EFFECTS OF FINANCIAL INNOVATION ON OPERATIONAL
EFFECTIVENESS OF COMMERCIAL BANKS: A CASE OF EQUITY BANK

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UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

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Partial Fulfilment of the Requirement for Master of Business Administration Degree

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SUMMER 2018
STUDENT DECLARATION

I, the undersigned do declare that this research project report is my original work that has not been presented to any other college or higher institution of learning for academic credit other than United States International University-Africa

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This research work has been submitted for examination with my approval as the supervisor.

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Sign: -----------------------------  Date: -----------------------------
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ABSTRACT

The main objective of this study was to determine the effect of financial innovations on operational efficiency of commercial banks. The study was led by the following questions: To determine the effect of financial process innovation on operational efficiency of commercial banks; to determine the effect of financial product innovation on operational efficiency of commercial banks, and finally, to determine the effect of financial markets innovation on operational efficiency of commercial banks.

A descriptive research design was adopted for the study. The study had a target population of 42 Equity bank branches operating within Nairobi. The study was a census since all the 42 branches in Nairobi were utilized in the study. Primary data utilized in this study was collected using a structured questionnaire and analyzed for descriptive and inferential statistics using the Statistical Package for Social Sciences (SPSS) version 23.

The findings on the effect of financial process innovation on operational efficiency of commercial banks shows that there exists a statistically significant relationship between financial process innovations and operational efficiency of commercial banks.

The findings on the effect of product innovation on operational efficiency of commercial banks revealed the existence of statistically significant relationship between financial product innovation and operational efficiency of commercial banks.

Finally, the findings on the effect of financial market innovations on operational efficiency of commercial banks revealed the existence of a statistically significant relationship between financial market innovations and operational efficiency of commercial banks.

This study concludes that customer transaction processes, credit finance processes, and trade finance processes play a major role in enhancing operational efficiency of commercial banks, since they enhance faster and efficient service delivery to customers. This study also concludes that internet banking has played a critical role in streamlining and enhancing operational efficiency in commercial banks, particularly the introduction on electronic funds transfers, mobile banking platforms, and automatic teller machines (ATMs). Finally, this study concludes that financial market innovations such as mobile phone banking, peer to peer (P2P) financial services M-Kopa and M-Shwari by
Safaricom, have offered significant competition to commercial banks, forcing commercial banks to enhance their operational efficiency so as to retain their credit and loan seeking clients.

This study recommends that commercial banks in Kenya should invest more in customer transaction processes, credit finance processes, and trade finance processes. This study also recommends that commercial banks should develop more products that utilize internet banking platform since internet banking has played a critical role in enhancing operational efficiency within commercial banks. Finally, this study recommends that commercial banks should invest more financial resources in mobile phone banking applications, and partner with peer to peer (P2P) financial services providers such as Safaricom M-Kopa and M-Shwari so as to leverage on the P2P operational efficiencies and client base.
ACKNOWLEDGEMENT
To my supervisor Mr. Kepha Oyaro, thanks for your excellent support and guidance in writing this research project.
DEDICATION

I would like to dedicate this research project to my family and friends for their support and during master’s studies.
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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study
Continuous change, hyper competition, changing demographics and customer needs require commercial banks to build adaptability competency, as a survival and also, for fostering organizational operational efficiency (Central Bank of Kenya, 2013). Financial innovations is one of the mechanisms that commercial banks have adopted to not only enhance performance, but also operational efficiency. According to Miles and Snow (2014) technological innovations are important in that they reduce redundancies inherent within traditional commercial banking operational systems. With the increase in globalization of financial services, banks have no choice but to innovate their financial products and services so as to compete with multinational financial institutions plowing into the domestic markets (Ray, Xue & Barney, 2013).

One way to achieving growth and sustaining operational efficiency is to encourage and foster innovative practices and creativity internally within the organization. The impact of globalization on business have seen business entities reinventing and innovating to be able to remain relevant, competitive and profitable. Aghion, Bloom, Blundell, Griffith, & Howitt (2005) posit that there are three main trends that define competitiveness and innovations for business. This include adoption and use of emerging technologies, rate at which markets are disjointed and challenging, and the concentration of international competition. Thus, these factors contribute to not only to strategies that enhance organizational operational efficiency, but also the budding of innovative technologies (Terziovski, 2010).

Miles and Snow (2014) equally notes that necessity for technological innovation is usually driven by organizational objectives and strategies the organization needs to achieve to be able to compete effectively in a given market. For instance, Porter (2004) argued that market specific innovation can be driven by quest for product differentiation, cost focus and cost leadership. If these elements are in place, an organization can allocate resources as a medium or conduit to create new businesses (Miles & Snow, 2014).

According to Terziovski (2010), innovation is essential in organizational operational efficiency since, most often than not, it enables an organization to use the new
innovations to build growth and enhanced returns. Ultimately, to remain competitive in a globalized market, organizations must enhance their growth capabilities through innovation. Rubera and Kirca (2012) notes that for a firm to enter and excel in an existing market, there is need for innovation. Innovation helps expand or exploit existing, and market opportunities. Innovation is important to an organizations operational efficiency in that it constitutes indispensable characteristics for better and quality, or improved delivery of services. According to Aghion et al., (2005), market innovation has existed in the manufacturing, financial sector, for decades, since the days of European and American industrial revolution. It was until the early 1980s that the service industries started gain and utilize differentiated innovative services in business

The last two decades has four decades have seen reinvigoration of innovation through rapid rise in technology, and globalization (Rubera & Kirca, 2012). Researchers and scholars have equally intensified their studies on the area of innovation in a quest to understand how it contributes to organizational development, growth, operational efficiency, competitiveness among other beneficial (Ray, Xue &Barney, 2013). In a similar observation, Terziovski (2010) notes that innovation of business services does not only enhance operational efficiency, but long-term operational sustainability of a business. Innovation is a complex process related to changes in production functions and processes whereby firms seek to acquire and build upon their distinctive technological competence, understood as the set of resources a firm possesses and the way in which these are transformed by innovative capabilities.

Innovation at firm level refers to a firm’s receptivity and propensity to adopt new ideas that lead to development and launch of new products (Rubera and Kirca, 2012). In the third edition of the Oslo Manual, innovation is defined as the implementation of a new or significantly improved product (good or service), a process, a new marketing technique or a new organizational method in business practices, workplace organization or external relations (Surroca, Tribo & Waddock, 2010).

Innovation involves acting on the ideas to make some specific and tangible difference in the domain in which the innovation occurs (Miron, Erez, & Naveh, 2004).). Gruber, Florian, Brettel, & Hungeling (2010) define innovation as the successful implementation of ideas that are perceived to be creative within an organization. However, Liu, Jiang, Zhang and Zhao (2013) argue that creative ideas only do not pass as innovation. Creating
ideas have to be implemented, and as such, cause significant impact in efficiency and effectiveness of use, compared to existing tools in use by an organization, or by individuals.

Firm’s operational efficiency is the appraisal of prescribed indicators of standards of effectiveness. Innovation is considered to be a critical requirement for the growth and profitability of organizations. For private sector organizations operating in increasingly competitive market, innovation is often a condition for simple survival. The capability to innovate is ever viewed as the single most vital factor in developing and supporting competitive advantage (Tidd, 2001). According to Miron et al. (2004), innovation is a necessary ingredient for sustained success and operational efficiency. In today’s knowledge economy, investments in intellectual assets are considered more and more to be key strategic elements to maintain a business’ growth, profitability and competitiveness (Miron et al., 2004).

For organizations in the banking industry are increasingly operating in competitive markets where innovation is often, a condition for survival. The success or otherwise of any discerning organization in this world of deregulated economies and competitive market depends largely on its ability to strategically outwit her competitors (Galbreath & Galvin, 2006). Outwitting competitors is informed by ability to deliver offering better than competitors in the market and this also depend on the ability to continually improve on the quality of goods and services being offered (Gruber et al., 2010). With this change has come increasing pressure on managers and workers to dramatically improve productivity and financial operational efficiency. Competition has created a fast-paced industry where firms must change in order to survive. Financial innovation in the banking industry has been spurred on by the forces described by Tidd (2001) particularly in terms of new distribution channel systems, such as internet and mobile banking.

Terziovski (2010) posits that the major aim of financial services innovation in the banking sector is to reduce the cost of doing business, and risk, while at the same time, improve quality of service. Innovations have most often occurred due to technological changes, or in response to new regulations or risk. The developments in the financial sector have not only led to the increase in the number of financial institutions, but also the development in level of sophistication with new payment systems and asset alternatives to
holding money. This has resulted mainly from technological advancement and increase in competition as the number of institutions increase. Developments in payment systems have started to create close substitutes for hard currency, thus affecting a core part of banking.

According to Tidd (2001) financial innovation has not only opened up new opportunities for the sector participants, but also increased new market players arising from new products in the financial market. These developments have increased the range of financing and investment opportunities available to economic agents besides changing the role of banks with expanded diversification choices in terms of portfolio and sources of financing. Such developments affect the speed and strength of the channels of monetary policy transmission mechanism in the economy. As financial markets become more liquid and complete, changes in official interest rates are more readily transmitted to the whole term structure and more generally to financial asset prices.

Firm operational efficiency is a multidimensional construct that consists of different elements including customer based operational efficiency, financial based operational efficiency, human resource operational efficiency, and finally organizational effectiveness (Bessant & Tidd, 2007). Consistent with the theoretical foundations in the capabilities and resource-based perspectives, it is argued that organizational capabilities are rent-generating assets, and they enable firms to earn above-normal returns. For example, operational efficiency management capability influences various measures of firm operational efficiency by allowing business leaders to review and take corrective actions on any potential or actual slippages proactively and in a timely manner (Terziovski, 2010). Likewise, prior studies in marketing and strategy argue that customer management capability (Bessant & Tidd 2007) and process management capability (Terziovski, 2010) influence several dimensions of firm operational efficiency.

Financial operational efficiency measures how well a firm is generating value for the owners. It can be measured through various financial measures such as profit after tax, return on assets (ROA), return on equity (ROE), earnings per share and any market value ration that is generally accepted. The financial statements of financial institutions commonly contain a variety of financial ratios designed to give an indication of the corporation's operational efficiency. Simply stated, much of the current bank operational
efficiency literature describes the objective of financial organizations as that of earning acceptable returns and minimizing the risks taken to earn this return (Terziovski, 2010). 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 operational efficiency have measured both risks and returns.

