possibilities available for institutions sector service via

digital service's products and delivery platforms. This theory also applies in my study since all the variables Remote data processing, Digital cards, Point of sale and Real time gross settlement are innovations that have been adopted by the Micro finance Institutions.

2.2.2 Diffusion of Innovations Theory

The diffusion of innovations theory, which E. M. Rodgers first proposed in 1962, explains how new concepts, behaviors, technologies, or products spread gradually among a community as opposed to all at once. By using market channels or just an organization, the theory attempted to clarify how economic breakthroughs and concepts propagate among society's populations (Rogers, 1995). Innovations spread from one individual or group to another through a process called diffusion. Because of this, people frequently adopt new concepts in a bid to make good decisions.

Innovations are essential to achieving development and sustainability, thus businesses should adopt them to improve their financial performance. The network effect and technical advancement allow new financial innovations to spread to rival businesses (Tidd & Thuriaux-Alemán, 2016). The idea is that a technology improvement or a new product spreads over time rather than being welcomed by all people and businesses at once. After the product's launch, it is promoted in a determination to advance marketplace portion. Later, more people then businesses adopt the technology in turn. The adoption of innovation increases when a product's network effect increases, and the number of competing products in an industry decreases. This would result in lower costs, greater profitability, and so better financial performance. The adoption of digital cards by

institution customers can be explained by the diffusion of innovation theory since its achievement or survival affects the financial performance of Micro Finance Institutions.

2.2.3 Task-Technology Fit Theory

Task-technology fit model was developed by Goodhue and Thompson (1995). The theory discusses how technology's capabilities are matched to the requirements of a profession, or how IT supports work (Goodhue & Thompson, 1995). According to the thesis, there are four main concepts that regulate how people utilize ICT: The model postulates that users will only accept information technology provided the required features are available to them and suit their needs. The management of MFIs must respond rationally in this circumstance and choose IT tools and working procedures that will enable them to complete the assignment successfully with the least amount of expense and the largest amount of net advantages. Because remote data processing ensures information transfer from the field to the information system of the Micro Finance Institution, the productivity and efficiency of the banking industry are considerably boosted.

2.3 Empirical Review

These unit appraisals the existing empirical studies on procedure novelties and financial presentation of microfinance institutions.

2.3.1 Remote Data Processing and Financial Performance

Using digital tools to offer online banking services to customers in a more individualized way while avoiding having them visit a bank branch in person is known as remote data processing. By offering numerous improvements to the banking experience, remote banking solutions assist in bridging the gap between traditional branches and online

banking. The effect of mobile banking on the fiscal presentation of Kenyan commercial banks was the subject of a study by (Mohamed, 2019). The study used methods for descriptive research. The study's target population consists of senior staff from the 43 commercial banks that have been granted licenses by the Central Bank of Kenya. Standardized questionnaires that were personally administered and simple random sampling were employed to gather primary data. Data analysis was done with the aid of SPSS Version 22.0. According to the survey, remote banking services have a big impact on how well banks execute. In order to examine the impact of electronic payment technology on several areas of bank performance, Mustapha (2018) did a study. According to Mustapha (2018), the performance of the banks was negatively correlated with the use of the ATM, which is one of the most widely utilized electronic payment technologies in Nigeria. The negative association was linked to the expenses involved in purchasing and running the ATM sites, as well as the costs related to mounting ATM machines physically. Compared to other channels used for the provision of cash services, the costs related to ATM operations are significant. This has a detrimental effect on various elements of bank performance.

In the Kenyan counties of Nairobi and Kiambu, Oyugi (2017) performed stidies on the impact of automatic facilities on the presentation of SASRA approved Saccos. 45 Saccos in the counties of Nairobi and Kiambu were sampled for the study. The results of the survey demonstrated that the popular of Saccos use the internet, with ATMs serving as the primary service. The study found a strong correlation between digital banking and Kenyan Saccos' financial success. Wanjiku (2020) study on skill novelty and monetary presence by profitable banks in Nairobi. A descriptive research design and a positivist ideology

adopted. The 42 commercial banks that were permitted to operate in Nairobi County, Kenya, in 2016 were the investigation's target population. The sample size was established using a targeted sampling strategy. In this analysis, both primary and secondary data were employed. Respondents who were chosen at random were given questionnaires. The inquiry made use of a multiple regression classic. The study's conclusions indicate that internet banking and other distant data processing methods have an effect on financial inclusion. Studies have been done on how different electronic money transfer technologies are used in Kenya and how they affect the financial institutions' business net worth, profitability, and liquidity. This study focused on Sumac DTM because it is a financial institution. The main methods used to gather the data were questionnaires and secondary data. The numerous respondents—important members of the study's subject institution—received questionnaires that contained both closed- and open-ended inquiries. The data was analyzed and shown using tables, pie charts, and graphs. The study also identified a number of advantages of utilizing EMT services, such as efficiency, profitability, and convenience. Security problems, particularly those involving money laundering and identity theft, were discovered to be the biggest obstacle. Based on these conclusions, To prevent consumers from losing their hard-earned cash as well as government agencies from losing income through illicit activities, which might have greater detrimental repercussions on economic growth, such as rising inflation, it was argued that EMT schemes need additional regulation and control. A more rigid regulatory framework would help to oversee a successful, open and efficient EMT structure, promoting a stable financial environment. Due to time restrictions, it was also suggested that each EMT service be

thoroughly examined because they are all extremely complete and individually tailored to meet the requirements of the organization (Wangui & Nzuki 2021).

In the Kenyan regions of Nairobi and Kiambu, Oyugi (2017) performed study on the effect of computerized services on the functioning of SASRA licensed Saccos. 45 Saccos in the regions of Nairobi and Kiambu were sampled for the study. The results of the survey demonstrated that the majority of Saccos use the World Wide Web, with ATMs serving as the primary service. The research established a strong association between digital institutions and Kenyan Saccos' financial success.

Studies on technical invention and financial presence by commercial institutions in Nairobi (Wanjiku, 2020). The 42 registered commercial institutions that were active in Nairobi County, Kenya in 2016 were all included in the target demographic for this inquiry. The sample size was established using a purposeful sampling strategy. In this study, primary and secondary data were also utilized. Respondents were chosen at random and given questionnaires. In this investigation, a multiple regression model was used. The study's findings suggested that online services and other forms of remote data processing have an effect on financial inclusion.

Study on the effects of mobile institutions on Nairobi-based microfinance institutions' transaction costs. The research method was experimental. The Association of Microfinance Institutions of Kenya (AMFI) members were used as the sample. To prevent associates like CIC, an insurance business and a corporate member, the replies were limited to members who engage in micro lending and related services. 15 microfinance institutions (MFIs) were haphazardly chosen after the sampling frame was created. Primarily qualitative main

statistics was collected using organized questionnaires. The website mixmarket.org, which gathers financial information from microfinance institutions worldwide, was used to acquire secondary data. The findings showed that many MFIs experienced greater transaction volumes because of the adoption of mobile Institutions; nevertheless, average MFIs did not notice any appreciable reduction in transaction costs. The study's findings suggest that, in order to considerably lower transaction costs, a coordinated effort in terms of business process analysis must be made prior to the implementation of mobile Institutions in MFIs (Kigen 2011).

The utilization of institutional credit and other financial services has a substantial potential to reduce poverty in Kenya. 18 million individuals, or 60% of the population, are poor and mostly ineligible for informal financial services. Agreeing to the National Micro and Small Enterprise Baseline Survey conducted in 1999; there are approximately 1.3 million SMEs in the nation. These businesses collectively employ about 2.3 million people, or 20% of the work dynamism, and they contribute 18% of the country's overall GDP and 25% of the GDP derived from non-agricultural sources. Only 10.4% of SMEs have access to credit or other types of funding, which is a considerable contribution despite this (Louis et al., 2013).

Over the years, Kenya's official banking industry has viewed the informal sector as hazardous and not economically viable. The aim of the reading was to regulate how microfinance services exaggerated the financial success of SMEs in Kenya. The study's methodology included a survey. All SMEs in Nairobi were the study's sample. The study used a 50-business-size interval and a systematic random sample design. 47 SMEs made

up the sample size. Secondary and primary data were used by the researcher. Structured questionnaires and semi-structures were used to obtain primary data. Descriptive and inferential statistics were used to analyze quantitative data (Mbugua, 2010).

