THE EFFECT OF FINANCIAL PRODUCT INNOVATION ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

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I Balyesiima Bagambaki Brian do state that this is my original work.

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D61/5706/2017

Supervisor:

This research project has been presented for assessment with my approval.

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Dr. Mirie Mwangi

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I acknowledge the effort of my supervisor Dr. Mirie Mwangi, thank you for the endless guidance.

I appreciate my parents, sisters and brothers for the support they have accorded to me throughout the course of my studies.

Iam finally grateful to the ALMIGHTY GOD for giving me knowledge, wisdom, understating and excellence, let your name be glorified forever.

DEDICATION

To my parents, sisters, brothers, friends and relatives.

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LIST OF ABBREVIATIONS

ACH	Automated Clearing House
ATM	Automatic Teller Machine
CAR	Capital Adequacy ratio
CBK	Central Bank of Kenya
CRBs	Credit Reference Bureaus
EFTs	Electronic Funds Transfers
FOREX	Foreign Exchange
MFBs	Microfinance Banks
MICR	Magnetic Ink Character Recognition
MRPs	Money Remittance Providers
NIM	Net Interest Margin
POS	Point of Sale
ROA	Return on Assets
ROE	Return on Equity
RTGS	Real Time Gross Time Services
SPSS	Statistical Package for Social Sciences

ABSTRACT

Banking services in Kenya have evolved over time in order to introduce a set of innovations. It has evolved from the conventional banking to a high tech model of banking business. This has been due to the changing needs of the clients and the move towards a global economy and its associated demands. The objective was to determine the effect of financial product innovation on financial performance of commercial banks in Kenya. Descriptive design was used and the study population was 42 commercial banks. One commercial bank was under statutory management and two banks were in receivership. Secondary data was gathered from bank annual supervision reports from CBK as well as the audited financial records for 39 commercial banks for 5 years (2013-2017). The independent variable was financial product innovation where as the dependent variable was financial performance. The control variables were asset quality and capital adequacy. Regression analysis was conducted using SPSS. The findings revealed an insignificant negative relationship between ROA and the proportion of revenues from cheques and EFTs cleared through ACH to total bank revenue. The findings also revealed an insignificant negative relationship between ROA and agency banking. The findings further revealed an insignificant and negative relationship between ROA and Asset quality and finally, a significant and positive relationship between ROA and capital adequacy was also revealed. The researcher concluded that financial product innovation had a meager contribution on commercial banks' performance during 2013-2017. The study recommended that information about financial product innovations should be availed to the regulators who can use it to carry out in-depth analyses of the relationship between banks' performance and the financial product innovations that are introduced or modified from time to time in the financial sector in order to offer guidance to commercial banks together with other financial institutions in regard to the effect of these innovations on the banks' performance.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Banking services in Kenya have evolved over time in order to introduce a set of innovations. It has evolved from the conventional banking to a high tech model of banking business. This has been due to the changing needs of the clients and the move towards a global economy and its associated demands. Globally, the use of ATMs, cellular handset banking, wireless banking platforms, debit and credit cards, smart card technologies and agency banking platforms are being used at an increasingly high rate while executing financial transactions (James, 2014).

Like any other financial aspect, financial product innovation is associated with both advantages and disadvantages, although it has significantly contributed both positively and negatively. Various scholars allude to the fact that some financial product innovations are good, for instance, the discovery of an ATM that has eased financial transactions in the financial sector (Douglas, 2010).

The intensifying significance of the financial sector in the modern economies, the faster pace at which innovation in the banking business is taking place and the contribution of financial product innovation on commercial banks' perfromance have caught the researcher's curiosity in carrying out an in depth scrutiny of the link between financial product innovation and financial performance. There are various researchers who have taken a further step to discover various literature on the current financial innovations and they all allude to different perspectives about the relationship between financial product

innovation and banks' peformance. A case to note is Jorge, 2006; Dabrowski, 2017; Christian, 2007; Axel et al, 2009; Resina, 2004 whose findings reveal mixed results about the relationship between financial product innovation and banks' performance.

1.1.1 Financial Product Innovation

Innovation refers to the making of fresh or a qualitative modification of the existing goods, processes, markets, supply sources and firms. Thriving firms encourage hi-tech innovation through identifying and offering financial support to innovators who have the best odds of profitably bringing forth up to date goods and high tech systems of manufacturing goods (Perihan, 2015). Financial product innovation enables a firm to differentiate itself from its rivals and at the same time improve its competitive position through creating new financial products and services. This leads to growth in firm's revenue, improved performance of firm's shares on stock markets that consequently lead to an improvement in the financial performance (Drucker 1985; Porter, 2004).