The Kenyan financial system is well established with an efficient banking system and an established stock exchange. The major elements of a well-developed financial system has been put in place in Kenya, including the creating of the first credit reference bureau in 2009, and credit has grown rapidly in recent years, but the financial sector has still been unable to reach its full potential in supporting the allocation of economic resource across the economy.

In the early 1980s and 1990s commercial banks in Kenya had a big challenge in servicing non-performing loans (NPLs), which as a result, lead to collapse of several banks (Oloo, 2007). However, over the years, the banking sector has grown robustly. As at 31st December 2013, the banking sector comprised of the Central Bank of Kenya, as the regulatory authority, 44 banking institutions (43 commercial banks and 1 mortgage finance company - MFC), 7 representative offices of foreign banks, 9 Microfinance Banks (MFBs), 2 credit reference bureaus (CRBs), 1 Money Remittance Provider (MRP) and 101 forex bureaus. Out of the 44 banking institutions, 30 locally owned banks comprise 3 with public shareholding and 27 privately owned while 14 are foreign. The 9 MFBs, 2 CRBs and 101 forex bureaus are privately owned. The foreign owned financial institutions comprise of 10 locally incorporated foreign banks and 4 branches of foreign incorporated banks (CBK, 2013).

The operational efficiency of the banking sector in the past years has been overly sound despite the global crisis, thanks in part, to proactive supervision by the Central Bank which heighted its supervisory activities to detect any immediate stress present in the system. Most banks introduced stricter appraisal for new credit facilities and tighter monitoring of credit portfolio, while some also scaled back their foreign currency loans and revised their relationships with foreign banks in order to reduce vulnerability to exchange rate shocks (CBK, 2013). As s result, Oloo (2007) notes that Kenya’s banking
sector moved towards greater inclusiveness, efficiency and stability in 2013 as envisaged in Kenya’s Vision 2030.

The key developments in the Kenya commercial banking sector includes the convergence of banking and mobile phone platforms (Cavusgil, Ghauri & Akcal, 2013). This merging was necessitated by convenience in cost of service, banks operation. According to statistics by CBK (2017), introduction of mobile banking platforms by commercial banks in Kenya has led to a reduction in the level of financially excluded Kenyans from 33% in 2009 to 25% in 2013. The proportion of Kenyans with access to formal financial services has increased from 41% in 2009 to 67% in 2013. The use of technology continues to enhance commercial banks efficiency in offering financial services. This is evidenced by the increase in the number of customers being served by a bank employee. In 2012, one employee used to serve an average of 501 customers while in 2013 the same employee was serving 640 customers (CBK, 2013).

In Kenya, just like other countries, commercial banks operate under direct regulations from the central bank, which sets rules and regulations that every commercial bank must abide by. Commercial banks in Kenya are required to disclose financial information to the central bank on a daily, weekly, and monthly basis concerning customer deposits, withdrawals above certain limits, status of compliance, and internal policies and regulation on safeguarding customers deposits (CBK, 2013). Kenya has 43 commercial banks, meaning that each bank has to compete for the same group of customers. As such, adopting innovation technologies that enhance the development of financial products and services that enable these banks to compete effectively and to establish significant operational efficiencies.

Equity bank was founded in 1984 as a building society before converting into a fully-fledged bank in 2004. In 2006, Equity bank was listed on the Nairobi Securities Exchange (NSE) in 2006. Equity bank is the largest bank by capitalization (Equity Bank, 2017). According to December 2016 annual financial report, Equity bank has a customer base of 11 million, making it the largest bank in Africa by customer base. In 2016, Equity was honored as the Banker Top Banks in the world as the fastest growing bank in Africa, and 8th best bank on return on Equity (ROA) of 54.9% (Crytonn, 2016).
1.2 Statement of the Problem
Commercial banks in Kenya have embraced financial innovation including the integration of online banking facilities, mobile banking, and agency banking to enhance operational efficiency. However, despite the significance of innovation in commercial banks, there is inadequate understanding about the drivers of innovation, and the impact financial innovation has had on bank’s operational efficiency. Equity bank is has embraced technology as a key driver, however, the impact of the technological innovation at Equity has not been research and well documented.

Several studies have been conducted on the subject of bank operational efficiency. For instance, Mabrouk and Mamoghli, (2010) study on financial operational efficiency on commercial banks indicated that the area of financial innovation in commercial banks remains significantly untested. A study by Mansury and Love (2008) concluded that financial innovation on commercial banks financial operational efficiency was inconclusive and needed to be investigated further. Other scholars such as Franscesa and Claeys (2010), Pooja and Singh (2009) studies concludes that financial innovation had minimal impact on financial operational efficiency, while Batiz-Lazo and Woldesenbet (2006); Cavusgil, Ghauri & Akcal, (2013) concluded that their existed significant between influence of financial innovation and banks operational efficiency.

Although studies have been carried out on the contribution of financial innovation on commercial banks, there still exists a confusion in literature on the realistic contribution of financial innovation to equity banks operational efficiency. Particularly, in Kenya where financial innovation products in commercial banks are robust, yet, quantifiable studies on the contribution or effects of financial innovation is still not well documented. This study seeks to build on the previous studies done on the subject, while at the same time, fill in the gap on the effects of financial innovation on Equity bank’s operational efficiency in Kenyan context.

1.3 Objectives of the Study
The general objective of this study was to determine the effects of financial innovation on financial operational efficiency at Equity bank in Kenya.
1.4 **Specific Objectives**

The following specific objectives were used for this study:

1.4.1 To establish the effects of financial process innovation on operational efficiency of Equity bank

1.4.2 To determine the effects of financial product innovation on operational efficiency of Equity bank

1.4.3 To determine the effects of financial market innovations on operational efficiency of Equity bank

1.5 **Significance of the Study**

This study is important to the following stakeholders:

1.5.1 **Researchers and Academicians**

Researchers and academicians will benefit from this study by utilizing the findings to test hypothesis, confirm their studies, and for literature review

1.5.2 **The Central Bank of Kenya**

The study will benefit Central Bank of Kenya, who are regulator of commercial banks operations in Kenya. Findings on process innovation, product innovation, and market innovation can be used to establish conducive regulations for both customers and commercial banks operational efficiency.

1.5.3 **Equity Bank**

Commercial banks can utilize the findings of this study to enhance the type of innovations that will enhance operational efficiency.

1.6 **Scope of the Study**

This study seeks to establish the effects of financial innovations on the operational efficiency of Equity bank in Kenya. The study was limited to Equity bank. This study took place in the month on April 2018.
1.7 Definition of Terms

1.7.1 Commercial Banks

Commercial Bank is a financial institution that provides services, such as accepting deposits, giving business loans and auto loans, mortgage lending, and basic investment products like savings accounts and certificates of deposit (Pooja & Singh, 2009).

1.7.2 Financial Process Innovation

Financial process innovation is defined as the introduction of ideas, or new way of doing things that revolutionizes organizational financial processes that enhancing efficiency and effectiveness and cost of the process (Cavusgil, Ghauri & Akcal, 2013).

1.7.3 Financial Product Innovation

Financial product innovation is defined as the introduction of new ideas or way of doing things that revolutionized financial product offerings that enhance efficiency and effectiveness of the products (Cavusgil, Ghauri & Akcal, 2013).

1.7.4 Financial Market Innovation

Financial market innovation is defined as the introduction of new markets that enhances the access of financial products and services while reducing cost associated with access to the financial markets (Pooja & Singh, 2009).

1.7.5 Operational Effectiveness

Operational effectiveness is any practice that is adopted by an organization to help in maximizing the use of inputs to develop products and services faster than competitors, in addition to achieving set objectives on time (Mabrouk & Mamoghli, 2010).

1.8 Chapter Summary

This chapter has presented background of the study on financial innovations and operational efficiency of commercial banks. The statement of the problem for which the study seeks to fill the gap has also been presented. Equally presented in this chapter is the general objective, specific objectives, scope of the study, justification of the study, and finally, the definition of terms. Chapter 2 has literature review; chapter 3- the research
methodology; chapter 4 – results and findings, and chapter 5 – discussion, conclusion and recommendations of the study.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction
This chapter presents the review of scholarly literature relevant to the subject of the study. It summarizes the information from other researchers who have carried out their research in the same field of study. Literature on process innovation in commercial banks is presented first; followed by literature on product innovations in commercial banks, and finally, market innovations in commercial banks. A Chapter summary is provided at the end.

2.2 Effects of Financial Process Innovation on Operational Effectiveness

Financial process innovations are used by commercial banks to enhance operational efficiency (Lyons, Chatman & Joyce, 2007). Financial process innovations are defined as the introduction of ideas, or new way of doing things that revolutionizes organizational financial efficiency and effectiveness and cost of the process. Henderson and Pearson (2011) argue that there exists a relationship between financial process management and operational efficiencies in commercial banks. They further argue that when process innovation changes the way an organization does its work, how teams are composed, and how internal systems are restructured, which leads to enhanced efficiency and effectiveness in desirable outcomes. According to Beck, Demirgüç-Kunt, and Martinez Peria (2008) financial process innovations include the following: customer transaction processes, credit finance processes, and trade finance processes. This process innovations presented in the following sections.

2.2.1 Customer Transaction Processes

Customer transactions form the largest percentage of commercial banks earnings (Ray et., 2013). Customer transaction processes are defined as the basic day to day banking requirements that customers required when they engage with their bank (Beck et al., 2008). In finance customer transaction processing, each customers transaction must be completed successfully, or fail as a unit to ensure the integrity of the financial processes. In the banking system, customer transaction processing systems usually consist of computers loaded with a software that hosts a transaction-oriented application that runs or performs transactions, mostly routine, that are necessary for bank daily business (Salaman
Porter (2004) argues that in a transaction-oriented banking processes, innovation is key to ensure transaction processing produces operational efficiency. One of the challenges in the banking sector is the copy and paste syndrome of the transaction processing software and units’ other banks have adopted. As such, Lyons, Chatman & Joyce (2007) note that commercial banks fail to galvanize unique innovations for customers financial transaction processes since they try to emulate the industry standards. The assumption made by most commercial banks is that if the industry has adopted the certain innovation processes, then, this innovation must be good for all, which might not necessarily be the case (Hofstede & Hofstede, 2010).