According to the study, all SMEs borrow share capital and use it for the proposed drive; the majority of them has no other sources of funding besides microfinance institutions and had no other sources of funding prior to receiving financing from these institutions. The research draws the conclusion that SMEs provided savings, loan, and training services to SMEs based on its findings. The majority of the time, SMEs borrows investment capital and applies the loan(s) for the intended purpose. According to the survey, microfinance institutions are the only source of funding for the majority of SMEs. The study's end findings indicate that microfinance services improve the financial performance of SMEs in Kenya because ROA grew with each subsequent loan. Conferring to the study's findings, the MFIS should give borrowers training in entrepreneurial skills to improve their competency in order to increase the effect of microfinance services on the financial performance of SMEs in Kenya. Before giving money to the business owners, MFIs should take into account the performance of the company (Mbugua, 2010).

2.3.2 Digital Cards and Financial Performance

Digital cards are those that may be registered in a digital wallet on a suitable computer or device and are the digital or electronic equivalent of a physical card or debit card. Digital cards, such as debit and ATM cards, are connected to a bank account. In Nigerian commercial banks, The use of ATMs and debit cards, as shown by the cost-to-income ratio and asset management rate, boosted cost efficiency. Using secondary data from a sample of 22 commercial banks, their research provided recommendations for commercial banks

to keep using ATMs and debit cards to increase overall efficiency. It would be imperative to do a similar study on ATMs and debit cards in a different setting given that the research was conducted in Nigeria. Due to the conflicting findings about the effect of ATMs and debit cards on institutional performance, this study was conducted for comparison purposes.

Chelangata et al. (2022) looked analyzed the effect of credit and debit cards on the financial performance of Kenya's commercial banks in 2022. Cross-sectional descriptive research was used in this study. 42 commercial banks that were granted licenses by the Kenyan Central Bank between 2011 and 2020 completed up the education's sample. For a ten-year period between 2011 and 2020, the study examined secondary data collected from the annual financial reports of the 42 banks. A panel model and descriptive statistics were used to analyze the data. The findings show that, at a 5% level of significance, the use of a debit card at an ATM was positively significant in relation to ROA.

In Kakamega County, Wanyonyi (2021) looked into digital financial services and SACCOs' financial performance. Staff from the three SACCOs operating in Kakamega County made up the study's target group. 162 employees of the SACCOs participated in this survey. 49 respondents were included in the sample, which represents 30% of the target market and will be distributed equally among the three SACCOs. Using a self-administered semi-structured questionnaire, the main data was gathered. Using SPSS, the collected data was examined using descriptive and inferential statistics. Tables, frequencies, percentages, averages, and standard deviation were used to display the

findings. The findings discovered that the use of digital credit cards had a substantial impact on the SACCOs' financial performance.

Financial inclusion, or giving the 2 billion unbanked individuals in the world admittance to and active use of cheap financial goods, can promote individual wealth, lessen poverty, and boost economic growth. In order to service these people, digital technologies like cell phones, cloud computing, data analytics, and block chains are one of the main accelerators of monetary inclusion. In this paper, the role of innovative monetary technology (Fintech) businesses serving the under banked and unbanked was investigated in relation to financial inclusion. I found crucial elements that affect these Fintech businesses' success as evaluated by financial performance and monetary inclusion, supported by theories of strategic management (Ondeyo, 2018).

Multi-variate regression and binomial legit models were used to evaluate primary data on 63 Fintech firms from Southeast Asia, India, and Africa in order to quantify the underlying effects of these characteristics. The results showed a strong and favorable correlation between financial inclusion, the level of client centricity in the company's commercial prototypical and planned alliances with monetary institutes and e-commerce businesses. Four Fintech companies were selected from the data sample for a qualitative research, which highlighted the significance of other influences such as scalability, prior startup knowledge, and the type of product sold (push vs. pull) for the success of the startups.

These findings can be used to inform future observed studies. By offering a quantitative, data-driven methodology, the learning has direct practical applicability for VC companies and investors that assess new technology initiatives in economic addition. Finally, the

findings show the need for a combination of measurable and qualitative insights to advance research on the crucial function that Fintech startups provide in promoting financial addition in emerging states (Wangui & Nzuki, 2021).

Designing, creating, and implementing novel financial tools and procedures as well as coming up with original solutions to financial issues are all examples of innovation. In this study, the impact of novelty on the financial performance of MFIs in Kenya was to be determined. Determine the impact of product and process changes on the financial performance of MFIs was one of the study's more explicit goals. The market has always been highly tense due to the dynamism brought on by technology. Data collection utilized descriptive data design. 14 MFIs were the population of interest, and unstructured questionnaires were used for the interviews. The comparative significance of each of the four variables on the performance of the MFIs in Kenya was also determined using a multiple regression model. According to the study, process and product innovation were beneficial to financial performance. According to the report, laws should be created to govern the actions of microfinance institutions in order to guarantee ongoing product innovation and process innovation improvements to increase operational efficiency and effectiveness (Imalingat, 2015).

Investments in IT have a mixed, not necessarily favorable, effect on the banking industry. The implementation of an e-banking strategy by a DTMFI may have an effect on a company depending on whether it is software- or hardware-based, in-house or outsourced. This education's key objective was to determine how electronic banking affected Kenya's DTMFIs' financial performance. The study investigated how the usage of personal

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computers, mobile banking, and automated teller machines affects the financial efficiency of DTMFIs in Kenya. The study made the assumption that the data would be analyzed using inferential statistics and a descriptive design (Kimotho & Muturi, 2019).

The population of the study consisted of thirteen DTMFIs that were officially registered in Kenya as of August 2016. Employees of these DTMFIs were given questionnaires to complete in order to collect the essential data. A linear regression model was employed to examine the data, together with descriptive and inferential statistics like mean and frequencies. According to the report, deposit-taking microfinance institutions have started using e-banking technology, and there is a link between electric banking and DTMFI financial performance in Kenya.

As determined by performance indicators including Management efficiency mean, capital sufficiency, profitability, liquidity management, asset quality, and market share of DTMFI, the study concludes that investments in ICT and internet banking contribute to explain DTMF success (Jha, 2017). Because the number of people who own mobile devices is rapidly increasing, the study suggests that DTMFIs in Kenya use mobile banking in their operations. Furthermore, the use of mobile phones in conjunction with deposit-taking microfinance banks in Kenya has changed how these businesses run (Kimotho & Muturi, 2019).

2.3.3 Point of Sale Terminal and Financial Performance

A point-of-sale (POS) station is a piece of hardware that accepts card payments in retail settings. MFI loan officers will be able to upload transaction data directly from the field to the management information system of the microfinance branches across the country with

the aid of the POS. Le and Ngo (2020) assessed the variables influencing bank profitability in 23 countries between the years of 2002 and 2016.

Payment System Statistics provided information on banking technology, and Monetary Progress and Physical dataset, Financial Soundness Indicators (International Monetary Fund, 2018) and World Development Indicators (World Bank, 2017) provided data on bank performance and other factors. The study established that growing the number of bank cards issued, ATMs, and point-of-sale strategies can boost a bank's success.

Okello (2016) did study on the financial performance and electronic retail payment services of Kenya's commercial banks. The forty-three commercial banks served as the study's target audience from 2011 to 2015, a five-year span. The inquiry made the most of the secondary data of the banks that were registered with the Central Bank of Kenya. The data included the amount of transactions made during a certain time period via ATMs, bank agents, and mobile banking, as well as the return on assets for commercial banks. The findings demonstrated that the adoption and use of electronic retail payment services have improved the performance of the banking industry by ensuring that productivity and efficiency are greatly raised.

The investigation employed a descriptive survey research design. 31 reputable microfinance firms that operate in Kiambu County made up the target population. The 155 respondents in the unit of analysis were the risk and compliance supervisor, the manager of finance, the manager of operations, the lending manager, and the company development manager from each microfinance organization.

Every registered microfinance institution participated in the survey using a census technique. 5 point Likert scale questionnaires were used to collect both main and secondary data for the study, and a secondary data collection form was used to collect secondary data. Statistics that can be applied to both description and inference. 31 reputable microfinance firms that operate in Kiambu County made up the target population.

The 155 participants in the unit of observation were the safety and regulatory manager, the manager of finance, the manager of operations, the acclaim director, and the commercial growth manager from each microfinance organization. Every registered microfinance organization participated in the survey using a census technique. 5 point Likert scale surveys were used to collect both main and secondary data for the study, and a secondary data collection form was used to gather minor data. To examine the gathered data, descriptive and inferential statistics were both employed. The findings imply that when the beta value of every sovereign variable is increased by one unit, the financial performance of the microfinance institutions also rises.

The results support the conclusion that the methods used to manage market, operational, credit, and liquidity risks have a positive and important impact on the financial presentation of microfinance institutions in Kiambu County. In order to increase financial performance to a significant and positive level, the study offered organization of the microfinance institutions recommendations on how to enhance their performs in controlling wateriness risk, operational risk, acclaim risk, and market risk (Masavu, 2022).

