IMPACT OF FINANCIAL ENGINEERING STRATEGIES ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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DECLARATION AND APPROVAL

This project is my original work and has not been presented for a degree in any other University or for any other award.

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DEDICATION

I dedicate this work to my lovely wife Judy Wakabari, My children Yvonne, Sandra and Zawadi for their support and motivation during my study.

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I would like express my sincere appreciation to my supervisor Dr. Ruthwinnie Munene for helplessly guiding me into development of this research project. I also acknowledge my parents for their moral, financial and social support. I want to thank the management of Mount Kenya University especially lecturers who taught me for their guidance and support during my studies.

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May God bless you all.

ABSTRACT

Financial engineering is broadly seen as an essential component of competitiveness, embedded in the organizational structures, processes, products and services within a firm. Under modem business conditions, financial engineering activities are considered as the driving force behind business success. Universal trend such as globalization, liberalization and technological change has meant that banks have to continuously reengineer themselves to remain competitive. The purpose of the study was to investigate financial engineering and its effect on financial performance of commercial banks in Kenya. This study used a causal research design. The population of interest in this study comprised commercial banks in Kenya there were 43 operating commercial banks in Kenya as of December 2022. Primary data was collected using a questionnaire with close ended and open ended questions administered to the management staff of the commercial banks. The targeted respondents were senior, middle and low management staff in the respective banks. Secondary data was obtained from annual reports of commercial banks as well as from the annual reports of the Bank Supervision Department of the Central Bank of Kenya. A descriptive analysis technique was employed. The findings were presented using tables and charts. The study showed that there was a moderate positive and statistically significant correlation between technology innovations on financial performance of commercial banks in Kenya. ($r = 0.577$; $p < 0.05$). There was a moderate positive and statistically significant correlation between product innovation and financial performance of commercial banks in Kenya. ($r = 0.743$; $p < 0.05$). There was a moderate positive and statistically significant correlation between market innovation and financial performance ($r = 0.454$; $p < 0.05$). There was a moderate positive and statistically significant correlation between process innovation on financial performance of commercial banks in Kenya ($r = 0.825$; $p < 0.05$). This implies that technology innovation, product innovation, market innovation and process innovation affects financial performance of commercial banks in Kenya. Based on the findings of the study, the researcher recommended that technology innovation should be considered as key factor in saving cost. The study also recommended that product innovation should be emphasized to help the bank retain and grow competitive position. Product innovation should be developed to offer greater rewards and performance improvement in commercial banks .Market innovation should be put in to consideration to promote customer satisfaction and retention. Process innovation should be embraced to increasing competitiveness and improve quality service delivery. This study suggest that further research should be carried out on the challenges facing adoption of financial innovation in commercial banks in Kenya.

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LIST OF ABBREVIATIONS AND ACROMNYS

ATM Automated Teller Machine

CBK Central Bank of Kenya

FP Financial Performance

PD Product Innovations

PC Process Innovations

ROA Return on Assets

ROI Return on Investment

SPSS Statistical Package for Social Science

CHAPTER ONE
INTRODUCTION

1.1 Background of the study

Financial hindering is a method or innovation process that firms implement in their day-to-day operations not only to improve the production of goods and services but also to gain a competitive edge in performance over competitors within their industry and internationally (Mytelka, 2017). As explained by Ortiz-Villajos & Sotoca (2018), Financial engineering plays an important role in business survival because it upgrades business processes by introducing new expertise, design and understanding or and combining them with existing ones. To generate new products and services, financial engineering must be rigged with unsurpassed creativity when it comes to implementing a number of strategies including product innovations, location innovation, marketing innovations as well as research and development innovation. Creativity keeps competitors at bay and at the same time helps firms get ahead of marketing opportunities (Bouncken, Kraus & Roig-Tierno, 2021).

According to Ortiz-Villajos & Sotoca (2018), while globalisation of financial systems remains the main incentive for financial innovation, others also include rapid technological advancements and deregulation. As such, financial innovation stands out as a vital element in improving the performance of Savings and Credit Cooperative Societies (SACCOs) because it is entrenched in the firm's organisational structures, operational processes, products and services. Bouncken, Kraus & Roig-Tierno (2021) argues that various key developments in the financial sector has augmented the magnitude of existing financial institutions and increased the intricacy levels of their payment systems. Remarkably, in terms of own developments, mobile banking technologies, cybersecurity, and 'big data' are the most prevalent financial innovations

(Druhov, Druhova & Pakhnenko, 2019). The importance of such financial innovation to SACCOs is not only to give them a competitive advantage but also to rapidly disseminate information into financial markets and improve their overall performance.

Financial engineering is the phenomenon of product and/or process innovation in the financial industries the development of new financial instruments and processes that will enhance shareholders', issuers' or intermediaries' wealth. Finncrty (2016) lists countless recent financial innovations from adjustable rate preferred stock to zero coupon convertible debt - but these all can be classified into three principal types of activities: securities innovation; innovative financial processes; and creative solutions to corporate finance problems (I.ccs. 2-12). Storey (2019) suggests that the conceptualizations about what innovation are. is closely wrapped up with what it is for because, clearly, it is not an end in itself. Hence, to a large extent, conceptualizations have to be inferred from treatments of its objectives. Traditional definitions tended to place emphasis on conscious intent as an elemental feature, emphasizing the formal, planned and deliberate aspects of the financial engineering process.

Financial engineering strategy provides a clear direction and focuses the effort of the entire organization on u common financial engineering goul (Dharan, 2017). Management needs to develop the strategy and communicate the role of fmaneiul engineering within a company, decide how to use technology and drive performance improvements through the use of appropriate performance indicators. Oke (2017) suggested that the first step in formulating an innovation strategy is to define what innovation means to the firm or the areas of focus in terms of innovation. By understanding the drivers of innovation needs, a firm can develop its focus areas for innovation. The importance of having a clearly defined new innovation strategy guiding

the innovation process was recognized by Griffin (2017) and Cooper ct al. (2002). Financial engineering strategy needs to specify how the importance of innovation will be communicated to employees to achieve their buy-in and must explicitly reflect the importance that management places on innovation. The management of high performing companies was visibly and tangibly committed to new product development and explicitly formulated and communicated the firm's new product development strategy (Bessant and Francis, 2019).

To develop an effective financial engineering process, banking management need to focus not only on products, technology and processes, but also on the culture of the organization, its norms, values and beliefs (Gunasckaran. 2016). There is a need to develop a climate that is conducive to creativity (Ahmed. 1998), with a strong external focus on multiple stakeholders (Cagliano, 2018). The need to understand user needs (Rothwell, 2019) and the importance of culture (Ekvall, 2019) are also consistent themes in the literature. The attentions of practitioners and academics have for many years been preoccupied with the quality movement in banks, focusing on product and process improvements through an evolutionary incremental process (Ghobadian und Gallcar, 2016).

1.1.1 Financial engineering Global Perspective

Financial engineering plays a crucial role especially in developing countries since it improves financial know-how, facilitates financial processes in international trade, and supports financial presence. As argued by Nazir, Tan & Nazir (2021), the financial sectors of China, India and Pakistan show the potential of rapid expansion thanks to financial system innovation. The financial facilities of these developing countries

reveal the extent to which financial innovation has led to financial progress, high-tech development, competent financial intermediation, and enhanced economic growth. However, microfinance institutions in these countries continue to face many challenges that hamper their success. According to Moki, Kanini & Kinyua (2019), the challenges faced by microfinance institutions are associated with scalability, awareness-raising, sustainability, and the overall impact of their financial innovations. To overcome these challenges, the microfinance institutions should adopt innovative strategies that maximize incremental changes through personified technological acquisition and adaptation of existing products that improve performance in the long term (Mustafa, Khursheed & Fatima, 2018).

In China, microfinance institutions have gone through a phase of negotiating with the government to devise key ways of promoting financing in rural areas since 2005. As stated by Byström (2018), the Asian giant has made significant changes in their approaches to reform SACCOs in the country in the past two decades. One of these changes is the shift of focus from constricted lending schemes to unrestricted rural finance as the government provides incentives to all SACCOs that are eager to introduce suitable product and service innovations (Ding, Qin & Shi, 2018). In 2018, the People's Bank of China (PBC) introduced a number of innovative financial products and services including rediscounted loans, loan refinancing, and reserve ratios for micro and small enterprises (MSEs) and the agricultural sector in rural areas (Chen & Yuan, 2021). This showed the extent to which the government is committed to using financial innovations.

Headquartered in Geneva, Switzerland, the World Economic Forum (WEC) brings together many nations and encourage s financial innovation to a great extent. In 2019, the WEC reported that in order to improve the social welfare of the populace in

different countries, governments should prioritise the need to implement financial innovation because it also fosters economic growth. Besides the critical role played financial innovation in the economy, it is important for countries to heavily invest in research and development because it complements innovation. According to Mytelka (2017), encouraging R&D in the name of financial innovation goes a long way in facilitating rapid technological advancements that can revive struggling financial sectors all over the world. According to the WEC report, financial innovation takes different forms that provide viable and trusted means of making payments to expedite trade transactions, such as debit and credit cards. Other functions include the use of loans and savings accounts to make international payments among industries as well as the pooling of financial resources by various multinational corporations (Misati, Osoro & Odongo, 2021).

As stated by Llanto & Fukui (2013), Philippines is one of the South East Asian countries that has successfully implemented financial engineering in commercial banks . Over the last decade, the country has taken full advantage of emerging innovations to enable SACCOs finance a wide range of deprived households in the rural areas. Such initiatives have been carried out sustainably in such a way that the financial engineering have not only helped minimise transaction costs, but also reduce risks among commercial banks .In addition, the financial innovations have facilitated the need for deprived households to obtain capital and the much-needed investments for their start-up businesses.

1.1.2 Financial Engineering in African Perspective

The majority of African countries are still on a path to ensure that internet access and personal computers are readily accessed by citizens, which is a key prerequisite to

financial innovations, such as internet banking, mobile banking, etc. Among the 1.2 billion people in Africa; only 35% have accessed the internet, and only 6% currently have active internet subscriptions (Faturoti, 2022). South Africa, Egypt, Kenya and Nigeria lead Africa in the number of internet users and mobile phone users. As stated by Ernawati & Nugroho (2012), the rise in the use of mobile phones in Africa has increased the uptake of financial products thanks to the sophisticated innovations that come with them. Mobile phones enables the deployment of various forms of transactions that SACCOs have taken advantage of to improve their service delivery to customers and gain a competitive edge over other players in the financial sector. In Nigeria, smartphone penetration is 30% and 71% of online shoppers use their mobile phones to access major ecommerce platforms at least once a month (Ogidiaka, & Ogwueleka, 2020). This shows that the extent to which financial innovations is gradually intensifying in the industrial world.

In the past decade, microfinance institutions in Ghana have seen a momentous introduction of wide-ranging innovations. According to Addae-Korankye (2020), the SACCO sector in Ghana has effectively employed a number of innovations: product innovations, location innovation, marketing innovations as well as research and development innovation. When it comes to product innovations, loans and savings take precedence since they are the most sought financial products in the country. Over the years, the promptness at which innovators have created and adopted key innovations has depended on the extent to which they address issues affecting SACCOs. For that reason, there are slow innovators, moderate innovators, and high innovators who collaborative with the intention of improving customer convenience, lowering transaction costs, and expanding the market share of SACCOs.

In East Africa, Kenya, Uganda and Tanzania have seen a SACCO revolution in the past

two decades characterized by products and services innovations, along with delivery channels. The rapid advancement of technology has hastened these efforts as many SACCOs have embarked on updating traditional technologies with the intention of appealing to more modern-day customers (Katundu, 2020). Furthermore, they choose to adopt newest technologies in the market to help them be responsive central banks, which recommend a number of cutting edge innovative practices in financial services. With approximately 80% of their population residing in rural areas, SACCOs in East African countries heavily rely on mobile money services and branchless banking to accommodate as many members of rural populations into financial systems. This not only expands their market share in the financial sector, but also help more citizens to access financial products and services effortlessly from SACCOs (Wallace & Kilika, 2021). In rural Tanzania, Wangwe and Lwakatare (2016) found out that the economic and financial reforms initiated in early 1980s has always focused on reorganising banking institutions, managing interest rates and accommodating private financial institutions. This has been facilitated by financial innovations that prioritise designing, customising and diversifying products and services to address the needs of specific regions.

1.1.3 Financial Engineering in Kenyan Perspective

In Kenya, financial innovation has materialised in numerous ways including commercial bank services, mobile banking, electronic banking, and stock brokerage. Moreover, Islamic banking has taken centre stage in the banking sector with various banks, such as Barclays Bank of Kenya, First Community Bank, and Gulf African Bank adopting the innovation (CBK, 2018). The Kenyan business environment has been rapidly changing in the past two decades thanks to the effective implementation of

information technology. Ouma, Omagwa & Ngaba (2018) state that the financial sector in the country has adopted information technology to a great extent, which has brought about more product innovations, process innovations and marketing innovations. One of the most vibrant financial innovation in the Kenyan financial sector is mobile banking through M-Pesa, which combines information technology and mobile phone usage to design products that appeal to the masses. The main objective of the innovations is to streamline customer services and foster customer satisfaction in a cost-effective manner (Ortiz-Villajos & Sotoca, 2018).

Misati, Osoro & Odongo (2021) reviewed the Kenyan financial sector in three phases. The first phase covered the entire 1970s decade up to the early years of 1980s. Banks highly dominated the financial sector during this phase because they used financial authoritarianism. In conjunction with the Kenyan government, banks prioritised allocating credit to key sectors using direct monetary policy instruments such as exchange rate controls, interest rate controls among others. The second phase started in late 1980s with introduction of structural regulation programmes and policy liberalization, which led to the interest rate reduction and the control of exchange rates. Such reforms in the financial sector have played an important role in increasing financial resource accessibility through increased savings, credit distribution and investments. The late 1990s to date covers the third phase, which is an era characterised by emerging financial instruments and financial innovation products such as automated teller machines (ATMs), electronic money Islamic banking

1.1.4 Financial Engineering and Financial Performance

All financial engineering strategic arc implemented using a few basic techniques, such as increasing or reducing risk (options, futures and other more exotic derivatives),

pooling risk, swapping income streams (interest rate swaps), splitting income streams (‘stripped’ bonds), and converting long-term obligations into shorter-term ones or vice versa (maturity transformation) (Dharan. 2015). But to be truly innovative, a new security or process must enable issuers or investors to accomplish something they could not do previously, in a sense making markets more efficient or complete.