Financial product innovation can be measured using various ways; including both input as well as output measures. Expenditure on research and development is considered as an input measure where as the number of newly created products or those that have been redesigned in the market, the proportion of revenue generated from new products and the general performance of the firm, intellectual property for instance patent rights as well as registered trademarks are considered as output measures of financial product innovation (Zizlavsky, 2016).

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Visco (2007) explains that financial product innovation can be categorized as:- fresh products like mortgages offered at a flexible rate, novel services like the buying and selling of securities on-line and wireless banking platforms, new processes of production such as keeping records of securities using electronic data base, and banks that typically run on the internet. Financial product innovation has created new opportunities for the players and at the same time attracted new participants in the financial sector (Christian, 2007).

Innovative commercial banks use financial product innovation as a critical strategic variable in order to surpass their rivals. This has turned out to be an important guide enabling the innovative banks to achieve better financial position, thus surpassing their rivals and maintaining their competitive advantage (Woldesenbet & Batiz-Lazo, 2006). Competitive advantage over the firm's rivals can be sustained through constant innovation, upgrading of the invention and its user interface procedure in order to delight the customer and increase the profitability of the firm (Porter, 2004).

1.1.2 Financial Performance

Farlex Financial Dictionary (2009) defines financial performance as the various numerical procedures used to appraise how efficient a corporation is deploying its resources in order to generate positive returns. For instance, the working capital/income, return on equity, profit before interest and taxes, profit after taxes, return on investment or assets (ROI), the net asset value (NAV) and ROE. Financial performance refers to the use of monetary indicators so as to gauge the level of attainment of the set objectives and

the input made towards availing the required resources and supporting the firm in financing the investment opportunities identified (Heremans, 2007).

Financial performance can also be defined as a concept of maximizing the shareholder's wealth (Stelios, 2012). Koller et al., (2010) assert that organizations are focused on value creation in order to maximize their owners' wealth. Daiva (2009) explains that Monetary Value Added (MVA) is a gauge for assessing the value created/added. Financial performance gauges how best the shareholder value is being created by the firm. The analyses of various financial ratios, bench marking a firm's performance against the best performing firm in a sector or industry as well as evaluating performance against the firm's budget are some of the techniques used by banks to gauge the performance of commercial banks (Ahmed et al., 2011).

Commonly used parameters used to measure financial performance include:- sales, productivity levels achieved, profit and export revenues generated by the firm. However, financial parameters such as ROA are sometimes used to measure the performance of the firms (Heshmati, et al., 2002). Zhang et al., (2012) agree that net PAT, ROA and ROI are the frequently used financial indicators for measuring the financial performance of firms. Waal and Bagorogoza (2010) add on that other frequently used parameters are:- productivity, profitability, the firm's growth rate, share of the market owned by the firm as well as the firm's competitive position over its rivals in the industry.

Financial reports and other secondary sources of data provide input data that are used in the computation of the financial indicators of the firm thereby, making financial

performance indicators to be very imperative management apparatus (Gitman & Zutter, 2014). Various techniques are used by dissimilar firms in order to appraise their financial performance using the organisation's set goals as a yardstick and this can be done using both the financial parameters as well as those that are not financial in nature (Waal & Bagorogoza, 2010; Ahmad & Bakar, 2010).

Pringle and Solomon (1981) emphasize that the analysis of the financial performance of a firm requires comparison standards. These help the company to find its evolution in more than a period because knowing the indicators for a single period is unreliable to appraise a company's financial position. Nikbakht and Groppelli (2002) argue that financial performance evaluation helps to evaluate a company's financial position in contrast to that of its competitors.

1.1.3 Financial Product Innovation and Financial Performance

Financial product innovations are principally geared towards increasing profits of a firm and they usually consist of latest goods, adapted technologies and procedures geared towards generating and increasing value to the shareholders (Forrer & Forrer, 2015).

Woldesenbet and Batiz-Lazo (2006) state that commercial banks use financial product innovation in order to compete in the financial markets, consequently improving their financial performance as well as their effectiveness. Several researchers have reported that a positive correlation exists between financial product innovation and measures that are used to gauge a firm's financial performance. Amidst a new set of models used to study the effect of a firm's novel activities on financial performance, there has been a

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shift to a complex process of innovation and the channels used to transform its inputs into better performance (Heshmati et al., 2002).

Firms should continuously create innovative products in their response to the to changing client's needs as well as the competitive environments in which they operate so as to achieve the firm's set goals of increasing profitability, market share as well as sales revenue (Grundiche, 2004).