2.3.4 Real Time Gross Settlement and Financial Performance

Real-time order-by-order settlement of funds without netting is known as real-time gross settlement (RTGS). Muhoro and Mungai (2018) looked into how Real Time Gross Settlement affected Kenyan banks' financial performance. A census study was conducted on all Kenyan banks that were subject to CBK regulation. According to the study, ROA is significantly affected by RTGS at 0.022, and ROA is increased by 0.7985% for every 1% increase in RTGS volume.

Studies on the impression of process innovation techniques on the performance of tier one commercial banks in Kenya were conducted in 2021 by Peter, Munga, and Nzili. A expressive survey study design was used for the investigation. 494 senior, middle, and lower management staff from the eight Tier One Commercial Banks made up the target group. Using the stratified accidental sampling technique, a sample size of 221 was obtained. Structured questionnaires that were given to the administration players of the top commercial banks in Nairobi were used to gather primary data. On the other side, secondary data was gathered during a five-year period, from 2014 to 2019, from published financial statements and periodicals. The study discovered that increased queueing, electronic funds transfers, and the quantity and dispersion of ATMs had significantly improved the banks' financial performance.

Makokha et al. (2016) carried out studies on the real-time gross settlement and earnings of Kenya's public universities. The study employed a descriptive survey methodology. The sample consisted of 11 workers from three distinct functional domains. Questionnaires were utilized as study instruments, and data analysis methods included regression and descriptive statistics. The study's findings, RTGS had an identical impact on public

universities' financial performance across the board. Additionally, a significant positive connection (0.690) between the transfer fee and the lengthening of the funds transfer duration was found. In this section, microfinance institutions are examined.

There has been a significant change in the banking industry. Information technology innovation has been the primary force behind this transformation. Real Time Gross Settlement (RTGS) is a real-time, automated way of transferring funds between banks. The issue is that it's still not obvious whether real-time gross settlement innovation (pesalink) will have a substantial impact on the financial performance of Kenya's commercial banks. The goal of the study was to determine how, in this situation, RTGS impacted the financial performance of Kenyan banks.

The goal of the study was to ascertain whether there was a correlation between real-time gross settlement, which was based on the proportion of service adoption and transactions, and financial performance as assessed by return on assets (ROA). The hypothesis that real-time gross settlement has no effect on Kenyan commercial banks' financial performance was developed. All Kenyan banks that were governed by the CBK underwent a census study. 43 thriving Kenyan banks provided secondary data for the study. In the study, descriptive and inferential statistics were also used. The diagnostic techniques included heteroscedasticity and normalcy tests.

The records were organized and organized using SPSS to provide tables of descriptive statistics. The study found that RTGS has a substantial impact on ROA at 0.022 and that for every 1% increase in RTGS volume, ROA increases by 0.7985%. The more transactions that there are, the more money the RTGS platform makes. The study's findings

suggest that commercial banks should implement RTGS to boost profitability while also modernizing their internet and mobile banking platforms to boost customer loyalty and satisfaction (Mot, 2012).

Accounting practices and reporting of finances in Ugandan microfinance organizations. The study's three main objectives were to first identify the accounting methods used by microfinance institutions, then to identify the measures used in financial reporting in such institutions, and finally to assess the influence of computerized accounting systems on financial reporting in such institutions. According to the methodology, information was gathered once from a range of respondents using a cross-sectional survey design. Qualitative and quantitative methodologies were used in the data gathering and analysis.

The managers and accountants from MAMIDECOT made up the study population. Questionnaires and interviews were used as the data gathering tools. The results showed that decision-making bookkeeping systems, computerized accounting systems, record bookkeeping systems, and industry-specific accounting systems are the accounting systems employed in MAMIDECOT. After reading the data and integrating it, the results are received, and the balance method is decided. The items from the financial statement are then acquired. The advantages of a computerized accounting system for MAMIDECOT's financial reporting include, but are not limited to, faster completion of common financial transactions, opportune transfer of monetary intelligences to highest bosses, and ease of quick analysis of financial reports. To reduce the likelihood of a complete loss in the event of virus attacks, the researcher advised firms using computerized accounting systems to create backups of all of their processes.

2.3.5 Financial Performance

The Central Bank of Kenya (CBK), which oversees microfinance institutions in Kenya, has strict reporting and regulatory requirements. Microfinance institutions' financial performance in Kenya can vary based on a numeral of variables, comprising the size of the institution, its business strategy, its target market, the quality of its loan portfolio, operational effectiveness, and general economic conditions. In general, microfinance institutions work to serve underserved groups of people, such as low-income people, microbusinesses, and small businesses.

Their objectives often include promoting financial inclusion, poverty reduction, and economic empowerment. To assess the monetary presentation of microfinance organizations, key indicators to consider include: Profitability which events the ability of the microfinance institution to generate profits from its operations (Ngumo et al., 2020).

Asset quality is the quality of the microfinance institutions loan portfolio and its ability to manage credit risk effectively. The key indicators to evaluate asset quality include non-performing loans (NPLs) ratio, loan loss provision ratio, and portfolio-at-risk (PAR) ratio. The liquidity position of a microfinance institution indicates its ability to encounter its temporary duties. It is important for the institutions to maintain sufficient liquid assets to fund withdrawals and disbursements. Liquidness ratios, such as the credit-to-payment ratio and cash reserve ratio, are used to evaluate this aspect. Microfinance institutions are required to maintain adequate capital to absorb losses and support their business operations. Capital adequacy ratios and tier 1 capital ratio, assess the institution's capital position in relation to its risk-weighted assets. It is worth noting that financial performance

can vary significantly among different microfinance institutions in Kenya, as they differ in size, business strategies, geographic focus, and clientele (Kahihu, 2021).

Smooth and efficient transaction processing is critical for microfinance institutions. This involves timely processing of deposits, withdrawals, loan disbursements, and repayments. Automating processes, leveraging technology, and streamlining workflows can help enhance transaction processing efficiency and reduce operational costs. Microfinance institutions often focus on providing loans to individuals and small businesses. Efficient loan processing, including quick evaluation of loan applications, timely approval, and disbursement, is essential for customer satisfaction and maintaining a healthy loan portfolio. Automating loan processing processes and implementing effective risk management practices can contribute to service efficiency and financial performance. Embracing technology plays a crucial role in improving service efficiency in microfinance institutions. Implementing robust and secure loaning systems, digital channels for transactions, online loaning platforms, and mobile Institutions applications can enhance accessibility, convenience, and efficiency for customers. Additionally, digitizing back-office functions can help streamline operations and reduce manual errors by streamlining processes, reducing manual intervention, and leveraging technology, microfinance institutions can improve operational efficiency and reduce costs associated with customer service, transaction processing, and administration. A well-trained and skilled workforce is essential for providing efficient services. Microfinance institutions should invest in continuous training and development programs to enhance employees' knowledge, skills, and capabilities. This helps ensure efficient service delivery and customer satisfaction. Efficient service delivery not only contributes to customer satisfaction but also improves

the operational performance of microfinance institutions. It can positively affect financial performance by reducing costs, increasing customer retention, attracting new customers, and enhancing the overall reputation of the institution (Nurfadilah et al., 2018).

Operational costs in microfinance institutions in Kenya consist of various expenses incurred in running the daily operations of the institution. These costs affect the overall monetary performance of the institutions. Some of the common operational costs in microfinance institutions in Kenya: Personnel Expenses which includes staff salaries, benefits, training costs, and payroll taxes. Microfinance institutions require a workforce to handle various operations, customer service, loan processing, credit assessment, risk management, and administrative tasks. Rent and Utilities microfinance institutions need physical offices to operate, and thus incur costs related to rent, utilities (electricity, water, and internet), maintenance, and other facilities expenses. Microfinance institutions invest in technology infrastructure, including hardware, software, servers, network systems, and cyber security, to support their operations and provide efficient Institutions services to customers. Operational costs encompass equipment maintenance, system upgrades, licensing fees, and data security measures. Microfinance institutions require reliable communication channels to interact with customers and stakeholders. These expenses may include telephone lines, internet connections, mobile devices, and communication service providers. Microfinance institutions allocate funds for marketing and advertising activities to attract new customers, promote their services, and establish their brand in the market. These expenses encompass advertising campaigns, digital marketing, print materials, and communication channels (Cuéllar-Fernández et al., 2016).