Finnerty (2014) describes ten forces that stimulate financial engineering. These include risk management, tax advantages, agency and issuance cost reduction, regulation compliance or evasion, interest and exchange rate changes, technological advances, accounting gimmicks and academic research. Much of the research attention to innovation focuses on the new idea. But ut leant as important is the adoption and spread of an innovation - its diffusion - across on industry. Indeed, faster diffusion means a higher societal return on the underlying investments in the innovation (Walston et al. 2015). Innovation strategy is a determinant of company financial performance and provides additional insights into the indirect contribution of the individual dimensions ol innovation strategy to company performance. The primary function of the financial system is to facilitate the allocution and deployment of economic resources, both spatially and across time, in an uncertain environment (Meutcr et al. 2015). This function, in turn, encompasses a payments system with a medium of exchange; the transfer of resources from savers to borrowers.; the gathering of savings for the purpose of pure time transformation (deferral/smoothing of inter-temporal consumption); and the reduction of risk through insurance and diversification.

1.1.5 Kenya Banking Industry

The Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK), govern the Banking industry in Kenya. The banking sector was liberalized in 1995 and exchange controls lifted. The Central Bank of Kenya, which falls under the Minister for Finance's docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. I he Central Bank of Kenya publishes information on Kenya's commercial banks and non-banking financial institutions, interest rates and other publications and guidelines. Banks in Kenya have come together under the Kenya Bankers Association (KBA). Which serves as a lobby for the banks' interests and addresses issues affecting its members?

The Kenyan Banking sector has demonstrated a solid growth over the past few years; the industry continues to offer significant profit opportunities for the major participants. Banks generally cam their revenues from taking in funds and lending them out at a higher rate. The interest spread between deposits and loans continued to be between 9 and 10% in 2009, offering much profit potential. Profit after tax of the overall banking system increased by 14.5 %. or KShs 4.37 billion, from KShs 30.15 billion in December 2018 to KShs 34.52 billion in December 2019. This growth is a continuation of the strong growth in profit after t axes that the industry has achieved for the past several years. The increase in profit reflected an increase in interest income on loans and advances, which rose by 21.3% or KShs 16 billion to KShs 91.2 billion in December 2009 from KShs 75.2 billion in December 2008. The increase in interest income was due to the growth of 14.33% in loans issued. The average commercial bank monthly average rates remained high, moving between 14.67% and 15.09% in 2009

1.2 Statement of the Problem

The financial industry sector offers a unique setting to study financial innovations. Financial innovations have facilitated the growth of economies, markets and commercial banks. The financial industry has successfully become the breeding ground for financial innovative services, processes and procedures, business models and technologies. Commercial banks play a significant role in the economic growth since they are at the forefront of providing financial services not only in rural areas and urban areas, but also to low-income earners. Primarily, these financial innovations are carried out to help members manage their personal banking effectively, which may positively influence the financial performance of commercial banks.

Tufano, 2018) and also these studies fail to provide sufficient data on financial engineering and performance of commercial banks in Kenya neither a unified uniform classification of these financial innovations practices as applied in these studies. Although there have been numerous studies in financial innovations practices in Kenya, there exists a knowledge gap which needs further research on the same. However, as stated by Joseph & Kibera (2019), there has been a decline in the provision of financial services to commercial banks customers in the past decade in Kenya. From the year 2015 to 2019, the percentage of clients seeking financial services from commercial banks decreased from 15.6% to 11.2%. Commercial banks have gained a competitive advantage after embracing highly demanded financial engineering innovations that provide clients with tailored services, such quick customer loans, transaction accounts with low transaction costs, mobile banking and internet banking services (Masika & Simiyu, 2018). Commercial banks still face challenges which have required them to adopt and make use financial engineering innovation services like use of debit cards, credit cards etc Scholars have acknowledged that debit cards services

have an impact on enhancing financial performance (Adewoe & Omoregi, 2015 ;). Further, some studies done previously have indicated increased incidences of fraud associated with plastic cards such debit cards, credit cards and ATMs which negatively affect the commercial banks financial performance of (Adepoju & Alhassan, 2013;). These findings have prompted the researcher to investigate impact of financial engineering on performance of commercial banks.

1.3 Purpose of the study

The purpose of this was to investigate the impact of financial engineering on financial performance of commercial banks in Kenya.

1.4 Objectives of the study

i. To determine the impact of technology innovations on financial performance of commercial banks inKenya

ii. To determine the impact of product innovations on financial performance of commercial banks inKenya

iii. To determine the impact of market innovations on financial performance of commercial banks inKenya

iv. To establish the impact of process innovation on financial performance of commercial banks inKenya

1.5 Research Questions

i. How does technology innovations impact the performance of commercial banks in, Kenya?

ii. What is the impact of product innovations on the financial performance of commercial banks in Kenya?

iii. Does market innovations impact financial performance commercial banks, Kenya?

iv. What is the impact of process innovations on the financial performance of commercial banks in Kenya

1.6 Significance of the Study

This study is important to the commercial banks in Kenya as they would be able to identify what financial engineering approaches to use in order to remain competitive and effective in the banking industry. The results of this study would also be invaluable to researchers and scholars, as it will form a basis for further research. They will use this study as a basis for discussions on the innovations adopted by banking industry in Kenya and their effect on financial performance.

1.7 Scope of the study

This study focused on the impact of financial engineering on financial performance of commercial banks in Kenya. The research focused on the 43 commercial banks operating in Kenya, with the study located in the Nairobi city, which serves as the headquarters for all commercial banks in the country. Content analysis was done of the existing financial performance reports for 2019 to 2022 .The research was carried out between the months of July 2023 to April 2024.

1.8 Limitations of the study

The study used secondary data collection posted by CBK on its website. Therefore, depended entirely on the data posted within the time. The study only covered commercial banks in Kenya. The financial engineering products were limited to technology, product, market and process innovation whereas other financial innovation products were not studied. The research only measured financial performance in terms of revenue growth, Return on Assets, and profitability excluding other measures of financial performance.

1.9 Delimitations of the study

The study was delimited to commercial banks headquarters in Kenya and only financial engineering aspect was considered. Therefore these results might not be inferred in all the financial institutions.

1.10 Assumptions of the study

This study assumed each respondent provided relevant and accurate information with regard to financial engineering. The study assumed that each respondent of this study worked in the commercial bank for a significant length of time of therefore had some knowledge on financial engineering in the commercial bank.

1.11 Operation definition of Key terms

Financial Engineering: Financial innovation is the act of creating new financial instruments as well as new financial technologies, institutions, and markets.

Product Innovation-Product innovation is the introduction of a good or service or improvements made to existing products.

Process Innovation-Process innovation is the process of introducing new business processes leading to increased efficiency or market expansion.

Automated Teller Machine: Automated teller machine (ATM) is banking electronic outlet allowing clients to carry on financial transactions without visiting their financial institution or assistance of a teller.

Return on Asset-Return on assets (ROA) - indicator of how profitable an organization is relative to its total assets.

Financial Performance-Financial performance is a subjective measure of how well a commercial bank can use assets from its primary mode of business and generate.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter summarizes the information from other researchers who have carried out their research in the same field of study. It also captures the theories, empirical review and recap of literature review.

2.2 Empirical Literature Review

2.2.1 Financial Engineering

As financial engineering attempts to define itself as a field with connections closer to the engineering disciplines than more traditional finance, associations are being set up and the general engineering community does not quite know what to do (Finery, 2016). Recent changes in patent laws and interpretations, along with encouragement for institutions to do more patenting have led to an explosion of new patents. Some of these are in financial engineering but it is not clear which can be defended. Certainly, financial patents will have an impact on the efficiency of markets and the rate of financial innovation (Nyslrom, 2020). Carnegie and Butlin (2018) define innovation as "something that is new or improvement done by an enterprise to create significantly added value cither directly for the enterprise or directly for its customer," Livingstone et al. (2018) refer to innovation as "new products or processes that increase value, including anything from patents and newly developed products to creative uses of information and collective human resource management systems.

Despite innovation absorbing real and substantial costs, and considering Culkin and Smith (2020) conclusion that the clarity of organizational objectives in terms of innovation has led to an increased emphasis on the evaluation of return on investment,

Ekvall, (2019) observes that systematic evaluation rarely occurs within organizations. Making causal connections between investment in innovation, and future management performance and organization success is externally difficult. Francis (2020) highlights the difficulty in establishing a statistical link between the incidence of innovation and company performance. Similarly. Tidd, (2018), found that the literature tends to focus heavily on training and education, and is primarily concerned with measuring the inputs, process and immediate outcomes rather than the longer-term impact of innovation.

Han. (2018) indicates that some innovations are built on existing products, services, or procedures, and are incremental in nature. Others involve greater degrees of difference and are more radical than incremental. Some innovators aim to be first, others aim for second place. He adds that a different dimension of innovations is the degree to which they imitate something already familiar. The process used in carrying out an innovation task requires an understanding of how firms manage the process of developing new products and services. Development includes the process of generating, selecting, and transforming ideas into commercially viable products and services. Several studies suggest that firms with high performance in innovation usually have a formal process for developing new products and services.

This formal process includes creativity and ideas management, selection and portfolio management and implementation management. Creativity and ideas management is the stimulation of ideas addressing customer requirements. The scope of ideas should be wide and all employees should be involved and ideas from customers cultivated. Selection and portfolio management provides an efficient means to select from the

many ideas generated and choose the best ideas for implementation. Implementation is the fundamental capability to turn new ideas. The human resource management element of the framework deals mainly with people and organization climate issues: the underlying impetus of innovation management is the need to create an environment where employee's arc motivated to contribute to innovation. An effective human resource policy that supports innovation and encourages the development of an innovative organization is needed. Von Stamm. (2015) suggest that firms should focus on norms that support creativity and implementation in order to build an innovative culture.

2.2.2 Financial Performance

Performance is the outcome of all of the organization's operations and strategies (Wheclcn and Hunger, 2016). Measuring financial performance accurately is critical for accounting purposes and remains a central concern for most organizations. Performance measurement systems provide the foundation to develop strategic plans, assess an organization's completion of objectives, and remunerate managers (Ittner and I mucker. 2018). Although assessment of performance in the marketing literature is still very important, it is also complicated (Pont and Shaw, 2015). While consensual measurement of performance promotes scholarly investigations and can clarify managerial decisions, marketers have not been able to find clear, t and reliable measures of performance on which marketing merit could be judged.

Two approaches have been adopted in the literature to measure financial performance. Longer term performance has been chosen for two reasons: firstly because that is what the customers of "retail" products such as unit trusts might be expected to be looking at,

particularly in view of the charging arrangements which make shorter term investment unwise. Secondly, one of the attractions of looking at “real” products rather than theoretical studies is the question of how administrative costs contribute to the results. In principle, such costs might appear in cither front-end or regular annual management charges. Financial performance is essential to the survival of firms in the competitive and uncertain environment. Management is eager to learn how the effort of service quality improvement is related to an organization's performance (Sousa and Voss, 2017). Financial performance ultimately reflects whether or not service quality is realized in a firm. Financial performance is conceptualized as the extent to which a firm increases sale, profits, and return on equity. These arc indicators of financial performance and manifest the wellbeing of a firm collectively.

Traditionally, the financial performance of banks and other financial institutions has been measured using a combination of conventional accounting measures and risk and return measures. Further analysis of financial performance has used methodologies such as financial ratio analysis, benchmarking, measuring performance against budget or a combination of these (Barnett and Salomon. 2016). Financial statements published usually include a variety of financial ratios designed to give an indication of the institution’s performance. As with any method of analysis designed to measure financial performance, there are limitations and imperfections associated with the use of financial ratios, particularly the use of very few ratios in isolation (Uoh, 2015). The current bank performance literature describes the objective of financial institutions as that of earning acceptable returns and minimizing the risks taken to cam this return (Pont and Shaw, 2014). There is a generally accepted relationship between risk and return, that is. the higher the risk the higher the expected return. Therefore, traditional measures of bank performance have measured both risks and returns (Swanson, 2017).

Financial engineering is also having an impact on banking. Innovation in combination with electronic technology is creating a world in which maturity transformation - turning short-term deposits into long-term loans, the central function of banks is unnecessary. Economic agents - individuals, households, companies - will no longer require this service. Their portfolios of assets and liabilities will be broadly matched in maturity terms: short-term assets will match short-term liabilities; longer-term liabilities will offset longer-term assets. As a result, as Walston et al (2019) suggests, 'traditional banking is dying. But the grieving throng around the deathbed (aces a long and expensive vigil.' Regarding the importance of innovation, there are huge body of knowledge like, technological innovation is a means of survival and growth of industrial sectors or technological innovation is recognized as a major contributor of economic growth and a dominant factor of business success not only in developed countries but also in DCs (Pack and Westphal, 2016; Wilkinson, 20018. Gerstenticld and Wortzcl (2017) suggested that one of the requirements for economic and industrial development of DCs is their ability' to innovate successfully. According to Teller (2016), a company must innovate or die. The process of innovation is fundamental to u healthy and viable organization. Those who do not innovate ultimately fail.

Hill and Uttcrback (2019) identified technological innovation as a major agent of development and change in societies which has been linked to rising productivity, employment growth and a strong position in export markets, trade and improved quality of life However, the inherent complexity of the process of technological innovation and its involvement in interaction with different environmental as well as industry-specific factors, made studies of the characteristics of technological innovation seem difficult to carry out. However, Lall (2018) stressed that a significant amount of technological innovation is taking place in the modem sectors of DCs. particularly in

those with relatively long experience of manufacturing and with broad - based capital good sectors. To all, these innovations include changes in broad sense.