Customer transaction processing does link multiple individual customer operations into a single indivisible transaction that are processed as a unit and completed without an error (De Young et al., 2007). Financial innovation in transaction processing ensures that there is a successful rollback in transactions that were in complete or inaccurate. As such, cases where a client has to physically visit a bank to have transaction anomalies corrected are eliminated. Therefore, the adoption of the transaction processing systems by commercial banks is essential in ensuring not only the integrity of financial processes, but also the operational efficiency (Lyons, Chatman & Joyce, 2007).

According to Yener, Carbo, Gardener, Molyneux (2007) financial innovation in transaction processing ensures that the banks databases are continuously updated across all modules anytime a customer does a transaction. To make sure this happens effortlessly, copies of a customers’ information are set aside on the database prior to any modifications on the same. In this regard, if any form of a customer’s transaction fails in the process, the copies set on the database are used to restore in a former state. This kind of financial innovation in the processing system is called rolled back (Gruber et al., 2010).

2.2.2 Credit Finance Processing

Financial innovation processing has significantly transformed how loans and credit facilities at commercial banks are administered. Prior to introduction and adoption of financial innovations systems, access to credit facilities was administered through paperwork (Mansury & Love, 2008). In most instances, applying for loan or credit facility would take seven to fourteen days for paper work to be approved. However, with the
introduction of financial innovations, loan and credit facility platforms moved online and enabled customers to access them without having to go to the bank (Henderson & Pearson, 2011). To this end, Lyons, Chatman & Joyce (2007) argue that the relevant aspects of technological particularly online innovations that reduce costs related to loan and credit facility processing, and approval or denial. Mansury & Love (2008) equally note that loan portfolio management systems, and distributed credit rating systems have enabled commercial banks to quickly access online client credit history, and thus, able to determine the clients credit worthiness in minutes. This kind of financial process integration has improved quality of loan appraisal systems for commercial banks.

A study by Henderson and Pearson (2011) concluded that financial innovation systems have enabled commercial banks to administer loans and credit facilities faster than traditional paper work approvals. Cavusgil, Ghauri and Akcal (2013) on the other hand argues that in as much as financial innovation such us online forms have made credit facilities quicker and faster to access, these innovations do not necessarily guarantee improvement in operational efficiency, contrary to assertions by Lyons et al., (2007); however, they provide for mechanisms and channels to conduct operational work differently. This means that is a bank embraces online platforms such as online application forms, yet does not process them in time, the resultant effect is delay is loan or credit facility dispatch, which does not enhance operational efficiency. On the other hand, if a bank has online loan or credit application facility that customers can access online, and the banks moves with speed to download this forms and process them, then this enhances efficiency (Mwania & Muganda, 2011).

According to Liu et al. (2013) in addition to credit appraisal systems that enhance operational efficiency, commercial banks equally rely on electronic signature to approve financial documents. This process makes tracking of documentation easier, faster and efficient, compared to paper work filed in cabinets. As such, it is important that commercial banks invest in online and digital platforms that accurately document or capture customers credit facilities and links them to their credit history, while at the same time, processing their credit worthiness (Mwania & Muganda, 2011).

2.2.3 Trade Finance Processing

Trade finance processing has enhanced commercial banks operational efficiency over the last three decades (Nader, 2011). Trade finance in commercial banks context refers to
trade settlements in export and import trade which commercial banks support. As such, Sana, Mohammad, Hassan, and Momina, (2011) noted that, financial innovations are important for commercial banks in that international trade depends on such innovations to advance trade. One of the major objectives of commercial banks is to improve efficiency while reducing cost. This is why Henderson and Pearson (2011) agrees with Nader (2011), that cost reduction in trade transactions enhances operational efficiency. In most instances, financial innovations, provide new opportunities that banks can exploit for more income while at the same time enhancing efficiency (Henderson & Pearson, 2011).

Nader (2011) analyzed the profit efficiency of the Saudi Arabia Commercial banks during the period 1998- 2007. The results of his study indicated that availability of phone banking, number of ATMs and number of branches had a positive effect on operational efficiency of Saudi banks. On the contrary, he found that the number of point of sale terminals (POSs), availability of personal computer banking, and availability of mobile banking did not improve operational efficiency. However, a study by Henderson and Pearson (2011) impact of internet banking on banks operational efficiency noted that trade finance processing was significantly impacted by the innovations. These innovations included the ability for customers from different continents could interact and conduct trade through digital promisory notes guaranteed by commercial banks. In essence, this enhances traders trust in cross border or cross continent trading (Cavusgil et al., 2013).

According to Mabrouk and Mamoghli (2010) magnetic strip cards have also been used by commercial banks to enhance operational efficiency. Traditionally, bankers would have to physically access the bank halls to be able to get banking services, whether internationally or locally. However, with the introduction of magnetic trip cards, one could use their VISA or Master Card to conduct bank transactions. The magnetic strips have since been phased out by most commercial banks in favor of chip cards (Gakure & Ngumi, 2013). Magnetic strips had challenges in that bank frauders could easily copy data from the strip and use it to access a customers’ bank account, however, highly encrypted chipsets provide commercial banks with secure customers access to their funds without fear of theft. Mabrouk and Mamoghli (2010) study concluded that the banks had employed various technological innovations like ATM services, mobile phone transactions and internet-based banking services do improve operational of commercial banks.
2.3 Effect of Financial Product Innovation on Operational Efficiency

Financial product innovation is defined as the introduction of new ideas or ways of doing things that revolutionizes financial product offerings, and thus enhance efficiency and effectiveness of the products (Cavusgil, Ghauri & Akcal, 2013). Nader (2011) posits that there exists a significant relationship between product innovations in commercial banks and operational efficiency. Bank that are able to utilize technology to enhance their products significantly improves and enhances internal operational efficiency than those that do not. Francesca and Claeys (2010) study compared different financial innovations offered by commercial banks using online banking models between Finland, Spain, Italy and the UK between the year 1995 to 2004. The study established that internet banks products performed better in terms of average returns to assets (or equity), without running operational costs. Meaning, online product offerings were essential in enhancing operational efficiency. There are several financial innovation products being offered by commercial bank. This includes: Mobile banking, SMS banking, Automated Teller Machines Banking; and Internet Banking (Yener et al., 2007).

2.3.1 Internet Banking

Internet banking has transformed the way commercial banks conduct their banking services. According to Lyons, Chatman & Joyce (2007), the idea of internet banking has enabled commercial banks to offer opportunities to offer clients quality service at, while at the same time, enhancing their operational efficiencies. Financial product innovations adopted by commercial banks include internet banking, Automated Teller Machine banking; Mobile banking and Electronic Funds Transfers (Yener et al., 2007).

2.3.1.1 Electronic Funds Transfer (EFT)

Electronic funds transfer are online computing systems that allow bank customers to transfer funds synchronously or asynchronously from clients’ bank accounts to their merchants, or to other bank accounts (Gruber et al., 2010).). The prominence of EFTs is that one does not need to be in the banking halls to conduct banking transactions, but rather, have access to internet and credentials to their bank account. Equally, Nader (2011) argues that since EFTs can be executed at any time of the day, it is more convenient to bank clients and to the bank operations. In comparison to traditional ways of conducting money transfer where clients had to physically visit the banking hall and
fill in transfer forms, EFTs offer a more swift, efficient process. Thus, as argued by Hair, Black, Babin and Anderson (2009), EFTs do enhance operational efficiency of commercial banks. Clients are empowered to carry out the transaction process through their personal computers, laptops, or mobile phones, which drastically reduces commercial banks need for human capital to process the transactions. As a result, any overheads associated with paper work processing of bank transactions and transfers are eliminated (Yener et al., 2007).

The Electronic Funds Transfer (EFTs) have been enhanced to operate at point of sale units (Liu et al., 2013). This includes the use of debit cards by bank clients to activate EFT processes. In this regard, EFTs allow for point of sale services to bank clients shopping using their debit cards. The innovative component of EFTs point of sale is that they have helped both banks and clients eliminate cheques or having to withdraw liquid cash to be able to shop. Similarly, Lyon et al. (2007) notes that the merging of technology and banking processes has ensured the creation of efficiency in operation of banking service.

2.3.1.2 Mobile Banking

Mobile banking systems offer normal banking services through mobile phone platforms (Henderson & Pearson, 2011). According to Yener et al., (2007) mobile banking platforms have enhanced commercial banks operational efficiencies. This has been the case in that mobile banks have significantly reduced the number of clients visit to the banks, since they can access banking services from the comfort of their mobile phones. Gakure and Ngumi (2013) posits that there exists a positive relationship between increase in mobile banking and commercial banks operational efficiency. Henderson & Pearson (2011) argues that mobile banking offers a high level of reliability and convenience of banking services to clients, while at the same time, helps commercial banks enhance their operational efficiency.

The Kenya M-Pesa money transfer platform has over the last decade proved to be an effective and convenient money transfer program (Gakure & Ngumi, 2013). As a result, commercial banks in Kenya have partners with the Kenya’s giant mobile service provider Safaricom to link M-Pesa to clients’ banks accounts and as such, clients are able to access their bank balances via mobile phones, conduct withdraws, in addition to making secure
and convenient payments (Henderson & Pearson, 2011). Commercial banks clients are able to apply for loans and credit facilities via mobile phones, which in essence, eliminates costs of loan administration, and thus enhances operational efficiency. However, Mas and Radcliffe (2011) notes that in as much as mobile banking services reduces the cost of doing business both for commercial banks and for customers, this does not necessarily translate into operational efficiency. Banks sometimes do take advantage of eh efficiency and convenience of mobile banking as a substitute for operational staffing. The challenge with this position is that mobile banking functions of software that needs constant monitoring. Any crashes in the software execution results in errors. Worse still, if the banks databases are under maintenance, clients cannot access their banking transaction via the mobile phone, which can easily compromise operational efficiency (Gakure & Ngumi, 2013).