Microfinance institutions must adhere to regulatory requirements, reporting standards, and compliance measures set by the Central Institution of Kenya. This involves costs associated with compliance monitoring, audit fees, regulatory filings, and legal expenses. This category covers various day-to-day operational costs, such as office supplies, stationery, insurance premiums, professional fees, transportation, and other administrative expenses required for smooth operations. Managing operational costs effectively is crucial for microfinance institutions to achieve profitability and financial sustainability. Cost optimization strategies, such as process automation, technology adoption, efficient resource allocation, and operational streamlining, can help microfinance institutions minimize unnecessary expenses and enhance overall financial performance. It's important to note that specific operational costs may vary among different microfinance institutions based on their size, scope, business model, and operational scale (Remer & Kattilakoski, 2021).

Return on assets (ROA) is a financial performance ratio that measures the profitability of a business in relation to its total assets. In the context of microfinance institutions in Kenya, ROA indicates the effectiveness of utilizing assets to generate profits. To calculate ROA, its average total assets divide the net income of the microfinance institution over a specific period. Here's the formula: ROA = (Net Income / Average Total Assets) x 100

The resulting ratio is expressed as a percentage, representing the success of the institution comparative to its advantage base. A higher ROA indicates better profitability in relation to the size of the assets, whereas a lower ROA suggests lower profitability or inefficient asset utilization. It's important to note that the ROA can vary across microfinance

institutions based on factors such as business strategies, risk management practices, operational efficiency, interest rate spreads, loan portfolio quality, and overall economic conditions. Additionally, the size and scale of the microfinance institution can also affect the ROA, as larger institutions may benefit from economies of scale. To obtain specific and accurate information about the ROA of microfinance institutions in Kenya, it is advisable to refer to the published financial statements, annual reports, or consult industry reports and expert analysis on the subject. These sources will provide the most up-to-date and comprehensive information regarding the monetary presentation of microfinance organizations in Kenya, including their ROA (Afolabi, 2016).

2.4 Research Gaps and Summary of the Literature

A study by Mugo (2016) found that MFI institutional innovation may be demonstrated in branch networking, businesses, monetary trainings, mobile institutions, and initial new branches. The expansion of the company is also seen as benefiting from this innovation. The study's weakness is that institutional novelty has not been associated with performance; rather, it has been associated with business growing.

Few studies particularly examined strategic process innovation and how it influences the growth of commercial institutions, despite the fact that strategic innovation in commercial institutions has received the majority of attention in the relevant past literature reviews. Hanif and Asgher (2018) focused their study on the performance of service process innovation and service innovation in Pakistani financial services. They found that multi-dimensional service innovation had a significant effect on service innovation performance. However, the scope of the study was Institutions services in Pakistani, which is different

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from Kenya commercial institutions. Further, the study context was service process innovation and not strategic process innovation.

The evaluation and analysis of the local studies showed that the institution's ability to innovate helped it to stay effective and competitive in the Institutions sector. It was noticed that process innovation might be applied in a variety of ways. Process innovation was found to affect the institution's performance. It has been proven that cost reductions result from process innovation.

The diffusion of innovation theory set out to explain how financial inventions and ideas spread among society's populations via market, non-market, or even just organizational channels. It was mentioned that innovations play a significant role in achieving development and sustainability, thus businesses should use them to improve their financial performance.

Mobile, agency, electronic, outlets, and internet Institutions were shown to be positively associated with financial inclusion by commercial institutions in Nairobi, according to Wanjiku (2020), that focused on technological innovation. Wanjiku (2020) study was, however, constrained in its breadth because it concentrated on technological innovation rather than innovation in processes, which is the subject of the present study.

2.5 Conceptual Framework

Conceptual framework is a logical instrument used to develop an understanding of a study's context and to guide the research process.

Figure 2.1

Conceptual Framework

Independent Variables   **Dependent Variable**

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┌──────────────────────────────┐
│ Remote Data Processing       │
│    ➤ Account opening         │──────────┐
│    ➤ Loan origination        │          │
│    ➤ Account balance enquiry │          │
└──────────────────────────────┘          │
                                           │
┌──────────────────────────────┐          │
│ Digital cards                │          │        ┌──────────────────────────┐
│    ➤ Credit cards            │──────────┤        │ Financial performance    │
│    ➤ Debit cards             │          ├──────▶ │    ➤ Operations costs    │
│    ➤ Prepaid cards           │          │        │    ➤ Return on assets    │
└──────────────────────────────┘          │        └──────────────────────────┘
                                           │
┌──────────────────────────────┐          │
│ Point of sale terminals      │          │
│    ➤ Point of sale infrastructure │─────┤
│    ➤ Transaction security    │          │
│    ➤ Transaction costs       │          │
└──────────────────────────────┘          │
                                           │
┌──────────────────────────────┐          │
│ Real Time Gross Settlement   │          │
│    ➤ Inter-institution transfers │──────┘
│    ➤ Inter-institution settlement │
│    ➤ High value payment      │
│      settlement              │
└──────────────────────────────┘
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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The methods used to collect, evaluate, and present the data are covered in this chapter. The study's design, target population, sample size, and sampling procedures, as well as the methodologies and tools used for data collecting, the pilot study, and information analysis, are all discussed in great detail.

3.2 Research Design

The study used cross-sectional survey research. In order to make predictions about the likelihood that the phenomenon under research would occur, a large population was sampled at one point in time in this study using descriptive cross-sectional approaches. Studies that aim to gather data from the same company or from several firms over a specific time period should use a cross sectional design. Comparisons of different variables from multiple companies are useful. On the other hand, studies that employ a descriptive approach to data collection ask participants to define a condition as it is by sharing their opinions and acuities (Kothari, 2014).

The cross-sectional descriptive approach was acceptable because this study encompassed various firms and attempted to gather data by evaluating the opinions of the respondents (Mugenda & Mugenda, 2012). It should be noted that the design can be utilized to reveal or explain the present situation of any number of variables at a specific time. The study aimed to provide answers to the five pertinent research-related questions of what, who, when, where, and how. Arungai (2016) utilized a descriptive cross-sectional survey

approach to examine the effects of novelty in processes on the financial presentation of MFIs in Nairobi County, Kenya.

3.3 Place of study

The study was steered in Nairobi County since its where all MFIs had their headquarters. Nairobi County hosts a huge population of people who are actively engaged in vibrant economic activities. Therefore, microfinance institutions are able to operate and sell their products to potentially high number of customers. Apart from that, the regulation by central bank of Kenya has been dictated with tough banking regulations that require high amounts of deposits maintained at all times (CBK, 2021). Further, the MFIs have also encountered stiff competition from other financial institutions like digital lenders, mainstream commercial banks and Saccos (Odero & Mutswenje, 2021). The competition is mainly based on huge amounts and customized loans with lower rates offered dependent on how fast the loan is repaid.

3.4 Target Population

A substantial collection of people, things, or events that share certain qualities and adhere to a specified specification is known as a target audience (Creswell, 2016). According to a study from the Association of Microfinance Institutions from 2022, Nairobi has 12 accredited microfinance institutions. The current study focused on the heads of departments from the 12 MFIs in Nairobi County's finance, operations, and credit control divisions and ICT departments.

3.5 Sample Size and Sampling Technique

The research adopted the Yamane statistical formula.

$$n = \frac{N}{1+N(a)^2} \qquad = \frac{48}{1+48(0.05)^2} = 44$$

Where;

Stratified sampling, in accordance with Bell and Bryman (2016) ensures that the breakdown of the final collection on the basis of the categorized criterion is the same as that of the population. Furthermore, stratified sampling is an appropriate method and approach when a trustworthy statistical database is available. It is largely up to the researcher to decide how to categorize and redistribute the units for the stratum. It also makes it possible to develop and use a variety of stratification criteria.

Table 3.1

Sampling Proportion

Strata	Target Population	Sample Size
Finance Mangers	12	11
Operations Managers	12	11
Credit Control Managers	12	11
ICT Managers	12	11
Total	**48**	**44**

3.6 Data Collection Methods

The majority of the questionnaire for the study consisted of closed-ended questions that were purposefully designed to collect and request the necessary information.

Scale for interval measurements Data from the likert scale was gathered, evaluated, and the scale items were made by combining the scores of a group of five likert-type things (Boone & Boone, 2015). The Likert five-point scale was the main tool used in this study to measure opinions since it is straightforward and fair (Zikmund, 2015).

According to Kothari (2014), questionnaires are useful for gathering information from a sizable population that is spread around the study area. Unstructured questionnaires are standardized to make sure that every responder is asked the same questions and provides a variety of responses that helps a researcher see the issue clearly. The researcher self-administered the questionnaire. The semi-structured demographic section of the survey requested respondents to provide information about them; the data was analytical in nature and helped to characterize each respondent.