2.2.3 Adoption of Financial Engineering and financial Performance

The emergence of financial engineering in banks has also been influenced by the realization on Wall Street in the early to mid-1990s that there was a need for a new kind of graduate training (Rahl. 2020). The financial institutions wanted people with heavy mathematics skills and some finance training, and had previously been fed from a haphazard network of different programs. Commercial banks in Kenya have developed new innovations that have influenced their financial performance. These includes mobile banking technologies, electronic money transfer, internet banking transactions, AT M deposits, and withdrawals, online account opening among others. All these innovations. Contribute heavily in building customer base, capital base as well as enhancing profitability which results to improved financial performance.

One important driver of organizational learning is experience with process technology. Organizational learning might be said to occur as an organization and its members build a knowledge base of action-outcome relationships relevant to its tasks and technologies (Argote, 2019). These knowledge bases have been called technological knowledge (Bohn. 2016). As technological knowledge bases become more complete through learning, knowledge is said to be mature (Bohn, 2016). In developing his model of knowledge maturity he focuses on what he culls technological knowledge. Chien and Danw (2016) showed in their study that most previous studies concerning company performance evaluation focus merely on operational efficiency and operational effectiveness which might directly influence the survival of a company. By

using an innovative two-stage data envelopment analysis model in their study, the empirical result of this study is that a company with better efficiency does not always mean that it has better effectiveness. A paper entitled 'efficiency, customer service and financing performance among Australian financial institutions' showed that all financial performance measures as interest margin, return on assets, and capital adequacy are positively correlated with customer service quality scores.

2.3 Theories of Financial Engineering

2.3.1 Task Technology theory

This theory view technologies as individual tools to carry out tasks and activities. These activities involve converting inputs into output by individuals (Goodhue, 2016). Task technology is linked with utilization of technology fit to the impact of performance. Goodhue and Thompson (2016) argue that improvement in financial information technologies enhances financial institutions financial performance. The tasks to be performed should conform to the technology. This theory assisted commercial banks in performing tasks for successful benefits. Goodhue (2018) argues that the fit theory is among activity requirements, abilities of each member individually, and their functions interact with financial information technology. These leads to realization of benefits which are tangible given a certain technology. The use of task fit theory in mobile financial technology have an impact on commercial banks performance, mobile technology financial services should be used to fit with the activities the technology purports to support commercial banks services (Goodhue & Thompson, 2016).

Task fit theory allows mobile technology financial services to fit each individual member activities and tasks to realize the performance outcomes. The level of activity

and task fit technology is determined by factors include use ease, authorization, quality system performance timeliness in production, reliability of systems, system accessibility, and the intended user's relationships and interaction levels. (Goodhue & Thompson, 2016). Several researches has been done on the validity on activity theory. The research on mobile money financial technology showed a significant relation on financial performance and task technology (Staple & Sedon, 2015; Junglas & Watson, 2016). The past studies focused mainly on the functionality and adoption of mobile money information financial systems among commercial banks clients and did not focus on its impact on commercial banks financial performance. It's important to evaluate and assess the application of task fit technology theory in mobile money technology financial services, the use of mobile technology contexts and impact on financial performance and determination for adjustment of fit theory and its extensions as proposed by Junglas and Watson (2016).

2.3.2 Innovator's Solution Theory

Christensen and Raynor's (1997) theory of the innovator's solution is a brilliant analysis of why companies fail to innovate. It explains convincingly why corporate managements don't leam about good ideas, and why managers succumb to inherent pressures to run away from the challenge of disruptive competition rather than stand and fight. The decisions made as a result of these pressures make sense in the short run to the individuals involved, but in due course they send the organization into an inexorable death spiral (Anthony and Christensen. 2018). But while their analysis of the causes of failure to undertake disruptive innovation is effective, their proposal for solving the dilemma of disruptive innovation is less helpful. The central premise of their thesis - the innovator's solution - is to accept the grim reality that big companies

are inherently and constitutionally disinclined to tackle disruptive innovation.

According to Christensen and Raynor, corporate leaders should put up a wall between the innovation and the existing hierarchy. Leadership should create an independent business unit, which will provide a safe and protected environment for innovation. There the innovation can flourish without having to light off the interferences and intrusions and anti-innovation attitudes of the hierarchy. Allowing a different culture to flourish in a separate organization eventually leads to repeated power struggles and culture clashes, which members of the mainstream organization invariably win. Interest in the new ventures tends to be cyclical. Brief surges of enthusiasm, triggered by abundant resources and the desire to diversify, are followed by sharp declines. The life spans of both internal venture units and corporate venture capital funds, therefore, tend to be short - on average, only four to five years.

Christensen and Raynor's innovator's solution theory rests on the hope that if one can build enough commercial success in the marketplace, he/she has a better chance of eventually winning that battle of persuasion. Surely, their argument goes, the hard numbers will win the war. Unfortunately, the track record shows that even with strong commercial success, numbers and reason are not enough to dislodge the forces of stasis and inertia.

2.3.3 The Information Success Theory

The information system's measurement success is important in embracing its adaptation and use. DeLone and McLean (2015) commended an integrative theory for operationalizing of factors for the success of information financial system. According

to this theory information input quality and output quality is determines the success of any information financial systems. The desire features of information financial systems determine the success of information financial system also the technical level aimed at producing the required output. The features and technical levels dimensions linked indirectly to the information financial system has effects on financial innovation on the performance of commercial banks in Kenya. This theory was changed to fit research on electronic business by showing how financial information system can be of benefit to an organization. (DeLone & McLean, 2017). In the later theory, the quality of service quality dimension was considered important. Financial institutions and organizational benefited from financial information accrued which was merged dimension of net benefit. In later theory putting into to consideration the success categories gave rise to net benefits gained from the use information financial systems.

The success factors were both casual and temporal, as success was viewed as changing not static state process. (Yusof, et al, 2019). Factors of success included quality of system, information, and service information and user satisfaction. The success measurement dimensions were considered during adaptation level the mobile money financial technological services to achieve the commercial banks benefits. Since the research is investigating effects on financial innovation which include mobile money technology financial services to performance of commercial banks, the use of mobile money technology financial services must be adopted. The study assumes that the quality features of mobile system devices, quality of information completeness and information accuracy from mobile system technology application and quality service are well performed using mobile money technology financial services in the commercial banks is well addressed, since mobile money technology financial services

are already in use by commercial banks The loophole connects use of mobile money financial technology to commercial banks financial gains. Delone & McLean (2017) updated information on financial theory success is upon which this study will rely upon, summarizing, the financial innovations should be created as a response to the market participants' needs aiming at meeting the member's goals thus affecting the overall financial performance of commercial banks

2.3.4 Disruptive Innovation Theory

Disruptive innovation theory was hypothesized by Christensen in 1997. He suggested that in a quickly changing and uncertain world, innovation is the key to competitive advantage. Yet innovation also increases uncertainty and market pressure. The more radical the innovation, the more difficult it is to estimate its market acceptance and potential. The increasing complexity and market dynamics create a substantial knowledge gap between theory and practice. Many companies are not organized to give new ideas a chance, to recognize trend breaking points in the market, to adapt quickly to changing market circumstances, or to cause market changes in the first place. Disruptive innovations change the game. They attack an existing business, and offer great opportunities for new profit growth. Only radical innovations lead to growth. Innovation is disruptive is a successfully exploited product, service or business model that significantly transforms the demand and needs of an existing market and disrupts its former key players". Damanpour (2016) defines it as those that produce fundamental changes in the activities of an organization and represent a large departure from existing practices .

A radical innovation is a product, process or service with either unprecedented performance features or familiar features that offer significant improvements in

performance or cost that transform existing markets or create new ones. Breakthrough innovations are based on inventions that serve as a source of many subsequent inventions. Ambiguous, extremely turbulent and uncertain times, combined with a long development time, make breakthrough innovations a highly risky matter. Leifcr (2017).

Disruptive innovation frequently results from a combination of the emergent qualities of several smaller ideas based on observing the world differently, challenging presuppositions, expanding boundaries, spotting the “white space", discovering the as yet unrealized needs of customers, setting challenging targets, thinking the unthinkable and challenging our underlying mental models. Innovation patterns appear as fractals, with small decision cycles imbedded in larger decision cycles in which the basic development steps (identify develop plan implement) are the guiding principle. Within this basic outline, the process of disruptive innovation is a rhythm of searching and selecting, exploring and experimenting, of learning and unlearning, and cycles of divergent and convergent thinking. It is a complex and interactive process of probing and learning or feedback. Contrary to linear, incremental innovation processes, such as the stage-gate concepts (Cooper et al., 2017a, b), disruptive innovation is more like a spiral or circular development process of continuous fast feed-forward and feed-back loops, is disruptive innovation development process is an interdependent system, based on the concepts of system thinking and of dynamic strategic thinking with learning as a central aspect (Brown and F.iscnhurdt. 2015).

This process is affected by exogenous determinants such as economic, social and political factors, competition and infrastructure, and endogenous determinants such as resources, corporate structure and corporate culture.

2.4 Empirical Studies

2.4.1 Technological Innovations

One of the consequences of the development of computer and financial technologies is the incredible growth in electronic trading. This has both good and bad implications for ordinary investors. On the positive side, the tools developed by cutting edge financial institutions over the last two decades arc now available to the individual household. Yet, as with most technologies, the tools are more advanced than the general population understanding of how to use them properly. Although trading costs have come down dramatically for the individual investor, the possibility of doing serious damage to your nest egg is even greater.

Rycroft and Rash (2019) claim that innovation requires a process of co-evolution between technology and cultural perspectives, technology exerts a significant influence on the ability to innovate and is viewed both as a major source of competitive advantage and of new product innovation (Gunasekaran et al., 2016; Porter. 2019). Often, banks experience problems in this area, which are caused by lack of capital expenditure on technology and insufficient expertise to use the technology to its maximum effectiveness (Alstrup, 2020). If management skills and activities arc conceptualized to be situation specific and embedded in the organizations in which they arc practiced then the question arises about what is the best way to prepare managers for the "complexity, uncertainty, uniqueness and value conflicts" which Schon (2018) postulates characterize organizational environments.

A systems perspective, as advocated by Doyle (2014) views management development

in terms of an integral part of a wider organizational system, and linked to the context and reality of managerial work. A systems perspective reveals the synthesizing, relational and integrative qualities of an 28onecptualiz and fosters an awareness of the complex interactions and patterns of causal relationships that exist both internally and external to the conceptualize (Mumford, 2018). Such a perspective leads to the conclusion that management development is at one and the same time both a system and a process, and as an open system, it interacts dynamically with variables from other environmental and organizational subsystems, activities and processes.

A systems perspective leads to the development of a broader set of strategic, policies and plans; it permits the notion of conceptualize development through management development; it encourages productivity and responsiveness; it leads to a better assessment of performance and overall programme effectiveness; and it contributes to the creation of a positive learning culture enabling the encompassing of generative learning. In framing management development within a more holistic perspective, systems thinking extends its context beyond the rational-functional to include qualitative dimensions, and produces new insights which themselves challenge some of the fundamental assumptions on which existing conceptions of management development activity and strategy are premised.

Higgins. (2015) advocates a unified approach to management development which sees it located at the very heart of the organization's philosophy, mission, business goals, and HR strategy, in a process that is coherent and integrated across all functions and hierarchies, so that effective management of the enterprise and development of managerial talent are a single integrated activity.

2.4.2 Product Innovation

Product innovation provides the most obvious means for generating revenues. Process innovation, on the other hand, provides the means for safeguarding and improving quality and also for saving costs. Improved and radically changed products are regarded as particularly important for long-term business growth (Hart, 2016). The power of product innovation in helping companies retain and grow competitive position is indisputable. Products have to be updated and completely renewed for retaining strong market presence. Different terminologies have been used to categorize and describe product development. Cooper et al (2018), for example, embraces two distinct activities: old product development, which involves updating and improving existing products, and new product development, which involves a greater degree of innovational challenge. Meyer (2016) similarly categorized product development into primary and secondary innovations. Primary innovations were broadly concerned with the development of new markets and relate to instances where there is a high degree of technical originality and a commensurate change in consumer behaviour. Secondary innovations, on the other hand, arc basically business or company focused and typically involve improvements to an existing market.

Product portfolio decisions arc the manifestation of a firm's innovation and marketing strategies. The common approach to managing new product development is to develop and manage a portfolio of specific projects (Wheelwright and Clark 1992). Practically speaking, choosing the product portfolio determines the firm's strategy for the medium term future and is senior management responsibility (Storey et al. 2018; Cooper et al. 2015). Operationally, portfolio decisions involve two strategic components: a development strategy regarding the number and rate of new' product introductions

(introduction intensity), and a market entry strategy regarding the relative speed to market (pioneering intensity). Past research suggests that better-managed firms structure their portfolios by striking a balance in the product innovation portfolio across these strategic components. However, past research has not systematically decomposed the components of portfolio strategy to examine how components works die together in relation to financial performance.

2.4.3 Market innovation

Market innovation is concerned with improving the mix of target markets and how chosen markets are best served (Kim and Mauborgne, 2019). Its purpose is to identify better (new) potential markets; and better (new) ways to serve target markets. Market orientation as a business culture leads to business performance improvement, as proved by numerous studies (Slater and Narver. 2015).

Innovations have a positive impact on business performance by leading to a market share increase and/or cost reduction and. in turn, a profit rise. Market oriented enterprises deliver superior qualities products to their Counterpoints to financial engineering include traditional market efficiency arguments against active management, such as Bill Sharpe's arithmetic. Even if it is possible to beat the market, and notwithstanding the fact that past performance should not be the sole criterion for judging investment managers, the riskiness of active strategies can be very different from passive strategies. Such risks do not necessarily average out over time, and investors' risk tolerance should be part of the process of selecting an investment strategy to match their goals.