Mobile banking financial innovations have enabled commercial banks to facilitate quicker and economical funds transfers, and thus increasing the level of trade (Mabrouk & Mamoghi, 2010). Additionally, mobile money transfers have enabled commercial banks to reach unbanked populations particularly in developing world. According to Francesca and Claeys, 2010), mobile banking has been extremely effective way of reaching the unbanked since banks did not have to establish physical banking halls, but rather rely on mobile cell coverage and mobile money transfer agents. The agents do facilitate the unbanked population with facilities to deposit or withdraw money using their mobile phones, thus making access to banking services quicker, efficient, and reliable. The mere fact that banks are able to reach millions of unbanked without incurring overheads and capital requirements necessary in setting up traditional banking has boosted commercial banks operational efficiency (Mabrouk & Mamoghi, 2010).

According to Surroca, Tribo and Waddock (2010) mobile banking has reduced the need for commercial banks to roll out expensive infrastructures such as the dedicated point of sales system (POS). In Kenya for instance, Safaricom has enabled millions of unbanked customers to make deposits, withdrawals, check bank balances, pay bills and even access financial credit (Mabrouk & Mamoghi, 2010). As such, the mobile banking has revolutionized how banks customers gain access to banks financial services, especially in the developing world, where access to banking services was limited (Tribo & Waddock, 2010). In this regard, mobile banking is a form of branchless banking that has largely
contributed to innovation and the development of financial services in developing countries, and therefore, should be encouraged and exploited by commercial banks (Francesca & Claeys, 2010).

According to Ray, Xue and Barney (2013) mobile banking financial innovation has significantly transformed access to credit by customers and business merchants. Credit allocation is the process or method through which banks allocate credit or loans to an applicant of such a facility. As such, mobile credit facilities provided by commercial banks have made it possible for banks to access borrowers’ credit worthiness in real time since banks have online access to credit bureaus who document clients credit ratings (Miller, 2006). Equally, Rubera and Kirca (2012) note that mobile banking mobile banking has enabled commercial banks to develop credit allocation framework. The credit allocation framework does inform commercial banks’ lending policies, which in turn contribute to operational efficiencies of commercial banks.

2.3.2 Automatic Teller Machines (ATMs)

The Automatic Teller Machines (ATMs) innovations have equally revolutionized the way banking in done both in developed and developing world (Palacios, Gil, Garrigos, 2009). Commercial banks introduced ATMs first as cash dispensing machines, however, the advancement in technology has enabled banks to use ATMs both for cash dispensing and cash deposits (Prochnow, 2011). According to Ray, Xue and Barney (2013) banks rely on ATMs to enhance operational efficiency since ATMs installations are less costly compared to banking hall infrastructures. In this regard, it is more convenient, efficient and reliable for customers to access ATMs since they are usually placed in convenient places such as gas stations, shopping malls, and in hotel and airport lobbies (Hair et al., 2009). According to Palacios, Gil, Garrigos (2009). ATMs are cost efficient ways of yielding higher unit output compared to counter services, and as such, operational efficiency of banks tend to increase. The only challenge with ATM innovations is that they lack personal touch customers receive in banks from employees, in addition to disruptions caused by ATM breakages, or lack of funds that may cause inconvenience to clients (Hair et al., 2009).
2.4 Effect of Financial Market Innovations on Operational Efficiency

Financial market innovations is defined as the introduction of new markets that enhance access to financial products and services while at the same time reducing cost associated with access to the markets (Pooja & Singh, 2009). On the other hand, Banbury and Mitchell (1995) defines market innovation is concerned with improving the mix of a market that is being targeted, and how well the markets will be served. Access to financial markets has mostly been the reserve of commercial banks, however, with financial innovations hitting the market, in addition to globalization, numerous products and services have begun to emerge (Nader, 2011). This include peer to peer lending, crowdfunding, virtual currencies, and innovative payment or currency exchange solutions (Lyons, Chatman & Joyce, 2007).

Pooja and Singh (2009) argue that there exists a significant relationship between innovative financial markets and operational efficiency of commercial banks. As more substitute and efficient products get to the financial markets, commercial banks are forced to adjust their operational models to fit into efficient models able to compete with other provisions on the market. This includes enhancing access to finance and financial transaction, including credits, loans, and payment systems (Terziovski, 2010).

The increase in competition in the global financial markets have necessitated the quest for financial market innovations (Nader, 2011). In a study conducted by Terziovski (2010), (2007) in 11 Latin American countries found that rivalry for financial markets pushes commercial banks to differentiate their products so as to attract more clients. A study on the impact of information technology on the banking industry was carried out by Shirley and Sushanta (2006). The study had a general objective of establishing the effects of information technology on the profitability of commercial banks. The study had a target population of 68 US banks and data was collected over a period of 20 years. The study found out that adoption of IT to service delivery may increase the operational profits due to cost savings. However, the study also found out that the profitability depended on the network effect which if too low would lower the profits of the banks. Thus, the study was not conclusive on the effect of operational innovations due to technology adoption.

According to Gakure and Ngumi (2013), financial innovations have an impact on performance of commercial banks in Kenya. The study was conducted with an aim of...
establishing the effect of financial innovations on the profitability of commercial banks. The study concluded that innovations require resources for them to be implemented and result in income. The study established that financial innovations involve committing resources in order to develop new products and new ways of delivering the banking products and services. To this end, banks may need to hire skilled personnel to implement and monitor such processes. In as much as the banks need new products, they should consider the utility they are creating for the customers.

Francesca and Claeys (2010), carried out a study with an aim of examining the role of online banking services in contributing to the strategic goals. The study was carried out among 60 large banks operating in the European Union. The study revealed that those banks that had a goal of increasing their market share were likely to adopted financial innovations such as internet banking because they could reach more customers. However, the performance of banks that solely dependent on internet was noted to be low because the banks had spent a lot of money in venturing to internet banking and subsequent labor cost savings could not be sufficient to recoup the initial capital outlay. For this reason, it is important for banks to prudently decide on which financial innovations to adopt. Malhotra and Singh (2010) carried out a study with the aim of establishing the impact of internet banking on financial performance of commercial in India. The study had a keen interest in establishing whether the period of adoption of internet banking had an impact on performance. Specifically, the study sought to establish whether, banks that had adopted internet banking for longer periods had superior performance over those that had adopted banking for a shortest time period. A multiple regression model was used, and 82 banks were selected. The study found out that there was no statistically significant difference among those banks that had adopted internet banking for a longer time than those which had recently adopted internet banking.

2.4.1 Mobile Phone Customers

Mobile phone customers refer to any holder of smart mobile phones capability of connecting to the internet (Terziovski, 2010). Mobile phone owners have become a new target market for commercial banks seeking to enroll more customer accounts. According to Lyons et al. (2007) since the innovation of mobile banking, it is easier for commercial banks to target mobile phone owners since they done have to physically visit a bank to register for bank accounts, or access banking services. As such, the new market for
banking services has expanded from the traditional bank clients to the unbanked millions who reside in remote locations but have access to internet through their mobile phones (Surroca, Tribo & Waddock, 2010). In as much as mobile phone users do not consistency as compared to traditional clients, they nonetheless expand the financial market base of commercial banks without overhead costs, and thus, enhancing operational efficiency (Banbury & Mitchell, 1995).

2.4.2 Peer to Peer Financial Markets.

Peer to peer (P2P) is a financial market innovation that seeks to challenge commercial banks on provision of finance credit to clients (Nader, 2011). The peer to peer was designed to match financial lenders with suitable appropriate borrowers using online platforms. According to Roberts and Amit (2003) P2P lending have provided stiff competition to commercial banks since they provide lending and investment borrowing at competitive interest rates compared to commercial banks. The key players in the P2P markets include Lending Club, and OnDeck who have a combine lending capacity of more than $10 Billion dollars (Banbury & Mitchell, 1995). Over the last decade, financial innovations have revolutionized the banking and financial services sector. The cost of technological innovation has fallen with the advance in new financial technologies. As such, access to finance has become swift and efficient. In Kenya, for instance, P2P lending model has been pioneered by Safaricom M-Kopa and M-Shwari savings and credit facilities (Nader, 2011). In as much as the M-Shwari and M-Kopa facilities are mostly targeting individual borrowers and small and medium micro-finance institutions, they have been effective in enhancing access to finance credit to untraditional bank clients.

Sana et al. (2011) argues that the advantage brought to the financial markets by the peer to peer model is the inducement of competitive credit facility interest rates. In most instances, the more the interest rates are attractive to borrowers, the more clients are attracted to borrowing. In this regard, commercial banks have to compete with these P2P providers to ensure they do not lose their client base. The move to compete with other banks and P2P providers in essence, enhances competition for clients, and commercial banks operational efficiency (Gakure & Ngumi, 2013).

According to Mabrouk & Mamoghli (2010) posit that P2P international payment systems have provided stiff competition to commercial banks in that they are able to bypass the
normal bank system payments and settlements system. The innovation in the P2P payment systems aims at improving efficiency in foreign currency transactions and invoices so that settlements can be settled in few clicks (Sana et al. 2011). In as much as the P2P transactions mostly bypasses the traditional commercial banks, the relative impact of this competition both from P2P that involves person to person via mobile phones of international payments, has forced commercial banks to partner with P2P agents, or to become P2P agents as the case with M-Kopa and M-Shwari that from Safaricom that are held with Commercial Bank of Africa, and Kenya Commercial Bank respectively (Nader, 2011)

2.4.3 Electronic Databases

The advance in information technology has made is possible for securitization and structuring of financial and credit products. Henderson and Pearson (2011). Electronic data bases have enhanced and increased commercial banks’ ability to collect, process, analyze, and document customer trends in the use of financial facilities. Ultimately, in the current competitive world, an organization that has command over customers data has the higher probability to control the market (Gakure & Ngumi, 2013). Electronic databases have also been able to support greater efficiency and competition, while at the same time, technology input has led to the fall in the costs of financial intermediation. According to Mabrouk and Mamoghli (2010), electronic databases have made it possible to access international markets and still be able to get adequate data to conduct business. As such, the operational efficiency induced into the system has lowered the cost of capital commercial banks need to setup international intermediaries for credit transactions or for trade.