Lyons et al., (2007) argue that financial product innovation reduces the expenses involved in gathering, processing, storing in a data base and transmitting financial information by developing financial products through which clients can interface easily with the banking services. They allude to internet banking, ATMs, handset banking, as well as other itinerant money platforms as being the most important innovations influencing the banking channels that significantly affect the performance of banks. Mansury and Love (2008) point out that financial product innovations for managing customer relationships as well as management of bank technologies are the backbone of a bank's in-house banking operations that have positively contributed to profitability and financial performance of commercial banks.

Financial product innovation is important in overcoming the challenges faced by financial intermediation in developing countries; a case to note is the high cost and high risks (Gitonga, 2003). For instance, mobile banking greatly depends on unpredictable as opposed to predetermined costs. This means that retail customers with miniature and few

financial dealings are equally feasible and can be accommodated in the banking sector unlike in the conventional channels used in banking (Porteous, 2007).

Besides, it's easier to build trust by reducing transactional risk in the minds of both client and the provider for instance by developing applications which are user friendly with the capacity to translate financial transactions into the client's local language. Financial innovation can therefore be used to encourage financial inclusion from the large financial sector that is largely unbanked, thereby improving the financial positions of the banks. In the same way, innovative firms together with their inventions can as well outwit the problem of long-standing financial difficulties (Merton, 1992; Lerner, 2006).

1.1.4 Commercial Banks in Kenya

Banking business has significantly developed and become modern as well as very much integrated, locally and globally championed through a better infrastructure of the financial markets. Cap 491 of the CBK, the Companies Act, banking Act Cap 488 together with the 2006 microfinance Act govern and oversee the banking sector in Kenya. These laws are used alongside the guidelines issued regularly by the CBK and further facilitated by the Kenyan Banking sector that was liberalized in 1995 (CBK, 2018).

Secondary data available from the CBK show that the sector is made up of forty three banks among which forty two are commercial, one mortgage finance company, eight foreign banks' representative offices, thirteen MFBs, three CRBs, seventeen MRPs and seventy seven FOREX bureaus (CBK, 2018). New digital payment modes for instance

through smart phones have enhanced a better entrance to the access of the financial services, mostly within the emergent economies with lesser take-up of conventional banking facilities, and this has inevitably called for the attention of regulators and other participants in the financial sector (James, 2018).

Financial product innovations in the Kenyan banking sector include RTGS; an electronic system of payment and settlement in which the processing as well as the final settlement of transactions related to the transfer of funds take place continuously on an item-by-item basis throughout the entire day. It was launched in 2005 by the CBK in order to facilitate high value transfers of money as well as payments that are time critical between the financial system participants while enhancing efficiency by reducing the risks inherent in the traditional system of executing financial transactions. Other financial product innovations are the use of MICR that ensures a speedy and efficient clearance of cheques, ACH which was modified in 2013 through which EFTs and cheques are electronically processed, agency banking which was launched in 2010. Its uptake was low until 2015 when commercial banks modified the implementation model by partnering with M-Pesa agents unlike in the previous years where commercial banks would partner with exclusive bank agents. M-Pesa and its agents had a wider coverage and therefore, this partnership led to an increase in the volume as well as value of agency banking transactions in banks. Real-time interbank switch was pilot tested in 2015 in commercial banks registered with the Kenya bankers association. It was officially launched in June 2015 to facilitate direct retail streams of domestic remittances by account holders from various banks. It's a bank-to-bank transfer mechanism aimed at reducing losses in domestic remittances market that

the commercial banks had ceded to the mobile money operators (Roseline et al., 2010; CBK, 2013; Kenya Bankers Association, 2018).

Data available from CBK show that during the year 2017, banks submitted more than eighty requests asking the CBK to endorse the initiation of charges linked to new financial products. These requests were aimed at introducing services used to transfer money in partnership with UK and US firms thus enhancing the flow of remittances from foreign economies. This is further expected to reduce the expenditure on financial transactions, improve efficiency and consequently the financial performance of commercial Banks (Bank Supervision Annual Report 2017, CBK).

1.2 Research Problem

Banking services in Kenya have evolved over time in order to introduce a set of innovations. The highly dynamic banking sector, globalisation, changes in economic policies and regulations require continuous innovation so as to achieve efficiency as well as effectiveness in banking operations. The emergence of novel technologies in the banking sector, new financial products and process create new demands in the financial markets thereby forcing commercial banks to utilise the required skills and competences in order to remain competitive by offering innovative financial products that give them a competitive edge over their rivals (Mark & Joseph, 2003). Woldesenbet and Batiz-Lazo (2006) state that commercial banks use financial product innovation in order to compete in the financial markets, consequently improving their financial performance as well as their effectiveness.