Accordingly, market orientation is expected to produce a significant positive impact on

all analyzed effects of innovative activities. Sales has been proposed as the most important measure of business performance on which managers should focus (Schon 2018), and is a measure of firm performance that is often closely associated with the marketing function. Similarly, gross profit (sales revenue minus cost of selling) is an indicator of the firm's value chain, specifically measuring a firm's ability to convert inputs into valuable outputs (McAdam and McClelland; 2016).

The market in which an enterprise offers its products can be a predictor of the effects of innovative activities. Strengths and weaknesses of competitors, demands raised by consumers, legal regulations, as well as ecological, health and other standards, motivate enterprises to develop products taking into account the situation in a particular market.

Enterprises often find themselves having to modify their products sold on the international market, not only to achieve outstanding business performance and competitive advantage, but also to enter the market in the first place and to remain in it. Accordingly, the market range can have an impact on the effects of innovative activities. It is to be expected that the more present an enterprise is in the international market, the more oriented its innovation activities are towards improving product quality, ecological and health aspects, as well as towards complying with legal standards and various regulations.

2.4.4 Process Engineering

Engineering, by very nature of its development and application, builds on whatever is accepted theory at any given stage of the cycle. Investment theories tend to lurch forward in leaps, usually after the disappointment of a prolonged bear market. New theories emerge, correcting the ills exposed by a calamitous decline and engineering applies the new wisdoms. Process re-engineering challenges 100 years of established

thinking and practice about work, organization and management. It advocates a new business model along with unique techniques calling for a revolution in the way business gets done (Hammer and Stanton, 2015). Hammer and Champy became increasingly concerned, the longer they worked with organizations, about misuse and abuse of the term re-engineering and the fact that many who used the term did not understand it. Almost any organizational change effort began to full under this label. Process re-engineering became associated with downsizing, restructuring, and automation, more use of technology, delayering, flattering the hierarchy, reorganizing and total quality management. While related to some of these terms. Hummer and Champy view process re-engineering as different from them in critical ways.

Process innovation embraces quality function deployment and business process reengineering (Cumming, 2018). It is a type of innovation, which is not easy, but its purpose is now well understood. An efficient supplier who keeps working on productivity gains can expect, over time, to develop products that offer the same performance at a lower cost. Such cost reductions may, or may not be passed on to customers in the form of lower prices. Process innovation is important in both the supply of the core product as well as in the support part of any offer. Both components of an offer require quality standards to be met and maintained. In the case of services, which by their very nature rely on personal interactions to achieve results, the management of process innovation is a particular challenging activity (Johne and Storey. 2018). Implementing and developing the innovation process requires energy to overcome the resistance to change.

Therefore, it is essential that visionary and committed leadership provide the energy to overcome this resistance. Leaders in an innovative role must be competent and knowledgeable about their work, and must also excel at inspiring employees (Higgins, 2015). Kakabadsc and Kakabudse's (2018) studies revealed that the best leaders were those who were with the 34onceptuuliz in a senior position for u considerable number of years and were predominately outwardly looking in nature. This factor is important for hanks with scarce management resources. Moreover, existing managers in banks are less likely to spend time benchmarking other organizations in regard to leadership and innovation (Raymond ct al., 2018).

The cultures of some companies are much more supportive of such innovations than are the cultures of others. A strategy that favors the development and introduction of innovations with these characteristics might be called proactive (Calanlone el al. 2015). According to Porter, (2020), companies with a reactive innovation strategy aim to hit many singles. These are easier to achieve than home runs, but each one by itself does not move a team as far. As originally conceived of, the marketing concept holds that all company activities must be organized around the primary goal of satisfying customers' needs. Organizational structures and procedures reflect a market-orientation, and all personnel are expected to be truly customer-focused. Market-oriented firms are also recognized to pay a great deal of attention to customer research prior to new products being developed and produced (Damanpour, 2016).

The reactive innovation strategy requires more emphasis on process than product innovation. Because innovations of this type are easier to achieve, reward systems need to emphasize results. Results need to be viewed in terms of commercial success. The culture of reactive innovators tends to be less supportive of creative genius and more

congenial to those who progress systematically in a logical fashion (Prahalad and Hamel, 2016). In some ways, reactive innovators need to devote more time and attention to their competitors than do proactive innovators. Because the reactive innovator emphasizes adoption of the inventions of others, there is clearly a need to stay current on what inventions arc being introduced, how they are being received, and what factors determine the most opportune time for a late mover to introduce its innovation. Further, imitative innovations require not just awareness but also a detailed understanding of the product or service being imitated (Fulmer, 2017). Enterprises in transition countries very often undergo such changes due to their adjusting to new business conditions. While they need not be directly focused on innovation activities, strategic and organizational changes are expected to be conducive to them, as their purpose is to improve the enterprise conditions and discover new techniques and methods aimed at enhancing its business performance.

2.5 Conceptual Framework

A conceptual framework is a concise description of the phenomenon under study represented by graphical depiction of the major variables of the study (Mugenda, 2018). Conceptual framework is guided by independent variables and dependent variable. Independent variables are technology innovation, product innovation, market innovation and process innovation while dependent variable is the financial performance.

To quantify technology, the study used mobile banking technologies, and online account opening. The research used measures of brands 'brand visibility, competitive position and diversification. Market innovations was measured through pricing,

product, promotions and location, while process innovations, the study considered quality of the personnel, number of customers served in a given time to quantify the quality of service offered while financial performance was e measured by revenue growth, return on assets and profitability.

Independent Variable **Dependent variable**

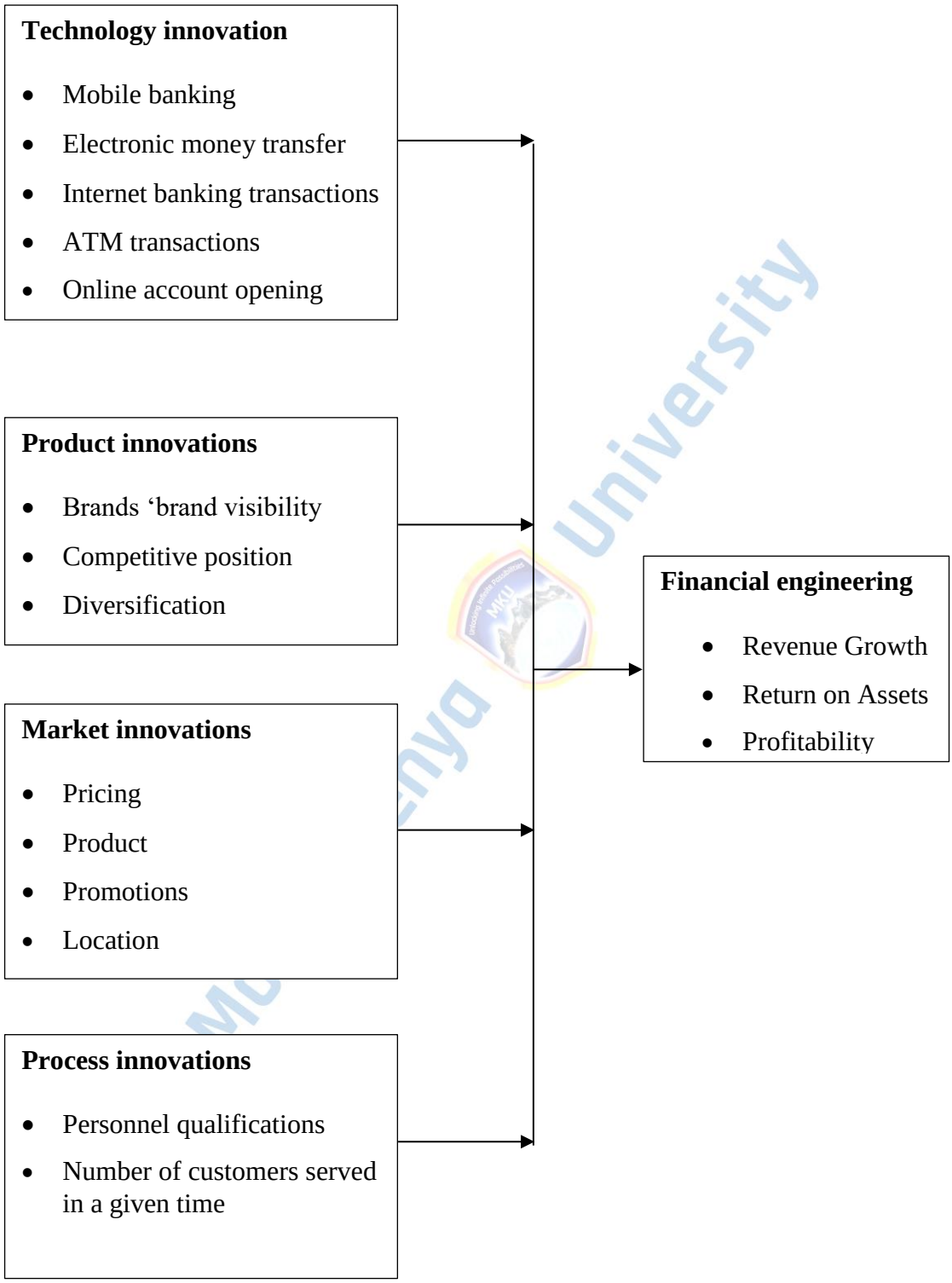

Figure 1: Conceptual framework: Own conceptualization (2023)

2.6 Recap of literature review

Financial engineering typically involves creativity, but is not identical to it: financial engineering involves acting on the creative ideas to make some specific and tangible difference in the domain in which it occurs. All financial engineering processes begin with creative ideas. We define financial engineering as the successful implementation of financial engineering typically involves creativity, but is not identical to it: financial engineering involves acting on the creative ideas to make some specific and tangible difference in the domain in which it occurs. All financial engineering processes begin with creative ideas. We define financial engineering as the successful implementation of creative ideas within an organization. In this view, creativity by individuals and teams is a starting point for financial engineering; the first is necessary but not sufficient condition tor the second. The available literature shows that there exists a strong relationship between financial engineering and financial performance of financial institutions such as banks.

As noted by Ayres (2018) technology affects the wealth of companies. There is, however, need to investigate the specific effects of these innovations with a specific reference to commercial banks. This study sets to fill the research gap that exists as no study has been done to investigate the relationship between financial engineering and financial performance of commercial banks despite their strategic positioning to adopt innovations. The available literature provided insights on how different engineering arc adopted in different contexts. Due to contextual, sector, and managerial differences among the organizations issues of technological effects on financial performance gained from these studies may not be assumed to explain effects of financial engineering on financial performance of the commercial hanks in Kenya. It is in this

light that the researcher carries out a study on the effects of financial engineering on financial performance of the commercial banks in Kenya

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discussed the research methodology adopted in the study. It explained the methodology that was used in selecting the population, sampling data, collecting data, and analyzing the data. The researcher aimed at applying methods, tools and techniques that were relevant and reliable to ensure that the data obtained was relevant for the study.

3.2 Research Design

Ddescriptive research design was utilized. It served as a framework and guides the process of data gathering and analysis. The specific characteristics of the research were focusing on examining the impact of financial engineering on the performance of financial performance of commercial banks making. This design allowed for a precise description of the phenomenon being investigated and also explored the interaction between the dependent and independent variables.

3.3 Target Population

The population of interest in this study comprised of commercial hanks in Kenya; there are 43 commercial banks in Kenya as of December 2022 (CBK Report, 2022). Thus the study used a census survey owing to the small number of commercial banks in Kenya. The target population of this research were mployees who work at commercial bank head office. This study focused specifically the managers in the marketing, customer care, information technology, Accounting and Finance departments, as they possessed

more knowledge about financial engineering and its impact on financial performance. The total population was 172 employees from the 43 commercial bank each representing all the four departments in the commercial banks. A census survey was used in the study.

3. 4 Data Collection Instrument

The study employed primary data collection. Primary data was collected through a self-administered questionnaire. The questionnaire adopted was a closed structured ended questions. According to Kothari (2018), a questionnaire was the most appropriate instrument for this study due to its ability to collect a large amount of information in a reasonably quick span of time .Secondary data was used to collect data on revenue performance. Financial data from annual reports of commercial banks for the past five years (2018 to 2022) was collected as secondary data. The information was sourced from both the Central Bank and individual commercial banks

3.5 Pilot Testing

Pilot study was carried in Equity bank targeting 17 employees which is 10% of the total population. Equity banks were selected because it has the largest number of branches in Kenya. The piloted respondents were not included in the final study. The pilot study allowed for pre-testing of the research instrument.

3.5.1 Validity of the Research Instruments

Kothari (2018) defines validity as a sound measurement that indicates the degree to which an instrument measures what it purports to measure. This study adopted content

validity which is the extent to which a measuring instrument provides adequate coverage of the topic under study. So as to establish content validity and make adjustments to the research instruments, consultations and discussions with the supervisor were done.

3.5.2 Reliability of the research instruments

Reliability of an instrument is the measure of the degree to which a research instrument yields consistent results or data after repeated trials (Cooper, 2018). Cronbach's Coefficient Alpha approach was used to measure internal consistency of the research instruments. Cronbach's Coefficient Alpha is a scale measurement tool appropriate in measuring internal consistency in descriptive survey researches as recommended by Cohen, Manion and Morrison (2017).

3.6 Data collection procedure

An informed consent letter was issued to the sampled entities for consent to collect data from therespondents. The questionnaire was administered to the respondents directly by the researcher with the help of two research assistants in order to save on time. The questionnaire was self-administered. The researcher hand delivered the respondents after making an appointment prior to delivering the questionnaires to the respondent due to their tight work schedule. The researcher agreed with the respondents when to pick the questions which was within one week. This ensured timely response and humble time to fill in the questionnaire

3.7 Proposed Data Analysis, Techniques and Procedure.

Data collected was organized and tabulated to make it easier to understand and analyze the data. The data was analyzed using the Statistical package for social sciences (SPSS) Version 25.0. Mean, standard deviations and percentages was applied in analyzing the data. The quantitative reports obtained from the analysis was presented using tables and analyzed using inferential statistics correlation coefficient and regression model.