2.5 Chapter Summary

This chapter has presented literature review on financial innovation and effect on operational efficiency of commercial banks. Literature on financial product innovations have been presented first, followed by financial process innovations, and finally, financial market innovations. Chapter three had documented the methodology used to carry out the study.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction
The research methodology that was adopted for this study has been presented in this chapter. The main key elements discussed in this chapter include the research design, the population and sampling design, the data collection methods used, and the data analysis methods adopted for this study are also presented.

3.2 Research Design
A research design is a comprehensive roadmap that guides a researcher on how to conduct a study, particularly the methodology to be adopted for the study (Kothari, 2004). A descriptive survey design was used to carry out this study. The descriptive design is flexible and expansive enough to various field challenges that could arise during administration of questionnaire and data interpretation (Kombo & Tromp 2006). Descriptive survey design usually seeks to describe the study subject characteristics without interfering with the study environment. As such, descriptive research designs involve measurement, classification, analysis, comparison and interpretation of data. The descriptive survey is ideal for this study in that primary data that was collected enabled the researcher to describe the study phenomenon (effect of financial innovations of operational efficiency of commercial banks) and present this description in form of percentages, frequencies, and correlations.

3.3 Population and Sampling Design

3.3.1 Population
A population of a study is defined as total number units or elements of a study for which the findings were generalized. For this study, the population the study is 173 Equity Bank branches in Kenya, and 42 branches in Nairobi. The target population was 42 equity branches in Nairobi county. Only senior level managers took part in this study. The main reason for choosing senior operations managers is that they are usually in charge of operations management, and financial innovation operational strategies.
3.3.2 Sampling Design

Sampling design is defined as the framework that is used in research to guide and establish sample frame and sample size (Cooper & Schindler, 2014). The sampling design is important in that it enables a researcher to authenticate the list of population from which the researcher draws a study sample.

3.3.2.1 Sample Frame

A sampling frame is defined as the list items, objects of elements that form the target population a researcher is interested in studying (Cooper & Schindler, 2014). The sampling frame for this study consist of all the Equity branches within Nairobi County as listed on Equity bank website.

3.3.2.2 Sample Size

The sample size is defined as the unit representation of a general population that is selected to conduct a study (Mugenda & Mugenda, 2003). A study sample sizes determines whether a study is scientific or not. A good sample size must be determined using a scientific method. The importance of selecting a sample size in a scientific manner is to enable verifiability, should another researcher want to confirm the findings or a study, or confirm findings of a study. This study was a census since all the Equity bank branches within Nairobi region were sampled. According to Kothari (2004), a census is a study where all the population size is used as a sample size. In a study where the population size if less than 100, a census is usually recommended (Cooper & Schindler, 2014). The sample size was the 42 branches in Nairobi county.

3.4 Data Collection Methods

Data collection method is defined as the process of collecting data that can be used to answer a study research questions (Kothari, 2004). Primary data will be collected using closed ended questionnaires. Questionnaires are the most convenient tools for collecting primary data (Mugenda & Mugenda, 2003). Semi structured questionnaires have majority structured questions, and sections where respondents can clarify specific questions. Questionnaires make it easy for a researcher to structure responses within a given prism or scope. This is important for standardization and analysis of data (Kothari, 2004). The questionnaire will be structured as follows: Section I presents demographic data of
respondents; Section II presents data on effects of financial process innovation on operational efficiency; Section III presents data on effects of financial product innovation on operational efficiency; Section IV had data on the effect financial markets innovation on operational efficiency in commercial banks and finally, Section V presents data on operational efficiency on commercial banks

3.5 Research Procedures

This study commenced by the researcher seeking relevant approvals and clearance from United States International University. Secondly, approvals were sought from the commercial banks headquarters in Nairobi. A letter detailing purpose of the study was drafted and sent to human resource managers of the Equity bank branches within Nairobi. After approvals have been granted, a pilot study consisting of five questionnaires and respondents was conducted using human resource managers since they are senior managers, however, they did not be taking part in the final study. The importance of the pilot study was used to simplify or correct any ambiguities within the questionnaire, and also to provide clarity, and correct phrasing and sequencing of questions. This process of pilot was also be used to check for validity and reliability of the questionnaire and the data generated. Finally, the study ethics in maintaining confidentiality, professionalism was applied during the entire process for this study

3.6 Data Analysis Methods

Quantitative data was analyzed through the use of a combination of descriptive statistics and inferential statistics. For descriptive statistics, frequency distributions, and percentages was used to describe characteristics of the data findings. For inferential statistics, correlation analysis and regression analysis will be used. Correlation was used to analyze where there exist any relationships between the variables. The Statistical Package for Social Science (SPSS) version 23 was used to analyze and present the specific issues through coding and summarizing the responses of all the respondents. Figures and Tables have been used to present the results and findings. The following multiple regression model was adopted:

\[ Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + e \]

Where

\[ Y = \text{Operational Effectiveness} \]
\( \beta_0 = \text{Regression Constant} \)
\( \beta_1 = \text{Financial Process Innovation Coefficient} \)
\( \beta_2 = \text{Financial Product Innovation Coefficient} \)
\( \beta_3 = \text{Financial Market Innovation Coefficient} \)

\( X_1 = \text{Financial Process Innovation Linear Variable} \)
\( \beta_2 = \text{Financial Product Innovation Linear Variable} \)
\( \beta_3 = \text{Financial Market Innovation Linear Variable} \)

### 3.7 Chapter Summary

The study methodology used to conduct this study has been presented in this chapter. The research design guiding the study has also been presented, followed by the population and sampling design. The study adopted descriptive research design on a target population of 38 Equity bank branches in Nairobi, where operations managers were sampled for the study. This chapter has also presented the data collection methods, and data analysis methods that was adopted. Chapter four has documented the results and findings of the study.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

The results and findings of this study are presented in this chapter. The results and findings on the effect of financial process innovation on operational effectiveness of commercial banks are presented first, followed by findings and results on effects of product innovation on operational effectiveness of commercial banks, and finally, the results and findings of effects of financial markets innovation on operational efficiency of commercial banks are presented. This study had a sample size of 42 Equity branches in Nairobi, out of which, 38 respondents returned their questionnaires making a respondent’s rate of 90%. A reliability analysis was conducted to establish reliability of the study tool. The values for Cronbach Alpha were .07 as indicated in Table 4.1.

Table 4.1: Reliability Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Items</th>
<th>Alpha Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Process Innovation</td>
<td>10</td>
<td>0.822</td>
</tr>
<tr>
<td>Product Innovation</td>
<td>10</td>
<td>0.764</td>
</tr>
<tr>
<td>Financial Market Innovation</td>
<td>10</td>
<td>0.709</td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>5</td>
<td>0.768</td>
</tr>
</tbody>
</table>

4.2 Respondents Demographics

The documented findings on respondents’ gender are presented as follows:

4.2.1 Gender

When respondents of the study were asked to indicate their gender, 58% indicated that they were male, while 42% indicated they were female as summarized in Figure 4.1.
4.2.2 Age of Respondents

On the question on respondents age, 42% were aged between 45 and 54, 26% were aged above 55 years, and 35-44 years respectively; while the remaining 5% indicated they were aged 25-34 years as summarized in Figure 4.2

4.2.3 Number of Years as an Employee at Equity Bank

When respondents were asked to indicate the number of years they had spent as employees of Equity bank, 45% indicated they had spent 6-10 years, 21% had spent
above 16 years, 18% had spent 11-15 years, while the remaining 16% had spent 1-5 years as highlighted in Figure 4.3

Figure 3: Number of Years as an Employee at Equity Bank

4.2.4 Number of Years as Operations Manager

On the question on number of years respondents had been operations managers, 42% noted 6-10 years, 32% indicated 11-15 years and the remaining 26% indicated 1-5 years as summarized

Figure 4.4: Number of Years as Operations Manager

4.3 Effect of Financial Process Innovation on Operational Efficiency

This study sought to examine the effect of financial process innovations on operational efficiency of commercial banks in Kenya.
4.3.1 Financial Performance and Innovation

On the question on whether Equity bank had increased financial performance as a result of financial innovations, majority, 63% of respondents strongly agreed, while 37% agreed as indicated in Table 4.2

Table 4.2: Increase in Financial Performance through Innovation

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>14</td>
<td>36.8</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>24</td>
<td>63.2</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3.2 Increase in Number of Customers due to Financial Innovation

When respondents were asked whether there had been an increase in the number of customers due to financial innovation, 76% of respondents strongly agreed, while 24% agreed as indicated in Table 4.3

Table 4.3: Increase in Number of Customers Due to Financial Innovation

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>9</td>
<td>23.7</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>29</td>
<td>76.3</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3.3 Increase in Quality of Service Due to Financial Innovation

On the question on whether there had been an increase in quality of service to customers due to financial innovations, 79% of respondents strongly agreed this to be the case. The remaining 21% equally agreed as highlighted in Table 4.4

Table 4.4: Increase in Quality of Service Due to Financial Innovations

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>8</td>
<td>21.1</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>30</td>
<td>78.9</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>
4.3.4 Increase in Customer Service Due to Financial Innovation

Wen respondents were asked whether there was an increase in customer service due to financial innovations at Equity bank, 76% strongly agreed, and (23%) agreed as summarized in Table 4.5

Table 4.5: Increase in Customer Service Due to Financial Innovation

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>29</td>
<td>73</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.3.5 Decrease in Overhead Costs

On the question on whether there was a decrease in overhead costs during the previous financial year as a result of financial innovations, 79% of respondents strongly agreed, while 21% agreed as indicated in Table 4.6

Table 4.6: Decrease in Overhead Costs

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>8</td>
<td>21.1</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>30</td>
<td>78.9</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.3.6 Availability of Financial Process Innovation

Respondents of this study were asked whether Equity bank had financial process innovations in place. According to the findings, 71% strongly agreed, while 29% agreed as noted in Table 4.7

Table 4.7: Availability of Financial Process Innovation

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>11</td>
<td>29</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>27</td>
<td>71</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>
4.3.7 Customer Transaction Processing Systems

On the question on whether financial process innovation included customer transaction processing systems, 71% of respondents strongly agreed, while 29% agreed as highlighted in Table 4.8