3.7 Data Collection

Prior to collecting research data, the researcher requested a letter of approval from the university. The researcher supplied the participants the letter of introduction from the university in order to get their consent to take part in the data gathering. A systematic self-completed questionnaire was distributed to the target audience, and after one week, it was picked up using a drop-and-pick later approach. The survey asked about demographics and also used modified construct items from prior research. Each participant received the guarantee that their anonymous responses would remain confidential.

3.8 Pilot Study

Pilot study was done to assess the viability, validity, and reliability of the instruments used for research (Kothari, 2014). Due to the fact that all 12 registered MFIs were taken into account for the study, the pilot involved 8 MFI respondents from Kilifi County. To save on cost, the researcher chose Kilifi since it's the place of researcher's residence. Outcomes of the pilot study allowed the researcher to decide whether to proceed with the main study or not. It also provided the researcher with fresh ideas that they may not have had before the pilot study was conducted, which increased the likelihood that the main study would yield more illuminating results. According to Mugenda and Mugenda (2012), a pilot test should be conducted on 10% of the study sample. Therefore, 8 respondents were purposefully chosen for the experiment. The validity and reliability of the tools were evaluated using the results from the questionnaires. The subjects in the pilot test were excluded from the main investigation.

3.9 Validity

A research tool is said to be legitimate when it can measure what it is intended to measure, according to Orodho (2012). It refers to how accurately a research tool's results capture the topic being investigated. Overall the content and face validity were examined for this study, with face validity ensuring that the questionnaire is brief and to the point while still being thorough enough to get the necessary data. The face validity was also attained by the way the question pieces were organized and logically sequenced.

In order to address surface validity, the investigator adjusted measures that had already been verified in prior studies and used his own subjective assessment of the validity of the

tools. Furthermore, as recommended by Kothari (2014) content validity is ensured by relying on both the supervisor's and subject matter experts' advice.

3.10 Reliability

According to Kimberlin and Winterstein (2008), dependability is the degree to which a research tool was able to produce consistent results when used with several samples taken from the same population. Either the test-retest method or the Cronbach alpha reliability test was employed by the researcher. A test-retest method involves asking the same respondent identical questions at brief intervals and correlating their answers to assess the degree of reliability. According to Sakari et al. (2013), the Cronbach internal study was employed for this investigation.

3.11 Data Analysis and Presentation

The Statistical Package for Social Sciences version 26 was utilized as a data analysis tool to code and analyze the gathered data. Descriptive and inferential data analysis methods were applied in this investigation. Regression analysis was done to examine whether the degree of connection between the independent variables and the dependent variable is statistically significant.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y= is financial performance

β_0 = will be regression coefficient (y-intercept)

$\beta_1, \beta_2, \beta_3$ and β_4 are the coefficient function of the independent variables,

X_1= Remote data processing

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X_2= Digital cards

X_3= Point of sale terminal

X_4= Real time gross settlement

$Ɛ$ is the error term

The results were presented using tables and explanation befitting all the criterion and face validity. Additionally, the study did also test various diagnostic tests such as multi-collinearity, heteroscedasticity, normality and linearity tests.

3.12 Ethical Considerations

For the benefit of the respondents, confidentiality was carefully preserved throughout the research. Additionally, the respondents' identities were kept a secret. The respondent continued to contribute voluntarily. The questionnaire included a clear statement of the study's objectives for the respondents. The study was conducted for scholarly reasons. The study was conducted with integrity and honesty. The study's results were correctly and accurately analyzed, and the statistical techniques were used without prejudice to produce a good result.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The data analysis, conclusions, and conclusions about the impact of innovative processes on the financial performance of microfinance firms in Nairobi County are presented in this chapter. Part A of the questionnaire was for background information, while Part B covered the study variables, such as the independent variable, the financial performance of microfinance businesses, and the constructs of process innovation.

4.2 Response Rate

The researcher targeted 44 respondents where forms were administered. According to Creswell (2015), Out of this, 41 responses were obtained giving a response rate of 93.2% which is excellent.

Table 4.1

Response Rate

Respondents	Frequency	Percentage
Respondents	41	93.2
Non-respondents	03	6.8
Total	**44**	**100%**

4.3 Pilot Study Results

Pre testing was conducted in Kilifi County; the pilot research involved eight microfinance institutions. The results of the validity and reliability tests are shown in the next subsections.

4.3.1 Reliability Analysis

To evaluate face and content validity as well as reliability, the researcher ran a pilot test with eight respondents. The pilot study included eight microfinance organizations in Kilifi County. The final analysis did not include pilot trial participants. The following subsections display the validity and reliability test results.

Table 4.2

Reliability Results

Variables	N of items	Cronbach's Alpha	Comments
Remote data processing	4	0.797	Accepted
Digital cards	4	0.753	Accepted
Point of sale terminal	4	0.845	Accepted
Real time gross settlement	4	0.718	Accepted
Financial performance	4	0.821	Accepted

Table 4.2 discloses that the Cronbach Alpha value for Remote data processing was 0.797, Digital Cards was 0.753 Point of sala terminal was 0.845, Real time gross settlement was 0.718 and financial performance was 0.821. According to Taber (2018), when the Cronbach Alpha's value ranges from 0.7 to 1, it indicates reliability and anything less than 0.7 reflects unreliability. Based on this insight, the results proved that the data collection instruments were reliable hence could be re-used over and over to give an accurate and similar results.

4.3.2 Validity Analysis

The study tool's construct and face validity were examined. According to Mugenda & Mugenda (2012), construct validity testing determines how well a study tool captures the

anticipated outcomes. Supervisors were consulted for advice on the adequacy of the measurement scales used in the study. Up until the final draft of the research proposal was selected for data collection, more feedback was incorporated at various stages of its development.

As previously mentioned, Bartlett's test of sphericity and Kaiser-Mayor-Oklin (KMO) measures of sample adequacy were used to examine the degree of characteristics correlation. In order to determine if exploratory and confirmatory factor analyses are appropriate for data processing, Saunders et al. (2014) claim that KMO is applied. The lowest acceptable value in the social sciences is 0.5, with values between 0.7 and 0.8 being considered good, and values beyond 0.8 being considered great, even though the KMO coefficient ranges from 0 to 1, according to (Hair et al., 2007). The study has a good KMO coefficient (0.592), a chi square value of 1682.230, and a p value of 0.00 according to Bartlett's test of sphericity. Factor analysis was required because measurement attributes were related at the 5% level of significance.

Table 4.3

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.592
Bartlett's Test of Sphericity	Approx. Chi-Square	1682.230
	Df	7
	Sig.	0.00

4.4 Demographic of Respondents

In the first section of the questionnaire, general information about the respondents and the Microfinance institutions under study was requested. The following subsections discuss the findings.

4.4.1 Gender Distribution

The responders had to specify their gender in their responses. The comparison of the proportion of male and female respondents is shown in Table 4.4 below.

Table 4.4

Gender Distribution

		Frequency	Percent	Valid Percent
Valid	Male	22	53.6	53.6
	Female	19	46.3	46.3
	Total	41	100.0	100.0

The results show that there was almost an equal share of both genders among the respondents. Particularly, 53.6% of those who responded were male, while 46.3% were female. These numbers show that the research effectively accounted for gender representation, ensuring that gender biases did not affect the findings.

4.4.2 Working Experience

The participants were asked to specify how long they had been employed by microfinance institutions. Table 4.5 presents the outcomes.

Table 4.5

Number of Years in Commercial Institutions

	Frequency	Percent
<5	7	17.1
5-10	10	24.4
10-15	13	31.7
>15	11	26.8
Total	41	100.0

Results in Table 4.5 indicate that 31.7% of the respondents had worked in the Microfinance institutions for between 10 to 15 years, this was followed by those who have worked for more than 15 years (26.8%). 24.4% of the participants had operated in the Microfinance institutions for between 5 and 10 years and other 7.0% of the respondents had been with the Microfinance institutions for less than 5 years. The outcome suggest that majority of the participants possess practice of more than 10 years hence most likely to provide informed responses to the study's research objectives.

4.4.3 Education

The participants were asked to describe their educational backgrounds by the researcher. Berry (2011) claims that social science researchers frequently use educational attainment to demonstrate an individual's integration and participation in societal events. Table 4.6 displays the findings of the respondents' education level.