3.7.1 Regression Model

Multi-linear regression model was used in explaining decision to financial performance by testing variables used as the independent variables of the study. The regression model below was used:

$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \varepsilon$

Where:

Y = Financial Performance

β_0 = Constant Term

$\beta_{1,2,3}$ = Beta coefficients

X_1= Technology innovations

X_2= Product innovations

X_3= Market innovations

X_4= Process innovation

ε = Error

3.8 Ethical Consideration

The researcher made a request for permission where necessary to ensure the respondents were not subjected to the violation of work-related code of conduct which

could jeopardize their job positions.. The respondents were issued with informed consent letter to allow voluntary participation in the study. A letter from the Mount Kenya University, post graduate was availed , Ethical Review clearance and NACOSTI letter were also sought to enable smooth data collection exercise.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The chapter focuses on data analysis, results presentation and discussion of the findings. The main purpose of the study was to investigate the impact of financial engineering on financial performance of commercial banks in Kenya.

4.2 Pilot Test Results

This chapter presents the pilot results, interpretation and discussion. A pilot study was carried out in Equity bank targeting 17 employees which is 10% of the total population. Statistical Package for Social Sciences (SPSS) software was used to analyze the data. Reliability of the instruments was determined using Cronbach Alpha. The findings were as indicated in Table 1.

Table 4.1: Reliability Test Results

Variable	N	Cronbach'sAlpha Value
Technology innovations	17	.798
Product innovations	17	.763
Market innovations	17	.716
Process innovation	17	.735
Financial performance ofcommercial banks	17	.738

(Source field data,2024)

The questionnaires were coded and Cronbach's Alpha Test was then conducted. All the 5 variables gave Cronbach's Alpha threshold values greater than 0.7 as shown in Table

1 From the pilot study the Cronbach Alpha values were 0.798, 0.763, 0.716, 0.735 and 0.738. for technology innovations , product innovations, market innovations, process innovation and financial performance of commercial banks Kenya respectively. All the variables had Cronbach values which were greater than 0.7. This implies that the instruments were reliable.

4.3 Response Rate

Response rate equals the number of people with whom structured questionnaires were properly completed divided by the total number of people in the entire sample (Fowler, 2014). The study administered 172 questionnaires for data collection. However, 147 questionnaires were properly filled and returned. This represented 85 % overall successful response rates. Respondents were also assured of confidentiality of the information provided. Trex (2012) suggested that a response rate of 50% is adequate 60% is good and 70% and above very good for analysis. This implies that 85 percent response rate was very appropriate for data analysis.

Table 4.2: Response Rate

Sampled No. of respondents	No. of Questionnaires Returned	Response Rate (%)
172	147	85

(Source field data,2024)

4.4 Demographic Information

4.4.1 Gender of the Respondents

The researcher sought to find out the gender of the respondents involved in the study.

The findings are as indicated in table 3

Table 4.3: Gender of the Respondents

Gender	Frequency	Percentage (%)
Male	63	43
Female	84	57
Total	**147**	**100**

(Source field data,2024)

According to the findings, 63(43%) of the respondents were male whereas 84 (57%) were females. This imply that majority of respondents working in the commercial banks were females.

4.4.2 Age of the Respondents

The researcher sought to find out the age of the respondents involved in the study. The findings are as indicated in table 4

Table 4.4.: Age of the Respondents

Age	Frequency	Percentage (%)
Less than 30 Years	48	33
31-40 Years	32	23
41-50 Years	43	29
More than 50 years	24	16
Total	**147**	**100.0**

(Source field data,2024)

From the findings majority of the respondents n=48 (33%) of the respondents were in the age bracket of less than 30 years, n=32 (23%) were in age bracket of 31-40 years. Those aged aged between 41-50 years were n= 43 (29%) and those with age bracket more than 50 years were 16%. This implies that majority of the respondents who participated in the study were in age bracket less than 30 years. The age composition revealed that majority of these respondent were had a wide knowledge on financial enginering.

4.4.3 Academic qualification

The researcher sought to find out the academic qualification of the respondents in Nakuru east constituency . The findings are as indicated in table 5.

Table 4.5: Academic qualification

Education level	Frequency	Percentage (%)
Certificate	25	17
Diploma	34	23
Bachelor	50	34
Post graduate	37	25
Total	**147**	**100.0**

(Source field data,2024)

The study findings showed that n=25 (17%) of the respondents had attained certificate holders comprised=25 (17%). Those who had attained diploma n=34 (23%) and those with bachelor degree comprised of n=50(34)%. Those who had attained post graduate

degree comprised n= 37(25%). These results implied that majority of the respondents were well educated thus understanding and filling the questionnaire was done adequately.

4.4.4 Department of service in the commercial Bank

The researcher sought to find out the department the respondents serve .The findings are as indicated in table 6.

Table 4.6.: Department of service in the commercial Bank

Department	Frequency	Percentage (%)
Marketing and product development	37	25
Information technology	38	26
Finance and accounts	25	17
Customer care	47	32
Total	**147**	**100.0**

(Source field data, 2024)

From the findings, majority served in the customer care department with n=47(32%) . This was followed by information technology department with n=38(26%). Those who served in marketing and product development were n= 37(25%) with the minority serving in finance and accounts department with n=25(17%). This implied that majority of the respondents who participated in the study were in customer care department.

4.4.5 Extent of financial engineering strategies on financial performance of commercial bank in Kenya.

The study sought to establish the extent of financial engineering strategies on financial performance of commercial bank, Kenya. The results are as indicated in table 7.

Table 4.7: Extent of financial engineering strategies on financial performance of commercial bank

Extent	Frequency	Percentage (%)
Very great extent	46	31
Great extent	39	27
Moderately extent	38	26
Less extent	14	10
No extent	10	5
Total	**147**	**100.0**

(Source field data,2024)

The research findings on the extent of financial engineering strategies on financial performance of commercial bank, Kenya. The results revealed that majority of the respondents agreed a very great extent n=46(31%). This was followed by those who agreed at great extent with n=39(27%). Those who agreed at moderate extent were n =38 (26%). Those who agreed at a less extent were n= 14(10%) while the minority comprising of n=10(5%) agreed at no extent. These results implied that financial engineering strategies has an influence financial performance of commercial bank, Kenya.

4.4.6 Extent of technology innovation on financial performance of commercial bank, Kenya.

The study sought to establish the extent of technology innovation on financial performance of commercial bank, Kenya. The results are as indicated in table 8.

Table 4.8: Extent

Extent	Frequency	Percentage (%)
Very great extent	43	31
Great extent	40	27
Moderately extent	36	25
Less extent	19	13
No extent	9	6
Total	**147**	**100.0**

(Source field data,2024)

The research findings on the extent of technology innovation on financial performance of commercial bank, Kenya. The results revealed that majority of the respondents agreed a very great extent n=43(31%). This was followed by those who agreed at great extent with n=40(27%). Those who agreed at moderate extent were n =36 (25%). Those who agreed at a less extent were n= 19(13%) while the minority comprising of n=9(6%) agreed at no extent. These results implied that technology innovation has an influence financial performance of commercial bank, Kenya.

4.4.7 Bank reliance on technological advancement on its operations

The study sought to establish bank reliance on technological advancements in order to operate its operations. The statements were scale of I to 5 Where: 1. strongly agree; 2 agreee, 3 moderately agreed 4. disagree or 5. Strongly disagree. The findings are as indicated in table 9.

Table 4.9: Bank reliance on technological advancement on its operations

statements		**1**	**2**	**3**	**4**	**5**		
	N	**%**	**%**	**%**	**%**	**%**	**Mean**	**Std**
The application of technology	147	40	35	11	9	5	4.57	.85
Mobile banking technologies	147	45	31	17	11	3	4.38	.82
Electronic money transfer	147	34	39	15	13	4	4.65	.97
Internet banking transactions	147	42	29	21	6	2	4.36	.87
ATM deposits and withdrawals	147	39	38	13	7	3	3.90	.62
Online account opening	147	31	37	19	7	2	4.64	.63

(Source field data,2024)

The study findings showed that there application of technology where majority strongly agreed 40 % and those who agreed were 35 %. Those who agreed moderately were at 11 %, 9 % agreed to a less extent while the minority agreed at no extent at 5 %. The mean was 4.57 with a standard deviation of 0.85. These results revealed that there was application of application of technology in commercial banks in , Kenya.

The study findings showed that there was mobile banking technologies where majority strongly agreed 45 % and those who agreed were 31 %. Those who agreed moderately were at 17 %, 11 % agreed to a less extent while the minority agreed at no

extent at 3 %. The mean was 4.38 with a standard deviation of 0.82. These results revealed that there was mobile banking technologies in commercial banks in , Kenya.

The study findings showed that there was application of electronic money transfer where majority agreed at 34 % and those who strongly agreed were 39 %. Those who agreed moderately were at 15 %, 13 % agreed to a less extent while the minority agreed at no extent at 4 %. The mean was 4.65 with a standard deviation of 0.97. These results revealed that there was application of electronic money transfer in commercial banks in Kenya.

The study findings showed that there was Internet banking transactions where majority strongly agreed at 42 % and those who agreed were 29 %. Those who moderately agreed were at 21 %, 6 % agreed to a less extent while the minority agreed at no extent at 2 %. The mean was 4.36 with a standard deviation of 0.87. These results revealed that there was Internet banking transactions in commercial banks in , Kenya.

The study findings showed that there were ATM deposits and withdrawals where majority strongly agreed at 39 % and those who agreed were 38 %. Those who moderately agreed were at 13 %, 7 % agreed to a less extent while the minority agreed at no extent at 3 %. The mean was 3.90 with a standard deviation of 0.62. These results revealed that there were ATM deposits and withdrawals was in commercial banks in , Kenya.

The study findings showed that there was online account opening where majority agreed at 37 % and those who strongly agreed were 31 %. Those who moderately agreed were at 19 %, 7 % agreed to a less extent while the minority agreed at no extent

at 2 %. The mean was 4.64 with a standard deviation of 0.63. These results revealed that there were online account opening in commercial banks in , Kenya.

4.4.8 Extent of technology advancements on a competitive advantage

The study sought to establish the extent of technology on a competitive advantage. The results are as indicated in table 10.

Table 4.10: Extent of technology on a competitive advantage.

Extent	Frequency	Percentage (%)
Very great extent	49	33
Great extent	52	35
Moderately extent	23	16
Less extent	16	11
No extent	7	5
Total	**147**	**100.0**

(Source field data, 2024)

The research findings on the extent of technology on a competitive advantage on financial performance of commercial bank, Kenya. The results revealed that majority of the respondents agreed a great extent n=52(35%). This was followed by those who agreed at very great extent with n=49(33%). Those who agreed at moderate extent were n =23 (16%). Those who agreed at a less extent were n= 16(11%) while the minority comprising of n=7(5%) agreed at no extent. These results implied that technology has a competitive advantage technology on financial performance of commercial bank, Kenya.

4.4.9 Influence of technologies innovation strategy factors adopted in the bank on financial performance of commercial banks in Kenya

The study sought to establish technological innovations strategy factors adopted in the bank . The statements were scale of I to 5 Where: 1. strongly agree; 2 agreee, 3 moderately agreed 4. Disagree or 5. Strongly disagree. The findings are as indicated in table 11.

Table 4.11: Technological innovations strategy factors adopted in the bank

Parameters/ factors	N	5 %	4 %	3 %	2 %	1 %	Mean	Std
Network problems/unreliable infrastructure	147	42	33	13	7	5	4.46	.84
Lack of financial resources	147	41	35	16	11	4	4.58	.82
Lack of awareness and knowledge for new strategies	147	36	37	20	13	9	4.45	.97
Projects that appear to be too high-cost (or just plain too expensive	147	41	30	20	6	3	4.36	.87
Lack of skills and inattentiveness	147	37	39	14	5	5	3.90	.62
No need for inattentiveness	147	30	34	21	8	3	4.64	.63

(Source field data,2024)

The study findings on network problems and unreliable infrastructure showed that majority strongly disagreed 42 % and those who disagreed were 33 %. Those who agreed moderately were at 13 %, 7 % agreed to a less extent while the minority agreed at no extent at 5 %. The mean was 4.46 with a standard deviation of 0.84. These results revealed that there were no network problems and unreliable infrastructure in commercial banks in , Kenya.

The study findings on lack of financial resources showed that majority strongly disagreed 41 % and those who disagreed were 35 %. Those who agreed moderately were at 16 %, 11 % agreed to a less extent while the minority agreed at no extent at 4 %. The mean was 4.58 with a standard deviation of 0.82. These results revealed that there were financial resources in commercial banks in , Kenya.

The study findings on lack of awareness and knowledge for new strategies showed that majority disagreed 37 % and those who strongly disagreed were 36 %. Those who agreed moderately were at 20 %, 13 % agreed to a less extent while the minority agreed at no extent at 9 %. The mean was 4.45 with a standard deviation of 0.97. These results revealed that there was awareness and knowledge for new strategies in commercial banks in , Kenya.

The study findings on projects appearing to be too high-cost (or just plain too expensive showed that majority strongly disagreed 41 % and those who disagreed were 30 %. Those who agreed moderately were at 20 %, 6 % agreed to a less extent while the minority agreed at no extent at 3 %. The mean was 4.36 with a standard deviation of 0.87. These results revealed that projects were not too expensive in commercial banks in , Kenya.

The study findings on lack of skills and inattentiveness showed that majority disagreed 39 % and those who strongly disagreed were 37 %. Those who agreed moderately were at 14 %, 5 % agreed to a less extent while the minority agreed at no extent at 5 %. The mean was 3.90 with a standard deviation of 0.62. These results revealed that projects was no on lack of skills and inattentiveness on technology innovation in commercial

banks in , Kenya.The study findings on no need for inattentiveness showed that majority disagreed 34 % and those who strongly disagreed were 30 %. Those who agreed moderately were at 21 %, 8 % agreed to a less extent while the minority agreed at no extent at 3 %. The mean was 4.64 with a standard deviation of 0.63. These results revealed that was need for inattentiveness on technology innovation in commercial banks in, Kenya. The overall results revealed technological innovations strategy factors adopted in the commercial bank has an influence on financial performance in commercial banks in Kenya.