The commercial banking sector in Kenya has been resilient to domestic and external influences and vulnerabilities in the economy. Despite a recorded decline in the amount of credit lent to the private businesses, the total assets for the commercial banking sector increased by 8.1% in 2017. The commercial banking sector's ROA reduced from 3.2% to 2.6% in 2016 and 2017 respectively, whereas the ROE also reduced from 24.4% in 2016 to 20.6% in 2017, leading to a decline in the overall profitability of the commercial banks. This decline was attributed to reduction in amount of credit lent to the private sector given the high level of risk and the increase in cost of deposits during elections. The shortage of credit in the private businesses negatively affected the investors' expansion plans due to low leverage ratio thus hindering any opportunity for increased profitability. Generally, the global economic recovery, implementation of a robust financial regulatory frame work balanced out the fragilities and risks faced by the commercial banks in 2017 and a better financial performance is expected in 2018 (CBK, Kenya Financial Sector Stability Report, 2017).

Frame and White (2004) argue that one of the barriers to financial innovation studies is the scarcity of data. Taking into consideration the importance of financial innovation, its implication on banks' performance is not well understood because it has not been sufficiently proven. Although the aspect of financial product innovation has great significance, its effect on banks' performance is a two edged phenomenon that needs clarity (Mabrouk & Mamoghli, 2010). Bonn (2000) concludes that the analysis of the results from previous studies on the contribution of financial product innovation towards banks' performance has been unconvincing.

Various scholars through their studies to clarify on correlation between financial product innovation and banks' performance have come up with mixed results. For instance Pooja and Balwinder (2009), Claeys and Franscesa (2010) found out that financial product innovation contributed least on banks' performance. Similarly, Antonnet (2014), Catherine and Herick (2016) found out a negative relationship between financial product innovation and ROA.

Divergently, findings from Aysel and Fatma (2017), Woldesenbet and Batiz-Lazo (2006), Korir et al., (2015), Phelistus (2015), Zipporah (2015), Patrick (2015), James (2014) and Mwangi (2013) show a strong positive correlation between financial product innovation and financial performance. Thus, these mixed results have made the aspect of financial product innovation as well as financial performance of banks an irony.

Mabrouk and Mamoghli (2010) suggest the need to discover particular types of financial product innovations that greatly effect financial position of banks so as to offer assistance to policymakers with regard to financial product innovations in the banking sector. Frame & White (2004) emphasise the need to carry out more studies so as to generate more data about the aspect of financial product innovation as well as financial performance of banks. It's at the helm of mixed results and recommendations of various scholars that the researcher's curiosity has been triggered so as to gain a deeper view of the subject and at the same time provide more data in order to fill the knowledge gap.

1.3 Research Objective

To determine the effect of financial product innovation on the financial performance of commercial banks in Kenya.

1.4 Value of the Study

The research findings are expected to be valuable to commercial banks including other financial institutions, financial sector policymakers and finance scholars by adding on the number of practical studies about the effect of financial product innovation on banks' performance. The result will be relevant by guiding the policy makers and other participants in the financial sector to develop and adopt efficient and secure financial product innovations that support a resilient economy.

The result of the study will also help practitioners in the banking sector to develop a clear understanding of the contribution of financial product innovation on banks' performance. Practitioners in the banking sector will use the result and recommendations as a basis of developing policies that encourage financial product innovation in order to facilitate financial inclusion for the un-banked. This will increase bank deposits from the clients and consequently increase performance.

In addition, finance students will be able to use data from the study findings and recommendations in carrying out further studies so as to identify the unrevealed relationships between financial product innovation and ROA of commercial banks.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

It entails an appraisal of the appropriate theories and the practical studies known about financial product innovation in the banking business. This study will be tailored to the driving forces of financial product innovation at the same time reveal its impact on performance of banks that invent such novel financial platforms.

2.2 Theoretical Review

A number of scholars have presented various theories so as to convey a clear thought about the notion of financial product innovation. The researcher will hinge this study on three key theories as explained below.

2.2.1 Innovation Diffusion Theory

It was proposed by Rogers (2003) and it has been broadly used in understanding the taking up of novel technologies. According to its author, the taking up of innovation is affected by the four fundamentals of diffusion involving innovation, communication channels, time as well as social systems. Rogers (2003) argues that the behavior of an individual towards the acceptance of a particular technology is influenced by the way how he/ she perceives it in terms of its relative advantage in comparison to other available technologies, its compatibility with the existing technologies, the complexity in using that technology, observability of the results of the innovation by the users, ease of trialability in order to ascertain its results and the social norms.