Table 4.6

Level of Education

Education	Frequency	Percent
Post graduate level	7	17.1
University	25	61.9
Tertiary College	8	19.5
Others	1	2.4
Total	41	100.0

The majority of survey respondents—who together accounted for 97.5% of the total respondents—had received tertiary education. Other types of qualifications not mentioned in the questionnaire make up the remaining 2.5%. The findings show that those who participated had satisfactory level of education to understand and respond to the study's questions. In comparison to respondents who are less educated, educated respondents are anticipated to be more competent and make more logical conclusions (Sheikh et al., 2014).

4.5 Diagnostic Tests

The diagnostic tests were steered to ascertain the viability of the data collected towards providing accurate analysis results as provided in sections below.

4.5.1 Normality Test

Ordinariness test was conducted to ascertain whether the collected data was suitable and no questionnaires had responses that were not evenly distributed. That is, when the responses to particular questions were drawn on a normality curve, they were symmetrical and not inclined to either of the side of the curve. According to Mishra (2019), for a data set to articulately show that its normal, the significance value have to be more than 0.05. The results are in Table 4.7.

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Table 4.7

Normality Test

		Remote Data processing	Digital cards	Point of sale terminals	Real time gross settlement	Financial Performance
N		98	98	98	98	98
	Mean	22.6837	21.6939	13.3163	21.7143	20.6224
Normal Parameters[a,b]	Std. Deviation	1.89735	2.77473	3.72674	2.56061	2.56670
	Absolute	.237	.228	.097	.238	.194
Most Extreme Differences	Positive	.189	.211	.097	.114	.122
	Negative	-.237	-.228	-.077	-.238	-.194
Kolmogorov-Smirnov Z		.345	.255	.956	.359	.921
Asymp. Sig. (2-tailed)		.092	.061	.320	.104	.294

a. Test distribution is Normal.
b. Calculated from data.

Table 4.7 discloses that Remote Data processing had a value of 0.092, Digital cards had 0.061, Point of sale terminals had 0.320, Real time Gross settlement had 0.104, and financial performance had 0.294. Therefore, since all the significance values were above 0.05, it pointed that the data was normal and did not contain anomalous responses that are inclined to any side.

4.5.2 Autocorrelation Test

Autocorrelation test was examined to assess how the interactions Remote data processing, Digital cards, Point of sale terminals and real-time gross settlement remain stable and were not influenced by other variable's characteristics. The study used Durbin-Watson to assess how they were correlated to each other and according to Turner et al. (2021), when the

range was 0-2, it indicated positive correlation. Further, when at the Durbin Watson value was 2, it indicated no correlation. However, when the range was 2-4, it indicated negative correlation. The results are in Table 4.8.

Table 4.8

Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.861[a]	.741	.645	2.50828	1.386

a. Predictors: (Constant), Remote data processing, Digital cards, Point of sale terminals, real-time gross settlement
b. Dependent Variable: Financial Performance

Table 4.8 discloses that the Durbin Watson value was 1.386 hence being within the range of 0-2, it signified that the variables had a positive correlation towards financial performance. This therefore, pointed that when combined, all the micro determinants considered in this study, had a high statistical correlation and had the potential of improving performance.

4.5.3 Multicollinearity Test

Whether when combined, independent variables were easily changed by other variables. According to Daoud (2019) for a data set to be free from multicollinearity, the tolerance level should be above 0.2 and VIF below 5. The results are in Table 4.9.

Table 4.9

Multicollinearity Test

Model		Collinearity Statistics	
		Tolerance	**VIF**
	(Constant)		
	Remote Data processing	.627	2.013
1	Digital cards	.301	3.318
	Point of sale terminal	.942	1.062
	Real time gross settlement	.412	3.706

Table 4.9, discloses that the Remote Data processing tolerance level was 0.627 at a VIF of 2.013, Digital cards tolerance level was 0.301 at a VIF of 3.318, Point of sale terminal tolerance level was 0.942 at a VIF of 1.062, and Real time gross settlement tolerance level was 0.412 at a VIF of 3.706. Therefore, since the tolerance level was above 0.2 and VIF below 5, all the variables were free of multicollinearity problem. That is, the independent variables were not easily swayed by other variables such as the financial performance but its them that influenced the increment or decrement of performance.

4.5.4 Linearity Test

Linearity test was conducted to examine whether the independent variables were in tandem and had an existing relationship with the dependent variables. The results are in Table 4.10.

Table 4.10

Linearity Test

			Sum of Squares	df	Mean Square	F	Sig.
Financial Performance * Remote Data processing	Between Groups	(Combined)	53.629	9	5.959	.896	.533
		Linearity	14.968	1	14.968	2.250	.137
		Deviation from Linearity	38.661	8	4.833	.726	.668
	Within Groups		585.401	89	6.652		
	Total		639.031	98			
Digital cards	Between Groups	(Combined)	119.137	8	14.892	2.549	.215
		Linearity	15.814	1	15.814	2.707	.103
		Deviation from Linearity	103.323	7	14.760	2.527	.120
	Within Groups		519.894	90	5.842		
	Total		639.031	98			
Point of sale terminal	Between Groups	(Combined)	91.736	13	7.057	1.083	.385
		Linearity	7.830	1	7.830	1.202	.276
		Deviation from Linearity	83.906	12	6.992	1.073	.393
	Within Groups		547.294	85	6.515		
	Total		639.031	98			
Real time gross settlement	Between Groups	(Combined)	84.110	10	8.411	1.319	.233
		Linearity	1.098	1	1.098	.172	.679
		Deviation from Linearity	83.012	9	9.224	1.446	.181
	Within Groups		554.920	88	6.378		
	Total		639.031	98			

Table 4.10 discloses that the significance value for Remote Data processing was 0.668, Digital cards was 0.120, Point of sale terminal was 0.393 and Real time gross settlement was 0.181. Therefore, since all the values were above 0.05 and according to Epshtein (2019), indicated the relationship between the tested process Innovations and financial performance was linear.

4.6 Descriptive Statistics

The study used a 5-point Likert scale of the form "SD = Strongly Disagree; D = Disagree; NS = Not Sure; A = Agree; SA = Strongly Agree" so as to assess the views of the respondents on process innovation and financial performance of Microfinance institutions. The respondents' responses on remote data processing and financial performance, digital cards and financial performance, point of sale terminals and financial performance, real time gross settlement and financial performance and descriptive statistics for financial performance are presented in this section. The findings were summarized using mean and standard deviations.

4.6.1 Descriptive Statistics for Remote Data Processing

Respondents were asked to rate how much they have adopted particular components of remote data processing on a five-point Likert scale, with 1 denoting strongly disagree and 5 denoting strongly agree, in order to accomplish this goal. Table 4.11 discusses the outcomes.

Table 4.11

Remote Data Processing

	Mean	Std. deviation
Automated of processes to enhance operation	4.17	.231
Account opening process and operating has been automated in the Microfinance institution	4.23	.536
The MFIs loan origination can be done remotely by the customers	4.02	.444
The customers can remotely check account balances	4.26	.703

According to Table 4.11 results, respondents were in agreement that microfinance institutions have automated their procedures to improve business operations. The mean scores for the account opening and operating categories were 4.17 and 4.23, respectively. The majority of respondents (mean=4.02) and (mean=4.26) agreed that consumers can check account balances and initiate loans through the MFI remotely. The study's findings concur with those of Mohamed (2019) who found that remote data processing services have a considerable negative influence on institutions' operational performance.

4.6.2 Descriptive Statistics for Digital Cards

Respondents were asked to rate how much they have adopted specific digital card features on a five-point Likert scale, with 1 denoting strongly disagree and 5 denoting strongly approve, in order to accomplish this goal. Table 4.12 discusses the findings.

Table 4.12

Digital Cards

	Mean	Std. Deviation
Digital cards have attracted more retail clients for the institution	4.41	.817
The Microfinance institution offers debit cards to its customers	4.15	.634
The Microfinance institution offers credit cards to the customers	4.26	.509
The Microfinance institution customers are incentivized to use prepaid cards	4.01	.822

According to Table 4.12 findings, respondents concurred that digital cards have increased the institution's retail depositor base and that it provides debit cards to its customers, as indicated by means of 4.41 and 4.26, respectively. The majority of respondents (mean: 4.15) agreed that the microfinance institution gives credit cards to its clients. Additionally, respondents concurred that Microfinance Institution clients are encouraged to use prepaid cards (mean: 4.01). The findings concur with those of Chelangat (2014) who found that using a digital card had a good effect on ROA.

4.6.3 Descriptive Statistics for Point of Sale Terminals

On a five-point Likert scale, with 1 denoting strongly disapprove and 5 denoting strongly accept, respondents had to rate how much they have incorporated various point-of-sale terminal characteristics in order to do this. The outcomes are argued in Table 4.13.