4.4.10 Extent of product innovation on commercial bank performance

The study sought to establish the extent product innovation influence commercial bank productivity. The results are as indicated in table 12.

Table 4.12: Extent of product innovation influence commercial bank performance

Extent	Frequency	Percentage (%)
Very great extent	47	32
Great extent	54	37
Moderately extent	33	23
Less extent	11	7
No extent	2	1
Total	**147**	**100.0**

(Source field data,2024)

The research findings on the extent of product innovation on productivity of commercial bank, Kenya. The results revealed that majority of the respondents agreed a great extent n=54(37%). This was followed by those who agreed at very great

extent with n=47(32%). Those who agreed at moderate extent were n =33 (23%). Those who agreed at a less extent were n= 11(7%) while the minority comprising of n=2(1%) agreed at no extent. These results implied that product innovation influence commercial bank productivity in , Kenya.

4.4.11 Extent of product innovative take-up on the profitability of the Bank

The study sought to establish the extent product innovation influence commercial bank productivity. The results are as indicated in table 13.

Table 4.13: Extent of product innovation take-up on the profitability of the Bank

Extent	Frequency	Percentage (%)
Very great extent	49	33
Great extent	55	38
Moderately extent	30	20
Less extent	9	6
No extent	4	3
Total	**147**	**100.0**

(Source field data,2024)

The research findings on the extent of product innovative take-up on the profitability of the Bank commercial bank in Kenya. The results revealed that majority of the respondents agreed a great extent n=55(38%). This was followed by those who agreed at very great extent with n=49(33%). Those who agreed at moderate extent were n =30 (20%). Those who agreed at a less extent were n= 9(6%) while the minority comprising of n=4(3%) agreed at no extent. These results implied that product innovative take-up on the profitability of the commercial bank in Kenya.

4.4.12 Factors influencing bank's adoption of product innovations in commercial banks.

The research findings on the extent of factors influencing banks's adoption of product innovations in commercial bank in Kenya. The statements were scale of I to 5 Where: 1. strongly agree; 2 agree, 3 moderately agreed 4. disagree or 5. Strongly disagree. The results are as indicated in table 14

Table 4.14: Extent of factors influencing Banks's adoption of product innovations in commercial bank in Kenya

Parameters/ factors	N	1 %	2 %	4 %	5 %	6 %	Mean	Std
Size of organization	147	32	43	13	8	4	4.64	.74
Quality of the systems	147	31	45	24	4	3	4.67	.72
Information intensity	147	32	47	18	17	9	4.55	.87
Specialization of business	147	39	40	22	7	2	4.56	.77
Management support of Competitive strategies	147	35	41	10	8	6	4.80	.71

(Source field data,2024)

The study findings on the size of organization showed that majority strongly agreed at 43 % and those who agreed were 32 %. Those who agreed moderately were at 13 %, 8 % disagreed to a less extent while the minority agreed at no extent at 4 %. The mean was 4.64 with a standard deviation of 0.74. These results revealed that size of organization is a factor influencing banks's adoption of product innovations in commercial bank in Kenya.

The study findings on the quality of the systems showed that majority agreed at 45 % and those who strongly agreed were 31 %. Those who agreed moderately were at 24 %, 4 % disagreed to a less extent while the minority agreed at no extent at 3 %. The mean was 4.67 with a standard deviation of 0.72. These results revealed that the quality of the system is a factor influencing banks's adoption of product innovations in commercial bank in Kenya.

The study findings on information intensity showed that majority agreed at 47 % and those who strongly agreed were 32 %. Those who agreed moderately were at 18 %, 17 % disagreed to a less extent while the minority agreed at no extent at 9 %. The mean was 4.55 with a standard deviation of 0.87. These results revealed that information intensity is a factor influencing banks's adoption of product innovations in commercial bank in Kenya.

The study findings on specialization of business showed that majority agreed at 40 % and those who strongly agreed were 39 %. Those who agreed moderately were at 22 %, 7 % disagreed to a less extent while the minority agreed at no extent at 2 %. The mean was 4.56 with a standard deviation of 0.77. These results revealed that specialization of business is a factor influencing banks's adoption of product innovations in commercial bank in Kenya.

The study findings on management support of competitive strategies showed that majority agreed at 41 % and those who strongly agreed were 35 %. Those who agreed moderately were at 10 %, 8 % disagreed to a less extent while the minority agreed at no extent at 6 %. The mean was 4.80 with a standard deviation of 0.71. These results revealed that management support of competitive strategies is a factor influencing banks's adoption of product innovations in commercial bank in Kenya.

4.4.13 Areas factors in product innovation strategies considered key factors to productivity

The study sought to find out areas factors in product innovation strategies for greater profitability. The statements were scale of: 1 – Strongly Agree, 2– Agree, 3 – Neutral, 4-Disagreeor5–StronglyDisagree. The results are as indicated in table 15

Table 4.15: Areas factors in product innovation strategies considered key factors to productivity

Success factors		1	2	4	5	6		
	N	%	%	%	%	%	Mean	Std
Product Development	147	34	35	19	7	5	4.61	.77
Product diversification	147	41	42	27	5	2	4.64	.73
Product differentiation	147	33	39	28	15	10	4.52	.82
Product/brand visibility	147	38	41	20	7	4	4.53	.71

(Source field data,2024)

The study findings on the product development majority agreed at 35 % and those who strongly agreed at 34 %. Those who agreed moderately were at 19 %, 7 % disagreed to a less extent while the minority agreed at no extent at 5 %. The mean was 4.61 with a standard deviation of 0.77. These results revealed that areas factors in product innovation strategies considered key factors to productivity in commercial banks in Kenya.

The study findings on the product diversification majority strongly agreed at 42 % and those who agreed at 41 %. Those who agreed moderately were at 27 %, 5 % disagreed to a less extent while the minority agreed at no extent at 2 %. The mean was

4.64 with a standard deviation of 0.73. These results revealed that areas factors in product innovation strategies considered key factors to productivity in commercial banks in Kenya.

The study findings on the product differentiation majority agreed at 39 % and those who agreed at 33 %. Those who agreed moderately were at 28 %, 15 % disagreed to a less extent while the minority agreed at no extent at 10 %. The mean was 4.52 with a standard deviation of 0.82. These results revealed that product differentiation is an area in product innovation strategies for greater profitability is considered key factors to productivity in commercial banks in Kenya.

The study findings on the product product/brand visibility majority agreed at 41 % and those who agreed at 38 %. Those who agreed moderately were at 20%, 7 % disagreed to a less extent while the minority agreed at no extent at 4 %. The mean was 4.53 with a standard deviation of 0.71. These results revealed that product product/brand visibility is an area in product innovation strategies for greater profitability is considered key factors to productivity in commercial banks in Kenya. The overall results showed that product development, product diversification, product differentiation and product/brand visibility are areas factors in product innovation strategies for greater profitability in commercial banks in Kenya.

4.4.14 Market innovation adoption effects on financial performance of commercial bank

The study sought to establish the extent market innovation affects the financial performance of commercial bank. The results are as indicated in table 16.

Table 4.16: Extent market innovation adoption effects on financial performance of commercial bank

Extent	Frequency	Percentage (%)
Very great extent	59	40
Great extent	43	29
Moderately extent	28	20
Less extent	12	8
No extent	5	3
Total	**147**	**100.0**

(Source field data,2024)

The research findings on the extent market innovation affects the financial performance of commercial bank, Kenya. The results revealed that majority of the respondents agreed at very great extent n=59(40%). This was followed by those who agreed at great extent with n=43(29%). Those who agreed at moderate extent were n =28 (20%). Those who agreed at a less extent were n= 12(8%) while the minority comprising of n=5(3%) agreed at no extent. These results implied that market innovation affects the financial performance of commercial bank, Kenya.

4.4.15 Extent bank employs market innovation strategies on financial performance of commercial banks in Kenya

The study sought to establish the extent bank employs market innovation on financial performance of commercial banks in Kenya. The statements were scale of I to 5 Where: 1.; Very great extent 2 Great extent , 3 moderately extent 4. Little extent 5 Not at all. The results are as indicated in table 17

Table 4.17: Market innovation strategies on financial performance of commercial banks in Kenya.

Parameters/ factors		1	2	3	4	5		
	N	%	%	%	%	%	Mean	Std
Creating value through pricing	147	43	31	15	10	7	4.36	.83
Availability of resources and capabilities	147	41	31	22	13	6	4.58	.79
Customer satisfaction and retention	147	32	41	24	9	9	4.54	.87
Creating and nurturing strong products	147	39	32	22	6	6	4.63	.77
Environmental analysis and response to changes	147	27	49	11	6	5	3.80	.92
Aggressive anti-competitors marketing campaigns	147	30	44	16	5	3	4.84	.73

(Source field data,2024)

The study findings on creating value through pricing showed that majority agreed to a very large extent 43 % and those who agreed at large extent were 31 %. Those who agreed at moderate extent were at 15 %, 10 % agreed to a less extent while the minority agreed at no extent at 7 %. The mean was 4.36 with a standard deviation of 0.83. These results revealed that creating value through pricing had an effect on financial performance of commercial banks in , Kenya.

The study findings on availability of resources and capabilities showed that majority agreed to a very large extent 41 % and those who agreed at large extent were 31 %. Those who agreed at moderate extent were at 22 %, 13 % agreed to a less extent while the minority agreed at no extent at 6 %. The mean was 4.58 with a standard deviation of 0.79. These results revealed that availability of resources and capabilities had an effect on financial performance of commercial banks in , Kenya.

The study findings on customer satisfaction and retention showed that majority agreed to a large extent 41 % and those who agreed at a very large extent were 32 %. Those who agreed at moderate extent were at 24 %, 9 % agreed to a less extent while the minority agreed at no extent at 9 %. The mean was 4.54 with a standard deviation of 0.87. These results revealed that customer satisfaction and retention had an effect on financial performance of commercial banks in , Kenya.

The study findings on creating and nurturing strong products showed that majority agreed to a very large extent 39 % and those who agreed at a large extent were 32 %. Those who agreed at moderate extent were at 22 %, 6 % agreed to a less extent while the minority agreed at no extent at 6 %. The mean was 4.63 with a standard deviation of 0.77. These results revealed that creating and nurturing strong products on financial performance of commercial banks in , Kenya.

The study findings on environmental analysis and response to changes showed that majority agreed to a large extent 49 % and those who agreed at a very large extent were 27 %. Those who agreed at moderate extent were at 11 %, 6 % agreed to a less extent while the minority agreed at no extent at 5 %. The mean was 3.80 with a standard deviation of 0.92. These results revealed that environmental analysis and response to changes on financial performance of commercial banks in , Kenya.

The study findings on aggressive anti-competitors marketing campaigns showed that majority agreed to a large extent 44 % and those who agreed at a very large extent were 30 %. Those who agreed at moderate extent were at 16 %, 5 % agreed to a less extent while the minority agreed at no extent at 3 %. The mean was 4.84 with a standard deviation of 0.73 These results revealed that aggressive anti-competitors

marketing campaigns on financial performance of commercial banks in , Kenya. The overall results showed that bank employs market innovation which has an influence on financial performance of commercial banks in Kenya

4.4.16 Level of agreement on the effect of the market innovation on financial performance of commercial bank.

The study sought to find out the level of agreement of the market innovation on financial performance of commercial bank. The statements were scale of: 1 – Strongly Agree, 2– Agree, 3 – Neutral, 4-Disagree or 5–StronglyDisagree. The results are as indicated in table 18

Table 4.18: Level of agreement on the effect of the market innovation on financial performance of commercial bank.

Statements	**N**	**1 %**	**2 %**	**4 %**	**5 %**	**6 %**	**Mean**	**Std**
Effect of the market innovation strategies	147	31	38	17	8	6	4.51	.76
Market development purpose bank is to identify better (new) potential markets	147	41	32	27	15	2	4.64	.73
Market development helps the bank to get better (new) ways to serve target markets	147	37	43	25	18	10	4.52	.82

The bank is involved in market segmentation which is aimed at developing the profitability of a business to the full	147	32	33	14	17	5	4.91	.77
Market orientation is expected to produce a significant positive impact on all analyzed effects of innovative activities	147	41	40	21	11	4	4.94	.75
Market orientation is expected to produce a significant positive impact on all analyzed effects of innovative activities	147	39	33	27	15	11	4.42	.81

(Source field data,2024)

The study findings on effect of the market innovation strategies showed that majority agreed at 38 % and those who strongly agreed at 31 %. Those who agreed moderately were at 17 %, 8 % disagreed to a less extent while the minority agreed at no extent at 6 %. The mean was 4.51 with a standard deviation of 0.76. These results revealed that effect of the market innovation strategies in commercial banks in Kenya.

The study findings on market development purpose bank is to identify better (new) potential markets showed that majority strongly agreed at 41 % and those who agreed at 32 %. Those who agreed moderately were at 27%, 15 % disagreed to a less extent while the minority agreed at no extent at 2 %. The mean was 4.64 with a standard deviation of 0.73. These results revealed that market development purpose bank is to identify better (new) potential market in commercial banks in Kenya.

The study findings on market development helps the bank to get better (new) ways to serve target market showed majority agreed at 43 % and those who strongly agreed at 37 %. Those who agreed moderately were at 25 %, 18 % disagreed to a less extent while the minority agreed at no extent at 10 %. The mean was 4.52 with a standard deviation of 0.82. These results revealed that market development helps the bank to get better (new) ways to serve target market in commercial banks in Kenya.

The study findings on the bank being involved in market segmentation which is aimed at developing the profitability of a business to the full showed majority agreed at 33 % and those who strongly agreed at 32 %. Those who agreed moderately were at 14 %, 17 % disagreed to a less extent while the minority agreed at no extent at 5 %. The mean was 4.91 with a standard deviation of 0.77. These results revealed that the bank is involved in market segmentation which is aimed at developing the profitability of a business to the full in commercial banks in Kenya.