Table 4.8: Customer Transaction Processing Systems

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>11</td>
<td>29</td>
</tr>
<tr>
<td>Strongly</td>
<td>27</td>
<td>71</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.3.8 Customer Transaction Systems and Operational Efficiency

When respondents were asked whether customer transaction processing systems enhances operational efficiency, 45% agreed, 39% strongly agreed, while 16% remained neutral as indicated in Table 4.9

Table 4.9: Customer Transaction System and Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Agree</td>
<td>17</td>
<td>45</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>15</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3.9 Rollback of Unsuccessful Transactions

Respondents were asked whether customer transaction systems at Equity bank ensures successful rollback of transaction, 63% strongly agreed, 27% agreed, while 5% disagreed and were neutral respectively as summarized in Table 4.10

Table 4.10: Rollback of Unsuccessful Transactions

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Neutral</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>24</td>
<td>63</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>
4.3.10 Integrity of Financial Processes

On the question on whether financial integrity systems enhance financial processes. Majority 58% strongly agreed, 34% of respondents agreed, 5% disagreed, while the remaining 3% were neutral a highlighted in Table 4.11

Table 4.11: Integrity of Financial Processes

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>2</td>
<td>5.3</td>
</tr>
<tr>
<td>Neutral</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>Agree</td>
<td>13</td>
<td>34.2</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>22</td>
<td>57.9</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.4 Effect of Product Innovations on Operational Efficiency

This study sought to examine the effect of product innovation on operational efficiency of equity bank. The study findings are highlighted as follows:

4.4.1 Credit Finance Processing

On the question on whether credit finance processing had transformed loan and credit facilities at Equity bank, 74% of respondents strongly agreed, while 26% agreed as summarized in Table 4.12

Table 4.12: Credit Finance Processing

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>28</td>
<td>74</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.2 Credit Finance Processing System and Operational Efficiency

When respondents were asked whether credit finance processing enhances operational efficiency, 79% of respondents strongly agreed, 13% agreed, while the remaining 8% were neutral as indicated in Table 4.13
4.4.3 Electronic Signature and Operational Efficiency

Respondents of this study were asked whether electronic signature had enhanced operational efficiency, 68% strongly agreed, 29% agreed, while 3% were neutral as noted in Table 4.14

Table 4.14: Electronic Signature and Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>39</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.4.4 Trade Financial Innovations and Operational Efficiency

On the question on whether trade financial innovation influenced operational efficiency, majority, 68% strongly agreed, 29% agreed, while 3% remained neutral as indicated in Table 4.15

Table 4.15: Trade Financial Innovation and Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>28.9</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>26</td>
<td>68.4</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.4.5 Point of Sale Terminals and Operational Efficiency

On the issue on whether point of sale terminals had enhanced operational efficiency, 68% strongly agreed, while 32% agreed as indicated in Figure 4.5
4.4.6 Chip Technology and Operational Efficiency

When asked whether chip technology had influenced operational technology, 56% of respondents strongly agreed, 34% agreed, while 5% disagreed and were neutral respectively as noted in Table 4.16.

Table 4.16: Chip Technology and Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Neutral</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Agree</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>21</td>
<td>56</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>38</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.4.7 Product Innovation Essential to Operational Efficiency

When respondents were asked whether product innovations at Equity bank was essential to operational efficiency, 63% strongly agreed, 34% agreed, while 3% remained neutral as indicated in Table 4.17.
Table 4.17: Product Innovation Essential to Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Agree</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>24</td>
<td>63</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.8 Product Efficiency Enhances Operational Efficiency

When respondents were asked whether product efficiency had enhanced operational efficiency at Equity bank, majority, 63% strongly agreed this to be the case, 29% agreed, while 8% were neutral as indicated in Table 4.18

Table 4.18: Product Innovation Enhances Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>3</td>
<td>7.9</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>28.9</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>24</td>
<td>63.2</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.4.9 Internet Banking Transformation

This study sought to examine whether internet banking had transformed banking services at Equity bank. The findings show that 53% of respondents strongly agreed, 42% agreed, while 5% remained neutral as indicated in Table 4.19

Table 4.19: Internet Banking Transformation

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>42</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>20</td>
<td>52</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.10 Internet Banking Convenience

This study sought to determine whether internet banking had enhanced convenience of financial transactions at Equity bank. The findings show that 76% strongly agreed, 21% agreed, and 3% remained neutral as highlighted in Table 4.20
Table 4.20: Internet Banking Convenience

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>Agree</td>
<td>8</td>
<td>21.1</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>29</td>
<td>76.3</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.5 Effects of Financial Market Innovation on Operational Efficiency

This study sought to examine the effects of financial market innovation on operational efficiency of commercial banks. The findings are highlighted in this section:

4.5.1 Access to Financial Market Innovations

When respondents were asked whether they had access to financial market innovations, 79% strongly agreed, while 21% agreed as indicated in Table 4.21

Table 4.21: Access to Financial Market Innovations

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>30</td>
<td>79</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.5.1 Market Innovation Enhances Operational Efficiency

On the question on whether market innovations had enhanced Equity banks operational efficiency, 68% strongly agreed, 26% agreed, while 6% were neutral as indicated in Table 4.22

Table 4.22: Market Innovations and Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>
4.5.2 Mobile Phone Customers are Essential

On the question on whether mobile phone customers are essential in enhancing access to financial markets, 53% strongly agreed, while 47% agreed as indicated in Figure 4.6.

![Figure 4.6: Mobile Customers are Essential](Image)

4.5.3 Mobile Phone Clients are Easy to Manage

This study sought to examine whether mobile phone clients were easy to manage, 68% of respondents strongly agreed, 26% agreed, while 5% remained neutral as indicated in Table 4.23.

Table 4.23: Mobile Phone Clients are Easy to Manager

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.5.4 Agency banking and Unbanked Populations

On the question on whether agency banking had enhanced financial markets for the unbanked populations, 61% of respondents strongly agreed, 29% agreed, while the remaining 5% disagreed and were neutral respectively as summarized in Table 4.24.
Table 4.24: Agency Banking and Unbanked Populations

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Neutral</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>29</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>23</td>
<td>61</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.5.5 Agency Banking and Operational Efficiency

When respondents were asked whether agency banking had enhanced operational efficiency, 71% strongly agreed, 26% agreed, while 3% were neutral as highlighted in Table 4.25

Table 4.25: Agency Banking and Operational Efficiency

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>27</td>
<td>71</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.5.6 Peer to Peer Financial Markets

This study sought to examine whether peer to peer financial markets had enhanced operational efficiency of Equity bank. According to the findings show that 68% strongly agreed, while 32% agreed as indicated in Table 4.26

Table 4.26: Peer to Peer Financial Markets

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.5.7 Electronic Financial Databases and Operational Efficiency

On the question on whether electronic financial databases had enhanced operational efficiency of Equity bank, 60% of respondents strongly agreed, 37% agreed, while 3% were neutral as indicated in Table 4.27.
4.5.8 Peer to Peer M-Shwari

When respondents were asked whether peer to peer M-Shwari had enhance operational efficiency of Equity bank. The findings show that 63% strongly agree, while 37% agreed as indicated in Table 4.28.

Table 4.28: Peer to Peer M-Shwari

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>14</td>
<td>36.8</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>24</td>
<td>63.2</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.5.9 Mobile Phone Customers are Easy to Manage

On the question on whether mobile phone customers were easy to manage, 68% strongly agreed, 27% agreed, and the remaining 5% were neutral as summarized in Table 4.29.

Table 4.29: Mobile Phone Customers are Easy to Manage

<table>
<thead>
<tr>
<th>Scale</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

4.6 Correlation

When a correlation analysis was conducted, financial product innovation was found to have the strongest relationship with operational efficiency, \( r (0.861); p\text{-value} \leq 0.01 \). This was followed by relationship between financial process innovation and operational efficiency, \( r (0.821); p\text{-value} \leq 0.01 \); and finally, relationship between financial markets innovation and operational efficiency, \( r (0.815); p\text{-value} < 0.01 \). The relationships were statistically significant as noted in Table 4.30.
Table 4.30: Correlations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Efficiency</td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Financial Process</td>
<td>Pearson Correlation</td>
<td>.821**</td>
<td>38</td>
</tr>
<tr>
<td>Innovation</td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>38</td>
</tr>
<tr>
<td>Financial Product</td>
<td>Pearson Correlation</td>
<td>.861**</td>
<td>38</td>
</tr>
<tr>
<td>Innovation</td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>38</td>
</tr>
<tr>
<td>Financial Market Innovation</td>
<td>Pearson Correlation</td>
<td>.815**</td>
<td>38</td>
</tr>
<tr>
<td>Innovation</td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>38</td>
</tr>
</tbody>
</table>

**. Correlation significant at 0.01 (2-tailed).

4.7 Regression

Since all variables exhibited a statistically significant relationship with operational efficiency, a multiple regression was conducted to determine the extent of the relationship when all the variables are combined. This study had an adjusted ‘R’ squared of 0.837. This means that about 84% of operational efficiency at Equity bank is attributable to financial process innovation, financial product innovation, and financial market innovations. The remaining 26% of factors that contribute to operational efficiency at Equity bank were not covered by this study.

Table 4.31: Regression Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.922a</td>
<td>.851</td>
<td>.837</td>
<td>.08685</td>
</tr>
</tbody>
</table>


The study findings also show the Analysis of Variance (ANOVA) for determining the existence of differences between variable means was: $F_{(3, 34)} = 64.548; p-value = 0.000$ as summarized in Table 4.31
The findings also show financial product innovations had the strongest standardized Beta coefficient with operational efficiency, \( \beta (0.395); p\text{-value} = 0.002 \); followed by standardized Beta coefficient for financial process innovation, \( \beta (0.358); p\text{-value} = 0.001 \); and finally, standardized Beta coefficient for financial market innovations, \( \beta (0.266); p\text{-value} = 0.21 \) as summarized in Table 4.33

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>1.461</td>
<td>3</td>
<td>.487</td>
<td>64.548</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>.256</td>
<td>34</td>
<td>.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1.717</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Operational Efficiency

4.8 Chapter Summary

This chapter has presented the results and findings of the study. The findings show that financial product innovation had the strongest relationship with operational efficiency, \( r (0.861); p\text{-value} <0.01 \). This was followed by relationship between financial process innovation and operational efficiency, \( r (0.821); p\text{-value} < 0.01 \); and finally, relationship between financial markets innovation and operational efficiency, \( r (0.815); p\text{-value} <0.01 \). Chapter 5 presents the study discussion, conclusion, and recommendations.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

The study summary is provided first in this chapter, followed by discussion on the effect of financial process innovation on operational efficiency of commercial banks, effect of financial product innovation on operations of commercial banks, and the effect of financial market innovations on operational efficiency of commercial banks. The study conclusion, and recommendations are presented in a similar order.