Table 4.13

Point of Sale Terminals

	Mean	Std. Deviation
ATMs give access to deposits	4.13	.882
The MFI has sufficient POS infrastructure	4.20	.887
The MFI has put in place security measures on point of sale transactions	4.82	.883
The costs of transactions using point of sale process has been set low	4.89	.881

Table 4.13 findings, participants agreed that the MFI has an adequate POS infrastructure and that ATMs have made it easy for consumers to retrieve their deposits, as shown by means of 4.13 and 4.20, respectively. The majority of respondents (4.82 on average) and respondents (4.89 on averages) agreed that the MFI had put security measures in place for point-of-sale transactions. The analysis concurs with Le and Ngo (2020) study, which

established that point-of-sale stations have a large, favorable effect on institution profitability.

4.6.4 Descriptive Statistics for Real Time Gross Settlement

Respondents were asked to rate how much they have adopted particular real-time gross settlement characteristics on a five-point Likert scale, with 1 denoting strongly disagree and 5 denoting strongly agree, in order to accomplish this goal. Table 4.14 discusses the findings.

Table 4.14

Real Time Gross Settlement

	Mean	**Std. Deviation**
The MFI provides inter-institution transfers	3.98	.753
There is inter-institution settlement in the MFI	4.66	.748
The MFI uses RTGS to minimize risk related to high value payment settlements	4.52	.741
The actual period gross payment affects financial performance of Microfinance institutions positively	4.54	.756

A mean of 3.98 and a mean of 4.66, respectively, the results in Table 4.14 show that participants approved that the MFI offers inter-institution transfers and that there is inter-institution settlement in the MFI. Additionally, respondents concurred that the MFI employs RTGS to reduce the risk associated with high value payment settlements (mean:

4.52) and that RTGS has a favorable effect on the financial health of microfinance institutions (mean: 4.54). The research supports that of Muhoro and Mungai (2018) who found that for every 1% rise in RTGS volume, Return on Assets increased by 0.7985%.

4.7 Inferential Statistics

To ascertain whether there was a clear relationship between each of the independent variables and the financial outcomes of Micro Business Institutions in Kenya, the study used Pearson's link analysis. A model of multiple linear regressions was tailored between each of the independent variables and the financial performance of the Micro Finance Institutions in Kenya after it was discovered that there was a linear relationship amid the variables. This was done to find out how each independent variable affected the dependent. In direction to ascertain the confounding effect of all independent factors on financial performance, a multiple linear regression model was also built.

4.7.1 Correlation Analysis

To ascertain whether there is any connection between innovation in processes and financial performance, correlation analysis is used. Table 4.15 lists the correlation findings.

Table 4.15

Correlation Results

n=41		Performance	RDP	DC	POS	RTGS
Financial Performance	Pearson Correlation	1				
	Sig. (2-tailed)					
RDP	Pearson Correlation	.469*	1			
	Sig. (2-tailed)	.002				
DC	Pearson Correlation	.358*	.652*	1		
	Sig. (2-tailed)	.000	.006			
POS	Pearson Correlation	.582*	.505**	.719**	1	
	Sig. (2-tailed)	.000	.000	.000		
RTGS	Pearson Correlation	.427*	.600**	.604**	.671**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

The association between remote data processing and financial performance was determined to be moderately significant and positive (r =.469, p-value < 0.05). This suggests that the processing of data remotely helps businesses operate financially better. Digital cards were found to have a moderately significant positive link (r =.358, p-value < 0.05) with financial performance. This suggests that the use of digital cards helps to boost financial performance.

The association between the point of sale terminal and financial success was shown to be significantly strong (r =.582, p-value < 0.05). This suggests point-of-sale terminals improve financial results. Financial performance and real-time gross settlement were found to be strongly positively correlated (r =.427, p-value < 0.05). This suggests real-time gross settlement helps businesses perform financially better.

4.7.2 Multiple Regression Analysis

Multiple regressions were adopted to determine how the predictor variables Remote data processing, digital cards, point of sale terminal and real time gross settlement) predict the dependent variable (financial performance). Outcomes for multiple regression analysis were presented in Table 4.16, 4.17 and 4.18.

Table 4.16

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.635[a]	.404	.391	2.35159

The corrected R-square value is 0.404, meaning that the model's predictor variables— remote data processing, digital cards, point of sale terminals, and real-time gross settlement—explain 40.4% of financial performance. Analysis of variance was used to evaluate the regression model's goodness of fit test. Table 4.17 displayed the findings.

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Table 4.17

ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1092.251	4	273.062	6.111	.000[b]
	Residual	1608.563	36	44.682		
	Total	2700.814	40			

A statistical test called analysis of variance (ANOVA) is employed to determine whether the regression model is adequate. At a 95% level of confidence, the statistical model was utilized to assess the suitability of the fitted multiple linear regression model. The F-ratio for the variable factor with four degrees of freedom was 6.111. Using remote data processing, digital cards, real-time gross settlement, and point-of-sale terminals, it is possible to anticipate financial performance, as shown by the regression model's effect size and significance at the 95% level of confidence (p=0.000). Regression coefficient analysis was used to calculate beta, which was then used to show how much each independent variable affects the dependent variable.

Using analysis of multiple linear regressions Table 4.18 presents the outcomes of the fit linear regression model.

Table 4.18

Regression Coefficients

		Unstandardized Coefficients		Standardized Coefficients	F	Sig.
		B	Std. Error	Beta		
1	(Constant)	.696	1.317		.529	.017
	Remote data processing	.139	.054	.157	2.561	.011
	Digital cards	.216	.042	.259	5.073	.000
	Point of sale terminals	.290	.035	.456	8.249	.000
	Real time gross settlement	.113	.073	.099	1.543	.004

$Y = .696 + .139X_1 + 216X_2 + 290X_3 + 113X_4$ …....Equation 4.1

The regression model predicts that if all other variables were maintained constant at zero, the net profit of microfinance institutions would be 0.696. The regression model also shows that an increase in remote data processing of one unit would lead to an increase in the financial performance of 0.139. A unit increase in digital cards would lead to a positive improvement in the financial performance of 0.216 while a unit increase in point-of-sale terminals would result in an increase in financial performance of 0.290. Additionally, regression analyses showed that an increase in real-time gross settlement of one unit will boost the performance of commercial institutions by 0.113. They had significance values of 0.05 and above, demonstrating that the variables significantly contributed to explaining the heterogeneity in the financial performance of microfinance organizations.

4.7 Discussion of Key Findings

The foundation for achieving the objectives of the study was provided by the regression coefficients. This was accomplished by taking into account the P-values and t-values connected to the pertinent regression coefficients, as shown in Table 4.18. The financial performance was positively and significantly affected by remote data processing ($p < 0.05$, and effect size of .139). This suggests that if digital cards, point of sale terminals, and real-time gross settlement are held unchanged, an upsurge in distant data handling of one unit would consequence in an escalation in financial performance of.139 units. The null hypothesis, according to the findings, that there is no important effect of remote data processing on the financial performance of microfinance organizations, was rejected. Findings concur with those of Mohamed (2019) who found that remote data processing services have a considerable negative influence on institutions' operational performance.

Digital cards had ($p < 0.05$, and effect size of .216) favorable and substantial effect on financial performance. This suggests that while remote data processing, point-of-sale terminals, and real-time gross settlement are held constant, an increase in digital cards of one unit marks in an escalation in financial performance of.216 units. The null hypothesis, according to the findings, that there is no significant effect of digital cards on the financial performance of microfinance institutions, was rejected. The findings concur with those of Chelangat (2014) who found that using a digital card had a good effect on ROA.

The POS terminal had a ($p < 0.05$, and effect size of .290) positive and substantial effect on financial performance. This suggests that when digital cards, remote data processing, and real-time gross settlement are held constant, an increase in point of sale terminal by

one unit boosts financial performance by.290 units. The null hypothesis, according to the findings, that there is no significant effect of point of sale terminal on the financial performance of microfinance institutions, was rejected. The analysis concurs with Le and NGO (2020) study, which originate that point-of-sale terminals have a large, favorable effect on institution profitability.

Real-time gross settlement had a (p <0.05, and effect size of .113) favorable and substantial effect on financial performance. This suggests that while digital cards, remote data processing, and point of sale terminals are held constant, an increase in real time gross settlement of one component fallouts in an improvement in financial performance of 0.113 units. The null hypothesis, according to the findings, that real-time gross settlement has no important consequence on the financial performance of microfinance institutions, was rejected. The research supports that of Muhoro and Mungai (2018), who found that for every 1% rise in RTGS volume, Return on Assets increased by 0.7985%.