The study findings on market orientation expected to produce a significant positive impact on all analyzed effects of innovative activities showed majority strongly agreed at 41 % and those who agreed at 40 %. Those who agreed moderately were at 21 %, 11 % disagreed to a less extent while the minority agreed at no extent at 4 %. The mean was 4.94 with a standard deviation of 0.75. These results revealed that on market orientation is expected to produce a significant positive impact on all analyzed effects of innovative activities in commercial banks in Kenya.

The study findings on market orientation expected to produce a significant positive impact on all analyzed effects of innovative activities showed majority strongly agreed at 39 % and those who agreed at 33 %. Those who agreed moderately were at 27 %,

15 % disagreed to a less extent while the minority agreed at no extent at 11 %. The mean was 4.42 with a standard deviation of 0.81. These results revealed that market orientation is expected to produce a significant positive impact on all analyzed effects of innovative activities in commercial banks in Kenya.

4.4.17 Extent process innovation on financial performance of commercial banks in Kenya

The study sought to establish the extent does process engineering affect the financial performance of commercial bank. The results are as indicated in table 19.

Table 4.19: Extent process engineering effects on financial performance of commercial bank

Extent	Frequency	Percentage (%)
Very great extent	54	37
Great extent	45	31
Moderately extent	31	21
Less extent	9	6
No extent	8	5
Total	**147**	**100.0**

(Source field data,2024)

The research findings on the extent process innovation affects the financial performance of commercial bank, Kenya. The results revealed that majority of the respondents agreed at very great extent n=54(37%). This was followed by those who agreed at great extent with n=45(31%). Those who agreed at moderate extent were n =31 (21%). Those who agreed at a less extent were n= 9(6%) while the minority

comprising of n=8(5%) agreed at no extent. These results implied that process innovation affects the financial performance of commercial bank, Kenya.

4.4.18 Use of process innovation financial performance of commercial bank.

The study sought to find out the rank of use of process innovation on financial performance of commercial bank. The statements were scale of: 1 – most used, 2– used, 3 – moderately used, 4-least used or 5–not used . The results are as indicated in table 18

Table 4.20: Rank of use of process innovation on financial performance of commercial bank.

Statements	N	1 %	2 %	4 %	5 %	6 %	Mean	Std
Increasing profit	147	30	48	18	3	1	4.81	.71
Enhancing quality personnel	147	41	42	17	11	8	4.78	.73
Saving of costs	147	47	43	35	18	10	4.52	.90
Attracting more customers	147	31	33	25	9	3	4.61	.77
Increasing competitiveness	147	41	30	31	12	3	4.87	.78
Providing the means for safeguarding and improving quality of service	147	35	43	31	11	5	4.45	.83

(Source field data,2024)

The study findings on increasing profit showed that majority ranked used at 48 % and those who most used at 30 %. Those who ranked moderately used were at 18 %, 3 % less used extent while the minority not used ranked at 1 %. The mean was 4.81 with

a standard deviation of 0.71. These results revealed that process innovation increases profit on financial performance of commercial banks in Kenya.

The study findings on enhancing quality personnel showed that majority ranked used at 42 % and those who most used at 41 %. Those who ranked moderately used were at 17 %, 11 % less used while the minority not used ranked at 8 %. The mean was 4.78 with a standard deviation of 0.73. These results revealed that process innovation enhances quality personnel on financial performance of commercial banks in Kenya.

The study findings on saving of costs showed that majority ranked most used at 47 % and those who used at 43 %. Those who ranked moderately used were at 35 %, 18 % less used while the minority not used ranked at 10 %. The mean was 4.52 with a standard deviation of 0.90. These results revealed that process innovation saves costs on financial performance of commercial banks in Kenya.

The study findings on attracting more customers showed that majority used at 33 % and those who most used at 31 %. Those who ranked moderately used were at 235 %, 9 % less used while the minority not used ranked at 3 %. The mean was 4.61 with a standard deviation of 0.77. These results revealed that process innovation attracts more customers on financial performance of commercial banks in Kenya. The study findings on increasing competitiveness showed that majority most used at 41 % and those who used at 30 %. Those who ranked moderately used were at 31 %, 12 % less used while the minority not used ranked at 3 %. The mean was 4.87 with a standard deviation of 0.78. These results revealed that process innovation increases competitiveness on financial performance of commercial banks in Kenya.

The study findings on providing the means for safeguarding and improving quality of service showed that majority used at 43 % and those who most used at 35 %. Those who ranked moderately used were at 31 %, 11 % less used while the minority not used ranked at 5 %. The mean was 4.45 with a standard deviation of 0.83. These results revealed that process innovation provides the means for safeguarding and improving quality of service on financial performance of commercial banks in Kenya.

To what extend do you agree with the effect of process innovation on the profitability of the bank? Use a scale of 1-5 where 1 strongly disagree and 5 strongly agree.

4.4.16 Extent process innovation affect profitability of the bank

The study sought to establish the extent process innovation affect profitability of the bank on financial performance of commercial banks in Kenya. The statements were scale of I to 5 Where: 1.; Very great extent 2 Great extent , 3 moderately extent 4. Little extent 5 Not at all. The results are as indicated in table 21

Table 4.21: process innovation and profitability of the bank

Parameters/ factors	**N**	**1 %**	**2 %**	**3 %**	**4 %**	**5 %**	**Mean**	**Std**
Process innovation is important in both the supply of the core product as well as in the support part of any offer.	147	33	41	13	12	7	4.33	.87
Process innovations that arc radical, inventive and early offer greater rewards and performance improvement.	147	30	41	23	10	9	4.38	.76
Companies with a reactive innovation strategy aim to hit many singles	147	32	41	21	14	4	4.34	.81

(Source field data,2024)

The study findings on process innovation is important in both the supply of the core product as well as in the support part of any offer showed that majority agreed to a very large extent 41 % and those who agreed at large extent were 33 %. Those who agreed at moderate extent were at 13 %, 12 % agreed to a less extent while the minority agreed at no extent at 7 %. The mean was 4.33 with a standard deviation of 0.87. These results revealed that process innovation has importance in both the supply of the core product as well as in the support part of any offer an effect on financial performance of commercial banks in , Kenya.

The study findings on process innovations being radical, inventive and early offer greater rewards and performance improvement showed that majority agreed to a large extent 41 % and those who agreed a very large extent were 30 %. Those who agreed at moderate extent were at 23 %, 10 % agreed to a less extent while the minority agreed at no extent at 9 %. The mean was 4.38 with a standard deviation of 0.76. These results revealed that process innovations are radical, inventive and early offer greater rewards and performance improvement on financial performance of commercial banks in , Kenya.

The study findings on companies with a reactive innovation strategy aiming to hit many singles showed that majority agreed to a large extent 41 % and those who agreed a very large extent were 32 %. Those who agreed at moderate extent were at 21 %, 14 % agreed to a less extent while the minority agreed at no extent at 4 %. The mean was 4.34 with a standard deviation of 0.81. These results revealed that companies with a reactive innovation strategy aims to hit many singles on financial performance of commercial banks in , Kenya.

4.5 Inferential Statistics

4.5.1 Correlation Analysis

4.5.1.1 Technology innovations and financial performance

The study sought to establish the correlation between technology innovations on financial performance of commercial banks in Kenya. The findings of the study are as shown in Table 22.

Table 4.22 Financial Performance

		Financial performance
Technology innovations	Pearson Correlation	.577**
	Sig. (2-tailed)	.000
	N	147

**. Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 22, the study indicates that there was a moderate positive and statistically significant correlation between technology innovations on financial performance of commercial banks in Kenya. ($r = 0.577$; $p < 0.05$). This implies technology innovations improves financial performance of commercial banks in Kenya

4.5.1.2 Product innovation and financial performance

The study sought to establish the correlation between product innovation and financial performance of commercial banks in Kenya. The findings of the study are as shown in Table 23.

Table 4.23 :Project innovation and financial performance

		Financial Performance
Project innovation	Pearson Correlation	.743**
	Sig. (2-tailed)	.000
	N	147

**. Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 23, the study indicates that there was a moderate positive and statistically significant correlation between product innovation and financial performance of commercial banks in Kenya. ($r = 0.743$; $p < 0.05$). This implies product innovation improves financial performance of commercial banks in Kenya.

4.5.1.3 Market innovation and financial performance

The study sought to establish the correlation between market innovations and financial performance of commercial banks inKenya. The findings of the study are as shown in Table 24

Table 4.24: Market innovation and financial performance

		Financial performance
Market innovation	Pearson Correlation	.559**
	Sig. (2-tailed)	.000
	N	147

**. Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 24, the study indicates that there was a moderate positive and statistically significant correlation between market innovation and financial

performance (r = 0.454; p < 0.05). This implies that market innovation affects financial performance of commercial banks in Kenya.

4.5.1.4 Process innovation and financial performance

The study sought to establish the correlation between process innovation on financial performance of commercial banks in Kenya. The findings of the study are as shown in Table 25

Table 4.25: Process innovation and financial performance

		Financial Performance
Process Innovation	Pearson Correlation	.825**
	Sig. (2-tailed)	.000
	N	147

**. Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 27, the study indicates that there was a moderate positive and statistically significant correlation between process innovation on financial performance of commercial banks in Kenya (r = 0.825; p < 0.05). This implies that process innovation affects financial performance of commercial banks in Kenya.

4.6 Regression Analysis

The study carried out a regression analysis to evaluate the combined effect of technology innovations, product innovations, market innovations, process innovation and financial performance of CDF project in Nakuru East constituency was established. The model summary was shown in table 26

Table 4.26: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	.868[a]	.753	.751	.3435	.000

The R-Squared is the proportion of variance in the dependent variable which can be explained by the independent variables. The R-squared in this study was 0.753, which shows that the four independent variables technology innovations, product innovations, market innovations, process innovation can explain 75.3 % of financial performance of commercial banks in Kenya while other factors explain 24.7 %.

Table 4.27: ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.53	4	7.343	100.248	.000[b]
	Residual	7.441	143	.1005		
	Total	36.094	147			

a. Dependent Variable: financial performance of commercial banks

b. Predictors: (Constant), technology innovations, product innovations, market innovations, process innovation

The analysis of variance in this study was used to determine whether the model is a good fit for the data. From the findings, the p-value was 0.000 which is less than 0.05

and hence the model is good in predicting how the four independent variables (technology innovations, product innovations, market innovations, process innovation) affect financial performance commercial banks in Kenya . Further, the F-value was (100.248) which shows that the model was fit in predicting the effect of the independent variables on the dependent variable.

Table 4.28: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.076	.130		.277	.751
Technology innovations	.364	.146	.582	4.360	.015
Product innovations	.281	.088	.231	2.547	.006
1					
Market innovations	.312	.178	.173	2.316	.067
Process innovation	.268	.165	.229	3.740	.008

Table 28 shows the overall significant test results for the hypothesized research model. The interpretations of the findings indicated follow the following regression model.

$$\mathbf{Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4}$$

Therefore,

$$\mathbf{Y= 0.076 + 0.364 X_1 + 0.281\ X_2 + 0.312 X_3 + 0.268\ X_4}$$

According to the intercept (β_0), when the four independent variables are held constant, the financial performance for commercial banks was 0.076. In addition, holding all the other independent variables constant, a unit increase in technology innovations would

lead to a 0.364 improvement in financial performance for commercial banks in Kenya. Further, holding on the other independent variables constant, a unit increase product innovations would lead to a 0.281 improvement in financial performance for commercial banks in Kenya.

In addition, holding all the other variables constant, a unit increase in market innovations would lead to a 0.312 improvement in financial performance for commercial banks in Kenya.. Finally holding all the other variables constant, a unit increase in process innovation would lead to a 0.268 improvement in financial performance for commercial banks in Kenya.. From these findings it can be inferred that technology innovations had the most influence on financial performance for commercial banks in Kenya followed by market innovations, product innovations and process innovation in that order.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a detailed summary of the major findings of the actual study; it then draws conclusions and discusses implications emanating from these findings. Finally, it makes some recommendations and suggestions on areas of further study. The purpose was to investigate the impact of financial engineering on financial performance of commercial banks in Kenya.

5.2 Summary of Major Findings

The study sought to determine the summary of key major findings of the study. The summary was categorized in form of specific objectives.

5.2.1 Technology innovations and financial performance

The study findings showed that there application of technology n commercial banks in Kenya. The study findings showed that there was mobile banking technologies in commercial banks in , Kenya.The study findings showed that there was application of electronic money transfer in commercial banks in , Kenya.The study findings showed that there was Internet banking transactions in commercial banks in , Kenya.The study findings showed that there were ATM deposits and withdrawals in commercial banks in , Kenya.. The study findings showed that there was online account opening in commercial banks in , Kenya. The research findings showed that technology has a competitive advantage technology on financial performance of commercial bank, Kenya. The study findings revealed that there were no network problems and unreliable infrastructure in commercial banks in , Kenya. The study findings showed that there

were financial resources in commercial banks in , Kenya.The study findings revealed that there was awareness and knowledge for new strategies in commercial banks in , Kenya.

The study findings revealed that projects were not too expensive in commercial banks in , Kenya. The study findings revealed that projects there was no lack lack of skills and inattentiveness on technology innovation in commercial banks in , Kenya. The study findings revealed that there was need for inattentiveness on technology innovation in commercial banks in, Kenya. The overall results revealed technological innovations strategy factors adopted in the commercial bank has an influence on financial performance in commercial banks in Kenya.

5.2.2 Product innovation and financial performance

The study findings showed that that product innovation influence commercial bank productivity in , Kenya. These results showed that product innovative take-up on the profitability of the commercial bank in Kenya. The research findings revealed that size of organization is a factor influencing bank's adoption of product innovations in commercial bank in Kenya. The study findings revealed that the quality of the system is a factor influencing bank's adoption of product innovations in commercial bank in Kenya. The study findings revealed that information intensity is a factor influencing bank's adoption of product innovations in commercial bank in Kenya. The study findings on revealed that specialization of business is a factor influencing bank's adoption of product innovations in commercial bank in Kenya. The study findings revealed that management support of competitive strategies is a factor influencing bank's adoption of product innovations in commercial bank in Kenya.