5.2 Summary of the Study

The main objective of this study was to determine the effect of financial innovations on operational efficiency of commercial banks. The study was guided by the following specific objectives: To determine the effect of financial process innovation on operational efficiency of commercial banks; to determine the effect of financial product innovation on operational efficiency of commercial banks, and finally, to determine the effect of financial markets innovation on operational efficiency of commercial banks.

This study utilized a descriptive survey research design. The study had a target population of 42 Equity bank branches operating within Nairobi. The study was a census since all the 42 branches were utilized in the study. Primary data utilized in this study was collected using a structured questionnaire and analyzed for descriptive and inferential statistics using the Statistical Package for Social Sciences (SPSS) version 23. The findings were presented using Tables and Figures.

The findings on the effect of financial process innovation on operational efficiency of commercial banks shows that there exists a statistically significant relationship between financial process innovations and operational efficiency of commercial banks. The findings on the effect of product innovation on operational efficiency of commercial banks revealed the existence of statistically significant relationship between financial product innovation and operational efficiency of commercial banks.

Finally, the findings on the effect of financial market innovations on operational efficiency of commercial banks revealed the existence of a statistically significant
relationship between financial market innovations and operational efficiency of commercial banks.

5.3 Discussion

5.3.1 Effect of Financial Process Innovations on Operational Efficiency

This study sought to determine the effect of financial process innovations on operational efficiency of commercial banks. The study has established the existence of a statistically significant relationship between financial process innovations and operational efficiency of commercial banks. This finding confirms study findings by Henderson and Pearson (2011) who had established the existence of a similar relationship between financial process innovations and operational efficiency of commercial banks. Further, the findings by Henderson and Pearson (2011) had established that process innovation changes the way an organization does its work, how teams are composed, and how internal systems are restructured, which leads to enhanced efficiency and effectiveness in desirable outcomes.

This study found that customer transactions enhance operational efficiency of commercial banks. This is because customer transaction processes enhance customer experience through a more efficient process than the old traditional customer transition systems. In finance customer transaction processing, each customer's transaction is completed successfully. When part of the transaction is not executed, the entire transaction fails as a unit. This is done to ensure the integrity of customer financial processes are upheld. This argument had been advanced by Porter (2004) who argued that in a transaction-oriented banking processes, innovation is key to ensure transaction processing produces operational efficiency. This is because, customer transaction processing link multiple individual customer operations into a single indivisible transaction that are processed as a unit and completed without an error. This have only been made possible by introducing financial innovation processes within the banking sector.

Therefore, it could be argued that the adoption of the transaction processing systems by commercial banks is essential in ensuring not only the integrity of financial processes, but also the operational efficiency. Introduction of the financial process innovations ensures effortlessly transactions with copies of a customers’ information being processed in duplicates ensures that copies of transactions are stored for account reconciliations. This copies are set aside on the database prior to any modifications on the same to ensure...
integrity of customer transactions. This kind of financial process innovations is essential as has been argued by Mansury and Love (2008) in enhancing operational efficiency in commercial banks, as has been demonstrated by the findings of this study.

This study found that financial process innovations have transformed access to loans and credit facilities, making administration of loans and credit facilities faster and efficient. This is because, the bureaucracy attributed to loans and access to credit facilities is eliminated by online financial systems that can be accessed by clients. Similarly, online innovations reduce costs related to loan and credit facility processing, and approval or denial, making the process more efficient and effective. Mansury and Love (2008) had argued that loan portfolio management systems, and distributed credit rating systems are enabled by financial process innovations, which enable commercial banks to quickly access online client credit history, and thus, able to determine the clients credit worthiness in minutes. This kind of operational efficiency can not be attributed to traditional banking systems. Similarly, a study by Henderson and Pearson (2011) had concluded that financial innovation systems had enabled commercial banks to administer loans and credit facilities faster than traditional paper work approvals, making financial innovations more efficient.

This study has established that financial process innovations had contributed significantly to the increase in trade financing. Efficient trade financing systems contribute to efficiency in commercial banks operations. Similarly, it could be argued that innovations in trade finance has led to cost reduction in trade transactions, which in turn, enhance operational efficiency of commercial banks. In most instances, financial innovations, provide new opportunities that banks can exploit for more income while at the same time enhancing efficiency. The introduction of chipsets and card money means that a bank can enable its clients to conduct transactions from any point of sale (PoS), or when they have travelled internationally. This kind of ability enhances efficiencies in banks services to clients for are conducting trade in foreign territories as they can still be able to access their accounts and make payments.
5.3.2 Effect of Financial Product Innovation on Operational Efficiency

This study sought to establish the effect of financial product innovation on operational efficiency of commercial banks. The study findings have established the existence of a statistically significant relationship between financial product innovations and operational efficiency in commercial banks. This finding is in line with findings by Nader (2011) who noted that there exists a significant relationship between product innovations in commercial banks and operational efficiency. Further, Nader had argued that the utilization of technology by banks to enhance their products had significantly improved and enhanced operational efficiency of commercial banks. In another study that was conducted by Cainelli, Evangelista and Savona (2004) in Finland, Spain, Italy and the UK between the year 1995 to 2004 revealed that internet banking products performed better in terms of average returns to assets, which is in line with the findings of this study.

The findings of this study show that internet banking has transformed the way commercial banks conduct their banking services. Internet banking has enabled Equity bank to offer opportunities to offer clients quality service at, while at the same time, enhancing their operational efficiencies. For instance, the introduction and adoption of electronic funds transfer customers are able to transfer funds synchronously and asynchronously from their bank accounts to their merchants, or to other bank accounts. This has eliminated the delays that were often associated with bank transfers. Ovia (2010) had argued that the prominence of EFTs in commercial banks is the efficiency the innovation had brought to both the banks and their clients. In comparison to traditional ways of conducting money transfer where clients had to physically visit the banking hall and fill in transfer forms, EFTs offer a more swift, efficient process. On one had it could be argued that clients have been empowered to carry out the transaction process through their personal computers, laptops, or mobile phones, which in essence, has drastically reduced commercial banks need for human capital to process clients’ transactions.

This study has also established that mobile banking product innovations has enhanced and transformed operational efficiencies of commercial banks. This finding means that mobile banking platforms have enhanced how commercial banking is done, how banks reach their customers, and platforms that clients have access to for banking services. As such, as this findings suggest, mobile banking products have significantly reduced the number of clients visit to the banks, since they can access banking services from the comfort of
their mobile phones. This finding aligns with Cainelli, Evangelista and Savona (2004) arguments that there exists a positive relationship between increase in mobile banking and commercial banks operational efficiency. Mobile banking offers a high level of reliability and convenience by enabling their clients to use their mobile banking applications to access loans, credit facilities, and money transfers.

Based on the findings of this study, it could also be argued that mobile banking has reduced the need for commercial banks to roll out expensive infrastructures such as banking halls. For instance, in Kenya, Safaricom partnered with Equity bank to reach millions of unbanked customers, who owned a mobile phone. As such, this customers are able to make deposits, withdrawals, check bank balances, pay bills and even access financial credit through their mobile phones. This has been the case with the adoption of Automatic Teller Machines (ATMs) innovations by commercial banks, as the innovation has also revolutionized the way banking in done, particularly efficiency in customers access to their deposits, conducting withdrawals and making further deposits. This technologies, in essence, and as confirmed by the findings of this study, have enhanced operational efficiency of commercial banks.

5.3.3 Effect of Financial Market Innovations on Operational Efficiency

One of the objectives of this study was to establish the effect of financial market innovations on operational efficiency of commercial banks. The findings of this study have revealed the existence of a statistically significant relationship between financial market innovations and operational efficiency of Equity bank, and by extension, commercial banks that have adopted financial market innovations. A study by Pooja and Singh (2009) equally established the existence of a significant relationship between innovative financial markets and operational efficiency of commercial banks. Similarly, a study by Yildirim and Philippatos (2007) in 11 Latin American countries found that rivalry for financial markets pushes commercial banks to differentiate their products so as to attract more clients. This means that market innovations enhanced operational efficiency that resulted in growth of client numbers. In Ghana, a study by Roberts and Amit (2003) revealed that financial market innovation had enhanced Ghanaian banks’ ability to serve their clients more conveniently, which is in line with the findings of this study.
The findings of this study found that financial market innovations such as peer to peer (P2P) had a significant impact on operational efficiency of commercial bank. The advantages of peer to peer is that it was designed to match financial lenders with suitable appropriate borrowers using online platforms. This means that the adoption of P2P market innovations by clients has threatened commercial banks’ ability to offer loans and investments borrowing to clients. The challenge offered by peer to peer entities is that they most often offer loans and investment borrowing at much lower and competitive rates as compared to commercial banks. When clients have alternatives to banking service, this affects commercial banks performance, and in turn, forces commercial banks to enhance their operational efficiencies so as to compete effectively. A study that was conducted by Mabrouk and Mamoghli (2010) revealed that P2P international payment systems had provided stiff competition to commercial banks. In most instances, the P2P allowed clients to bypass normal commercial bank’s payment and settlements system. The findings further showed that as a result of competition that was meted on commercial banks by P2P, commercial banks have enhanced their internal operations so as to improve internal operational efficiency. The findings of this study have revealed the existence of a statistically significant relationship between market innovations should us the provision of banking services such as M-Kopa and M-Shwari services.