CHAPTER FIVE

SUMMARY, CONCLUSSIONS AND RECOMMENDATIONS

5.1 Introduction

In accordance with the study's conclusions, the chapter also offers study endorsements and areas for further investigation.

5.2 Summary of the Findings

The investigation of innovation in processes and financial performance in the context of microfinance institutions in Nairobi County was the aim of the study. The high response rate of 93.2% on the questionnaire was made possible by the small number of target respondents.

5.2.1 Remote Data Processing

The study's primary objective was to define how remote data processing affected the financial health of microfinance institutions in Nairobi County. According to descriptive statistics, Microfinance institutions have digitized their operations to improve efficiency, including the establishment of new accounts and general operations. The findings demonstrated that customers of MFIs can remotely check their balances and originate loans through the MFIs. The outcomes of the correlation showed that there was a moderately significant positive association between remote data processing and financial performance. The findings of the regression analysis showed that remote data processing had a considerable favorable product on financial performance.

5.2.2 Digital cards on Financial Performance

The impartial was to examining the effect of digital cards on the financial performance of microfinance institutions in Nairobi County was the study's secondary goal. According to

the findings of the descriptive statistics, digital cards have increased the number of retail depositors for the institution and the microfinance institution now provides debit cards to its clients. Additionally, the Microfinance Institution provides its clients with credit cards and encourages them to use prepaid cards. The correlation between digital cards and financial performance was found to be moderately positive and substantial. According to the outcomes of the regression analysis, digital cards significantly and favorably affected the fiscal performance of microfinance institutions.

5.2.3 Point of Sale Terminal

Evaluation of the outcome of POS terminal on the financial performance of microfinance institutions in Nairobi County was the third study goal. Findings showed that the MFI has enough POS infrastructure and that consumers may easily access their deposits thanks to ATMs. Results also showed that MFIs have implemented security controls for point-of-sale transactions and that point-of-sale transaction costs have been kept to a minimum. The results of the correlation indicated that there is a somewhat substantial and favorable association between financial performance and the point of sale terminal. The financial performance of microfinance institutions was positively and significantly affected by point of sale terminals, according to regression data.

5.2.4 Real Time Gross Settlement on Financial Performance

Examining the result of RTGS on the financial results of microfinance institutions in Nairobi County was the study's fourth goal. According to descriptive data, the MFI offers Institutions transfers and conducts Institutions settlement. The findings demonstrated that the MFI employs RTGS to reduce the risk associated with high value payment settlements

and that the real-time gross settlement takes a beneficial result on the monetary performance of microfinance institutions. RTGS has a moderately positive and important association with financial performance, according to correlation data. RTGS has a good and significant effect on the monetary presentation of microfinance organizations, rendering to regression data.

5.3 Conclusion

Microfinance institutions have been automated to improve MFIs operations. This means that all essential MFI functions and processes have been automated. Also the process of opening account with the MFIs has been automated as well. This implies that the clients can open the institution account remotely without physically visiting the Microfinance institution. In addition, the study concludes that the MFIs loan origination is done remotely by the customers. The account balances can be checked remotely by the customers.

The study also shows that digital cards introduction in to the Microfinance institutions has attracted more retail depositors to the MFIs. Also the Microfinance institution offers debit cards to its customers. This implies that the Microfinance institution gains through card fees. The Microfinance institution offers credit cards to the customers. In order to ensure maximum usage of the digital cards, the Microfinance institution incentivizes customers to use digital cards.

The study comes to the conclusion that Microfinance institutions ATMs need allowed clienteles to admission their credits with ease. Further, it is concluded that the MFI has sufficient POS infrastructure and the MFIs have put in place security measures on point of sale transactions. The study settles that the costs of transactions using point of sale process have been set low.

The study further shows that MFI institutions provide inter-institution transfers and that there is inter-institution settlement in the MFI. Also Microfinance institution use RTGS to minimize risk related to high value payment settlements and that the real time gross payment affects financial performance of Microfinance institutions positively.

5.4 Recommendations

The management of Microfinance institutions should seek to automate all core processes with a view to enhance MFIs operations that in addition to automating core processes, the Microfinance institutions should make it possible for the clients to open accounts remotely and operate those accounts remotely as well. This would improve virtual Institutions and reduce brick-and-mortar institutions hence improve financial performance through operations costs reduction.

The management of Microfinance institutions should introduce digital cards to its customers as it was revealed that this move would attract more retail depositors to the MFIs. The Microfinance institution should specifically offer debit cards and credit cards to its customers. This move would accord the Microfinance institutions no-interest revenue, which would boost the financial performance of the MFIs. In order to ensure maximum benefits through digital cards use, the Microfinance institution should incentivize customers to use digital cards.

The study recommends that the Microfinance institutions should expand the network of its ATMs so as to qualify clients to access their credits with affluence. This would attract new MFI customers thus lead to improved performance. The Microfinance institutions should

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invest in POS infrastructure so as to cash in on the tech savvy customers. In order to reap substantial benefits to POS, the Microfinance institutions should put in place security measures on point of sale transactions.

The management of Microfinance institutions should offer inter-institution transfers with ease and also offer inter-institution settlement. This would make it possible for account holders of other institutions to use Institutions services of the Microfinance institution hence benefit through transaction fees. The study recommends that the Microfinance institution should utilize real time gross settlement to minimize risk related to high value payment settlements.

5.5 Recommendation for Further Research

The limitations if the study regarding the examination of process changes in connection to the economic success of microfinance organizations. However, because the predictor variables in this study could only account for 40.4% of the variation in the financial results of microfinance institutions, the researcher suggests further investigation into additional MFI process innovations that are not explained in this study. Further research might be done on technological advances in other industries that depend on processes, such industry and the hospitality industry.

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APPENDIX I: Questionnaire

SECTION A: General Information

1. Name of your MFI (optional):

   ....

2. Gender

   Male [   ]   Female [   ]

3. For how long have you been a working in the MFI?

   a) Less than 5 years   ( )
   b) 5 to 10 years   ( )
   c) 10 to 15 years   ( )
   d) Over 15 years   ( )

3. What is your highest level of education qualification?

a) Post graduate level   ( )

b) University   ( )

c) Tertiary College   ( )

4. Does your MFI has any notable process innovations?

Yes ( )

No ( )

SECTION B: Process Innovations and Financial Performance

   a)   Remote Data Processing on Financial Performance

On a scale of 1 to 5 where;

1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree. Give the effect of the following statements on remote data processing.

	STATEMENT	1	2	3	4	5
a	Institutions have automated their processes to enhance operation					
b	Account opening and operating has been automated					
c	The MFIs loan origination can be done remotely by the customers					
d	The customers can remotely check account balances					

b) Digital Cards on Financial Performance

On a scale of 1 to 5 where;

1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree. Give the effect of the following statements on digital cards.

	STATEMENT	1	2	3	4	5
a	Digital cards have attracted more retail depositors for the institution					
b	The MFI offers debit cards to its customers					
c	The MFI offers credit cards to the customers					
d	The MFI customers are incentivized to use prepaid cards					

c) Point of Sale Terminal on Financial Performance

On a scale of 1 to 5 where;

1 – Strongly agree, 2 – Agree, 3 – Neither agree nor disagree, 4 – Disagree, 5 – Strongly disagree. Give the effect of the following statements on point of sale terminal.

	Statement	1	2	3	4	5
a	ATMs have enabled customers to access their deposits with ease					
b	The MFI has sufficient POS infrastructure					
c	The MFI has put in place security measures on point of sale transactions					
d	The costs of transactions using point of sale process has been set low					

d) Real Time Gross Settlement on Financial Performance

On a scale of 1 to 5 where;

1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree. Give the effect of the following statements on real time gross settlement.

	Statement	1	2	3	4	5
a	The MFI provides inter-institution transfers					
b	There is inter-institution settlement in the MFI					
c	The MFI uses RTGS to minimize risk related to high value payment settlements					

APPENDIX II: List of Microfinance Institutions in Nairobi County

1. Caritas Microfinance Institution Limited
2. Century Microfinance Institution Limited
3. Key Microfinance Institution Limited
4. Daraja Microfinance Institution Limited
5. Faulu Microfinance Institution Limited
6. Kenya Women Microfinance Institution PLC
7. Rafiki Microfinance Institution Limited
8. SMEP Microfinance Institution Limited
9. Sumac Microfinance Institution Limited
10. U & I Microfinance Institution Limited
11. Uwezo Microfinance Institution Limited
12. Maisha Microfinance Institution Ltd

APPENDIX III: RESEARCH PERMIT

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