The study findings that areas factors in product innovation strategies considered key factors to productivity in commercial banks in Kenya. The study findings revealed that product differentiation is an area in product innovation strategies for greater profitability is considered key factors to productivity in commercial banks in Kenya. The study findings revealed that product product/brand visibility is an area in product innovation strategies for greater profitability is considered key factors to productivity in commercial banks in Kenya. The overall results showed that product development, product diversification, product differentiation and product/brand visibility are areas factors in product innovation strategies for greater profitability in commercial banks in Kenya.

5.2.3 Market innovation and financial performance

These results implied that market innovation affects the financial performance of commercial bank in Kenya. The study findings revealed that creating value through pricing had an effect on financial performance of commercial banks in , Kenya. The study findings showed that availability of resources and capabilities had an effect on financial performance of commercial banks in Kenya. The study findings showed that customer satisfaction and retention had an effect on financial performance of commercial banks in Kenya. The study findings revealed that creating and nurturing strong products on financial performance of commercial banks in Kenya. The study findings revealed that environmental analysis and response to changes on financial performance of commercial banks in , Kenya. The study findings revealed that aggressive anti-competitors marketing campaigns on financial performance of commercial banks in , Kenya. The overall results showed that bank employs market

innovation which has an influence on financial performance of commercial banks in Kenya

The study findings showed that there was an effect of the market innovation strategies in commercial banks in Kenya. The study findings that market development purpose in the bank is to identify better (new) potential market in commercial banks in Kenya. The study findings revealed that market development helps the bank to get better (new) ways to serve target market in commercial banks in Kenya. The study findings showed that bank is involved in market segmentation which is aimed at developing the profitability of a business to the full in commercial banks in Kenya. The study findings revealed market orientation is expected to produce a significant positive impact on all analyzed effects of innovative activities in commercial banks in Kenya.

5.2.4 Process innovation and financial performance

These results implied that process innovation affects the financial performance of commercial bank, Kenya. The study findings revealed that process innovation increases profit on financial performance of commercial banks in Kenya. The study findings revealed that process innovation enhances quality personnel on financial performance of commercial banks in Kenya. The study findings revealed that process innovation saves costs on financial performance of commercial banks in Kenya. The study findings revealed that process innovation attracts more customers on financial performance of commercial banks in Kenya. The study findings revealed that process innovation increases competitiveness on financial performance of commercial banks in Kenya.

The study findings revealed that process innovation provides the means for safeguarding and improving quality of service on financial performance of commercial banks in Kenya.

The study findings revealed that process innovation has importance in both the supply of the core product as well as in the support part of any offer an effect on financial performance of commercial banks in , Kenya. The study findings revealed that process innovations are radical, inventive and early offer greater rewards and performance improvement on financial performance of commercial banks in , Kenya. The study findings revealed that companies with a reactive innovation strategy aims to hit many singles on financial performance of commercial banks in , Kenya.

5.3 Conclusions

The study indicates that there was a moderate positive and statistically significant correlation between technology innovations on financial performance of commercial banks in Kenya. ($r = 0.577$; $p < 0.05$). This implies technology innovations improves financial performance of commercial banks in Kenya.The study indicates that there was a moderate positive and statistically significant correlation between product innovation and financial performance of commercial banks in Kenya. ($r = 0.743$; $p < 0.05$). This implies product innovation improves financial performance of commercial banks in Kenya.

The study indicates that there was a moderate positive and statistically significant correlation between market innovation and financial performance ($r = 0.454$; $p < 0.05$). This implies that market innovation affects financial performance of commercial

banks in Kenya. The study indicates that there was a moderate positive and statistically significant correlation between process innovation on financial performance of commercial banks in Kenya ($r = 0.825$; $p < 0.05$). This implies that process innovation affects financial performance of commercial banks in Kenya. This study showed that 0.753 the four independent variables technology innovations, product innovations, market innovations, process innovation can explain 75.3 % of financial performance of commercial banks in Kenya while other factors 24.7 % are unexplained in this study. From these findings it can be inferred that **t**echnology innovations had the most influence on financial performance for commercial banks in Kenya followed by market innovations, product innovations and process innovation in that order.

5.4 Recommendations

Based on the findings of the study, the researcher recommended that technology innovation should be considered as key factor in saving cost thus improving profitability of commercial banks.The study also recommended that product innovation should be emphasized to help the bank retain and grow competitive position. Product innovation that is radical should be developed to offer greater rewards and performance improvement in commercial banks .Market innovation should be put in to consideration to promote customer satisfaction and retention. Process innovation should be embraced to increasing competitiveness and improve quality service delivery.

5.5 Suggestion for further Studies

This study suggest that further research should be carried out on the challenges facing adoption of financial innovation in commercial banks in Kenya.

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APPENDICES

APPENDIX I: INFORMED CONSENT FORM

Dear sir/madam,

RE: REQUEST FOR YOUR CONSENT TO PARTICIPATE IN A RESEARCH

I kindly write to request for you to participation in a research project. The study title is:

IMPACT OF FINANCIAL ENGINEERING ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

The potential risks and discomforts of the study are minimal. This is because you will only be expected to participate in the questionnaire. Before filling the questionnaire, all respondents will be reminded and requested to keep what is discussed to be confidential. There are no potential benefits for you as a person for participating in this study. I am requesting you to volunteer and share your opinions. No payments will be made for the information that you give or for the time that you will spend with us. Confidentiality of any information that you provide will be maintained. Data collected will only be used for the purpose of this study and will be destroyed when the findings are published.

PARTICIPATION IN THIS STUDY IS ENTIRELY VOLUNTARY.YOU MAY REFUSE TO FILL THE QUESTIONNAIRE AND YOU MAY WITHDRAW AT ANY STAGE IF YOU SO WISH.

I f you accept to participate in this study, please append your signature below:

Signature of participant: …… Date: ……

If you have any query, please contact the following:

Mobile phone: +2547270350391Or by email:kiruibernard1985@gmail.com

Sincerely,

Bernard Cheruiyot Kirui

RESEARCHER

APPENDIX II: QUESTIONNAIRE

I am carrying out a research on the IMPACT OF FINANCIAL ENGINEERING ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA. The research is purely academic in nature and any information obtained will be kept confidential.

Your cooperation and support will be highly appreciated.

Section I: Background information

Please **tick** and **fill** where appropriate

PART A :

DEMOGRAPHIC INFORMATION

Gender: Male ( ) Female ( )

2) Age

Less than 30 Years ( )

31-40 Years ( )

41-50 years ( )

More than 50 Years ( )

3) What level of education have you completed?

Certificate ( )

Diploma ( )

Degree ( )

Postgraduate/PhD) ( )

4) Department?

Marketing and product development ( )

Information technology ( )

Finance and accounts ( )

Customer care ( )

Part B: INNOVATIONS

To what extent do financial engineering strategies affect the financial performance of this Bank?

Very great extent ( )

Great extent ( )

Moderate extent ( )

Little extent ( )

Not at all ( )

PART C: TECHNOLOGY INNOVATION

1) To what extent do technological innovation strategies adopted by the bank affect the performance of this bank?

Very great extent ( )

Great extent ( )

Moderate extent ( )

Little extent ( )

Not at all ( )

2) To what extent does this bank make use of the following technological innovations in its operations? Use a scale of I to 5 Where: 1 – Strongly Agree, 2– Agree, 3 – Neutral, 4-Disagreeor5–StronglyDisagree

Technological innovation	**1**	**2**	**3**	**4**	**5**
Mobile banking technologies					
Electronic money transfer					
Internet banking transactions					
ATM deposits and withdrawals					
Online account opening					

3) Technology exerts a significant influence on the ability to innovate. In the light of this statement, to what extent docs technology innovation affect competitiveness of bank which is a factor of performance?

Very great extent ( )

Great extent ( )

Moderate extent ( )

Little extent ( )

Not at all ( )

4) On a scale of 1-5 rank how these general factors have affected adoption of technology innovation strategies by bank. Where I mean least affected while 5 means most affected.

Factors	**1**	**2**	**3**	**4**	**5**
Network problems/unreliable infrastructure					
Lack of financial resources					
1ack of awareness and knowledgeable of innovative strategies					
High cost or too expensive projects					
Lack of skills and innovativeness					
No need for innovativeness					

5. What recommendations would you make on technology innovativeness for performance?

PART D: PRODUCT INNOVATIONS

I) To what extent does this bank employ product development as an innovation to influence its productivity?

Very great extent ( )

Great extent ( )

Moderate extent ( )

Little extent ( )

Not at all ( )

2) Kindly indicate the new product developments that the bank has realized as a result of product innovation strategies?

3) To what extent does product innovation adopted by the bank affect the profitability of the bank?

Very great extent ( )

Great extent ( )

Moderate extent ( )

Little extent ( )

Not at all ( )

4) On a scale of 1-5 rank how these factors have affected your adoption of product innovation in your bank. 1 means least affected while 5 means most affected.

Factors

Factors	**1**	**2**	**3**	**4**	**5**
Size of organization					
Quality of the systems					
Information intensity					
Specialization of business					
Management support of Competitive strategies					

5. In which of the following areas does your organization consider as a key success factors in product innovation strategies for greater profitability?

Where: 1 – Strongly Agree, 2– Agree, 3 – Neutral, 4-Disagreeor5–StronglyDisagree

Success factors	**1**	**2**	**3**	**4**	**5**
Product Development					
Product diversification					

Product differentiation					
Product/brand visibility					

6) To what extent do you agree with the following statements relating to the effect of product innovation and its effect on the profitability of the bank? Rate your answer from 1-5 where to no extent at all and 5 to a very great extent.

Statements	**1**	**2**	**3**	**4**	**5**
Improved and radically changed products are regarded us particularly important for long-term bank growth					
Product innovation help the bank retain and grow competitive position					
Products at the bank have been updated and completely renewed for retaining strong market presence					
The bank is involved in both old product development and new product development which greatly enhance its profitability					

7) To what extent do the following factors drive your bank towards a product development and hence profitability? Use a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent.

Factors	**1**	**2**	**3**	**4**	**5**
The bank's vision and mission statements					
Shared commitment by everyone in the organization					
Clear Communication & Communications channels					

To what extent does effect of product development on the performance of the bank? Use a scale of 1-5 where 1= strongly disagree and 5 = strongly agree.

	1	2	3	4	5
Product development is important in both the supply of the core product as well as in the support part of any offer					
Product development that arc radical, inventive and early offer greater rewards and performance improvement					
The bank's product development strategy aims to hit many singles.					

PART E:

MARKET INNOVATIONS

9) To what extent does market innovation adopted by the bank affect the financial performance of the bank?

Very great extent ( )

Great extent ( )

Moderate extent ( )

Little extent ( )

Not at all ( )

10) To what extent does this bank employ the following forms of market innovation strategies?

Use a scale of 1 to 5 where I is to a very great extent and 5 is to no extent.

Extent	**1**	**2**	**3**	**4**	**5**
Creating value through pricing					
Availability of resources and capabilities					
Customer satisfaction and retention					
Creating and nurturing strong products					
Environmental analysis and response to changes					
Aggressive anti-competitors marketing campaigns					

11) What is your level of agreement with the following statements that relate to the effect of the market innovation on the financial performance of the bank? Use a scale of I -5 where 1= strongly disagree and 5 c strongly agree

Effect of the market innovation strategies	**1**	**2**	**3**	**4**	**5**
Market development purpose bank is to identify better (new) potential markets					
Market development helps the bank to get better (new) ways to serve target markets					
The bank is involved in market segmentation which is aimed at developing the profitability of a business to the full					
Market orientation as a bank culture leads to its business performance improvement					
Market orientation is expected to produce a significant positive impact on all analyzed effects of innovative activities					

PART F: PROCESS INNOVATIONS

12) To what extent does process engineering affect the financial performance of this bank?

Very great extent ( )

Great extent ( )

Moderate extent ( )

Little extent ( )

Not at all ( )

13) Which are the main organizational characteristics that affect the bank's process innovation strategy in influencing its profitability?

14) On a scale of 1-5 rank the use of process innovation on the following uses. 1 means least used while 5 means most used.

Increasing profit	**1**	**2**	**3**	**4**	**5**
Enhancing quality personnel					
Saving of costs					
Attracting more customers					
Increasing competitiveness					
Providing the means for safeguarding and improving quality of service					

15. To what extend do you agree with the effect of process innovation on the profitability of the bank? Use a scale of 1-5 where 1 strongly disagree and 5 strongly agree.

Statements	1	2	3	4	5
Process innovation is important in both the supply of the core product as well as in the support part of any offer.					
Process innovations that arc radical, inventive and early offer greater rewards and performance improvement.					
Companies with a reactive innovation strategy aim to hit many singles.					

16. PART G: FINANCIAL PERFORMACE

Kindly indicate the financial performance for the following years in this ban

Statements	2018	2019	2020	2021	2022

Thank you for your participation.

APPENDIX III: ERC LETTER

Mount Kenya University

REF: **MKU/ISERC/3568**
TO: **BERNARD CHERUIYOT KIRUI**

Date: 27 March 2024

REG: **MBA/2019/49716**

Dear Sir/Madam,

RE: INFLUENCE OF FINANCIAL ENGINEERING STRATEGIES ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2612.** The approval period is **27/03/2024 - 26/03/2025.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 01000, Thika

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

APPENDIX IV: POSTGRADUATE INTRODUCTORY LETTER

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MBA/2019/49716

28th March, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: BERNARD CHERUIYOT KIRUI – REGISTRATION NO. MBA/2019/49716

The purpose of this letter is to introduce the above named student who is pursuing **Master of Business Administration** in the department of **Accounting and Finance** in the school of **Business and Economics**

The title of the research is **"Influence of Financial Engineering Strategies on Financial Performance of Commercial Banks in Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **April 2024, and June 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342 - 01000, THIKA
Office of the Director,
Graduate Studies

Dr. Samuel M. Kareanga, Ph.D
Director, Graduate Studies
Enc.

APPENDIX V: NACOSTI PERMIT

REPUBLIC OF KENYA

APPENDIX VI: SIMILARITY INDEX