The findings of this study also established that electronic databases have enhanced and increased commercial banks’ ability to collect, process, analyze, and document customer trends in the use of financial facilities, which in turn have enhanced operational efficiency. Pooja and Singh (200) had argued that electronic banking had transformed commercial banks operational efficiencies by enabling commercial banks to offer services to clients at multiple points including use of computer-based platforms, electronic payment systems, and card money. The adoption of the electronic systems has therefore enabled commercial banks to introduce financial transaction efficiencies that are essential for the operation of commercial banks. Ultimately, as argued by Cainelli, Evangelista and Savona (2004), in the current competitive world, commercial banks have to establish command over customers data in terms of financial transactions so as to effectively serve them. The establishment and control of electronic databases have made it possible to access international markets and still be able to get adequate data to conduct commercial banks financial processes, products, and establish access to globalized markets. As such, the operational efficiency induced into the system has lowered the cost of capital
commercial banks need to setup international intermediaries for credit transactions or for trade.

5.4 Conclusion

5.4.1 Effect of Financial Process Innovations on Operational Efficiency

This study sought to examine the effect of financial process innovation on operational efficiency of commercial banks. The findings show that there exists a statistically significant relationship between financial process innovations and operational efficiency in commercial banks. This study concludes that customer transaction processes, credit finance processes, and trade finance processes play a major role in enhancing operational efficiency of commercial banks, since they enhance faster and efficient service delivery to customers. Equally, customer transaction processes have reduced redundancy and bureaucracy in service delivery and thus enhanced operational efficiency commercial banks offer to their clients.

5.4.2 Effect of Financial Product Innovation on Operational Efficiency

This study sought to examine the effect of product innovation on operational efficiency of commercial banks. The findings show that there exists a statistically significant relationship between financial product innovation and operational efficiency in commercial banks. This study concludes that internet banking has played a critical role in streamlining and enhancing operational efficiency in commercial banks, particularly the introduction on electronic funds transfers, mobile banking platforms, and automatic teller machines (ATMs). Banks are able to reach a wider client base faster, and have clients access to withdrawals, and deposits, while at the same time, transfer of funds, and payment of bills have been made much easier, quicker and efficient.

5.4.3 Effect of Financial Market Innovations on Operational Efficiency

This study sought to examine the effect of financial market innovations on the operational performance of commercial banks. The findings show that there exists a statistically significant relationship between financial market innovations and operational efficiency. This study concludes that financial market innovations such as mobile phone banking, peer to peer (P2P) financial services M-Kopa and M-Shwari by Safaricom, have offered
significant competition to commercial banks, forcing commercial banks to enhance their operational efficiency so as to retain their credit and loan seeking clients.

5.5 Recommendations

5.5.1 Recommendations for Improvement

5.5.1.1 Effect of Financial Process Innovations on Operational Efficiency

This study has established the existence of a significant relationship between financial process innovation and operational efficiency. Therefore, this study recommends that commercial banks in Kenya should invest more in customer transaction processes, credit finance processes, and trade finance processes. Customer transaction processes have enhanced efficiency in customers access to banking services, credit finance processes have enhanced operational efficiency in customers access loans and credit, while trade finance had enhanced efficiency in business trading systems.

5.5.1.2 Effect of Financial Product Innovation on Operational Efficiency

This study has established the existence of a significant relationship between product innovation and operational efficiency in commercial banks. Therefore, this study recommends that commercial banks should develop more products that utilize internet banking platform since internet banking has played a critical role in enhancing operational efficiency within commercial banks. Products such as electronic funds transfers, mobile banking platforms, and automatic teller machines (ATMs) should equally be enhanced so as to reach more clients, and use the operational efficiencies provided by this products to build competitive advantages.

5.5.1.3 Effect of Financial Market Innovation on Operational Efficiency

This study has established the existence of a statistically significant relationship between financial market innovations and operational efficiency within commercial banks. Therefore, this study recommends that commercial banks should invest more financial resources in mobile phone banking applications, and partner with peer to peer (P2P) financial services providers such as Safaricom M-Kopa and M-Shwari so as to leverage on the P2P operational efficiencies and client base.
5.5.2 Recommendation for Future Studies

This study focused exclusively on the effects of financial innovations on operational efficiency in commercial banks. The variables considered for this study were financial process innovation, financial product innovation, and financial market innovation. This factors are not exhaustive in examining operational efficiency in commercial banks. Future studies should focus on other factors not covered in by this study.
REFERENCES


Miron, E., Erez, M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each


APPENDICES

APPENDIX I: COVER LETTER

12\textsuperscript{th} March 2018

Jackline Wangui

P.O.BOX 234, 00200
Nairobi, Kenya

Dear Sir / Madam

RE: REQUEST FOR PARTICIPATION IN MY RESEARCH

My name is Jackline Wangui, currently pursuing my Master of Business Administration at United States International University Africa (USIU). As part of the requirements for my degree, am required to carry out a research in a field of my interest. My study is in the banking sector and is titled: “Effects of Technological Innovations on Operational Management for Commercial Banks in Kenya”. This study will help commercial banks gain an appreciation of the impact that technology innovations has on operational management and performance.

As part of senior management in charge of implementing technological innovations, you have been selected to take part in this study. Kindly spare few minutes to answer the questionnaire to the best of your knowledge. All information provided is confidential and will not be used for any other purpose, other than this study.

Thanks for your participation
APPENDIX II: QUESTIONNAIRE

This questionnaire tool is made of FIVE SECTIONS. Section I has questions on demographic data of the respondents. Section II has questions on operational efficiency of Commercial banks; Section III has questions on financial process innovations; Section IV has questions on financial product innovations, and Section V has questions on financial markets innovations.

Kindly answer the questions as accurately as possible. A Likert scale of 1-5 has been provided (1 being strongly disagree, 2 disagree; 3 neutral; 4 agree; while 5 strongly agree)

SECTION A: DEMOGRAPHIC INFORMATION

1. What is your gender?
   Male □
   Female □

2. What is your age range?
   i) 25-34 Years □
   ii) 35-44 Years □
   iii) 45-54 Years □
   iv) Above 55 □

3. How long have you been employed at the bank?
   i) 1-5 Years □
   ii) 6-10 Years □
   iii) 11-15 Years □
   iv) Above 16 □

4. How many years have you been an operations manager at the bank?
   i) 1-5 Years □
SECTION B: OPERATIONAL EFFICIENCY
Kindly use the Likert scale of 1 ‘strongly disagree’ – to 5 ‘strongly agree’ provided in the instruction section.

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<th>No.</th>
<th>Description / Questions</th>
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<td>5.</td>
<td>Your bank has increased financial performance through financial innovation</td>
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<td>6.</td>
<td>Your bank has increased the number of customers since adopting financial innovation</td>
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<td>7.</td>
<td>Your bank has increased quality of service to customers by adopting financial innovation</td>
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<td>8.</td>
<td>Your bank has increased customer service satisfaction by adopting financial innovation</td>
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<td>9.</td>
<td>Your bank has decreased operational overheads over the last year</td>
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SECTION C: Effect of Financial Process Innovation on Operational Efficiency
Kindly use the Likert scale provided in the instruction section to answer the following questions.

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<th>No.</th>
<th>Description / Questions</th>
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<td>10.</td>
<td>Your bank has financial process innovations in place</td>
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<td>11.</td>
<td>Financial process innovation includes customer transaction processing systems</td>
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<td>12.</td>
<td>Customer transaction processing systems enhances operational efficiency</td>
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<td>No.</td>
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<td>13.</td>
<td>Customer transaction systems ensures successful rollbacks of unsuccessful transactions</td>
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<td>14.</td>
<td>Customer transaction systems enhances integrity of financial processes</td>
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<td>15.</td>
<td>Credit finance processing has transformed loan and credit facilities at your bank</td>
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<td>16.</td>
<td>Credit finance process systems enhances operational efficiency</td>
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<td>17.</td>
<td>Electronic signature has enhanced operational efficiency</td>
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<td>18.</td>
<td>Trade finance innovations have enhanced operational efficiency</td>
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<td>19.</td>
<td>Point of Sale (POS) terminals have enhanced operational efficiency</td>
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<td>20.</td>
<td>Chip card technology on debit and cards has enhanced operations efficiency for commercial banks</td>
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</table>

SECTION D: Effect of Financial Innovation on Operational Efficiency

Kindly answer the following questions using the Likert scale provided in the instruction section

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<tr>
<th>No.</th>
<th>Description / Questions</th>
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<td>21.</td>
<td>Product innovation is essential for operational efficiency at your bank</td>
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<td>22.</td>
<td>Product efficiency enhances operational efficiency at your bank</td>
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<td>23.</td>
<td>Internet banking has transformed banking service for your organization</td>
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<td>24.</td>
<td>Internet banking has enhanced convenience of financial transaction at your bank</td>
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<td>25.</td>
<td>Electronic funds transfer is essential for operational efficiency at your bank</td>
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<td>26.</td>
<td>Electronic funds transfer enhances operational efficiency</td>
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</table>
27. Mobile banking is essential for operational efficiency at your bank
28. Mobile banking enhances operational efficiency at your bank
29. ATMs are essential for operational efficiency at your bank
30. ATMs enhances operational efficiency at your bank

**SECTION E: Financial Market Innovations and Operational Efficiency**

Kindly answer the following questions to the best of your knowledge using the Likert Scale provided in the instruction section

<table>
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<tr>
<th>No.</th>
<th>Description / Questions</th>
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<tr>
<td>31.</td>
<td>Access to financial market innovations enhances banks operational efficiency</td>
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<td>32.</td>
<td>Market innovation enhances operational efficiency</td>
<td></td>
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<td>33.</td>
<td>Mobile phone customers are essential in enhancing financial markets</td>
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<td>34.</td>
<td>Mobile phone customers are easy to manage compared to traditional bank clients</td>
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<td>35.</td>
<td>Agency banking has enhanced financial markets for unbanked populations</td>
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<tr>
<td>36.</td>
<td>Agency banking has enhanced operational efficiency for commercial banks</td>
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<td>37.</td>
<td>Peer to peer financial markets have enhanced access to financial markets</td>
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<td>38.</td>
<td>Peer to Peer M-Shwari has enhanced access to financial markets in Kenya</td>
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<td>39.</td>
<td>Electronic financial databases are essential for operational efficiency</td>
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<td>40.</td>
<td>Electronic financial database enhances operational efficiency</td>
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</table>
Thanks very much for your participation