Mazzon and Hernandez (2006) assert that an entity will adopt an innovation in case it's in congruence with entity's norms and values. To this end therefore, the theory explains why the ACH, RTGS, agency banking as well as real time interbank switch and other banking innovations that are compatible with the existing technologies in the financial sector have been widely embraced in the banking sector because they ensure an efficient, secure, easier and quick process of transacting thus improving the financial performance of commercial banks (Dorra, 2014).

2.2.2 Technology Acceptance Theory

It was proposed by Davis (1989) in order to elucidate what determines user acceptance for a wide assortment of the available high-tech computing platforms for the end users. According to the author, the core hypothetical constructs that influence the user's goal to make use of a particular system are:- the opinion of the user about the helpfulness of the system (Perceived Usefulness) and the user's opinion about how easy it will be to utilise such a system in executing the tasks.

Dishaw et al. (2006) highlight the weaknesses of the theory as the original model's deliberate generalization and parsimony, failure to put into consideration the non-organizational locale and contentment. The theory's relevance is that it explains why innovative banks together with other financial sector players are developing and marketing user friendly banking applications namely mobile phone as well as agency banking. This is because they are convenient, easier to understand and use for instance by translating financial transactions in the user's local language for easier and secure

interface while using the banking application, thus increasing customer deposits and the consequential improvement in financial performance of the commercial banks (Kennedy & Jacky, 2013).

2.2.3 Transaction Cost Theory of Innovation

Niehans (1983) proposed the transaction cost theory of innovation. The author's thinking was that financial innovation is majorly geared towards reducing the costs of transacting and in reality, innovations are created in an effort to respond to the improvements in technology that contribute to the shrinking of the transaction costs. The decline in the cost of transacting consequently encourages financial innovation at the same time facilitates the upgrading of the financial services offered in an economy. The author investigated financial novelty basing on micro economic changes. Proponents of the theory postulate that reduction in cost of transacting is the major aim of financial innovation.

Niehans (1983) further argue that the fundamental drive for financial innovation is to generate benefits in form of increased profits that flow to the innovators. Therefore, the increasing move towards cost cutting through developing various cost effective innovations such as the use of MICR in processing cheques, agency banking, use of payment cards for instance debit and credit cards help commercial banks to reduce transactional costs, consequently increasing the banks' financial performance (Li & Zeng, 2010; Blach, 2011).

2.3 Determinants of Financial Performance in Commercial Banks

The determinants of a bank's performance can be grouped into two, that is to say internal factors that are specific bank characteristics and external factors that are macroeconomic in nature. The internal factors are influenced by the decisions made by management as well as the board of directors. The external factors affect the entire economy including the profitability of the banks and they are considered to be beyond management's control (Aburime, 2005; Hassan & Al-Tamimi, 2010).

There are several factors that affect bank's performance besides financial product innovation. Valentina et al. (2009) argue that internal as well as external factors affect bank's performance. Internal factors include capital adequacy, asset quality, management efficiency, earnings ability as well as liquidity and these are explained below (Abdulazeez et al., 2017; Dang, 2011).

Capital adequacy is an internal determinant of performance in commercial banks. Capital constitutes bank's own funds for supporting the bank's operations. Banks use capital adequacy as a buffer in case there is shortage of funds to support its business (Sophocles et al., 2005). Capital availability increases the level of bank's liquidity because of the fact that over dependence on deposits increases the risk of bank runs since deposits are considered to be a very fragile source of funds to commercial banks moreover, lager reserves of capital minimizes the possibility of financial distress (Raghuram & Diamond, 2000). Capital adequacy is further supported by fund capital that enables banks to minimize credit risk, market as well as operational risks thus enabling banks to absorb losses incurred and safe guard creditors. Dang (2011) explains that capital adequacy is

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evaluated basing on the CAR which is a ratio that shows the bank's internal capability to with stand losses in case of a financial crisis. There is a direct relationship between CAR and the bank's resilience to financial crises. This has a direct effect on bank's profitability because it determines the bank's expansion strategy into risky but highly profitable business ventures (Sangmi & Nazir, 2010).

Asset quality also determines the level of financial performance in commercial banks. Bank assets consist of credit portfolio, current and fixed assets and usually the amount of assets owned by the bank depends on the bank' age (Sophocles et al., 2005). Usually, bank loan forms a large part of bank's assets and contributes a large portion of the bank's inflows/revenues. The quality of the loan mix/portfolio has a direct influence on profitability for instance; non-performing loans cause financial loss to the commercial banks hence reducing their financial performance. Therefore, non-performing loans are the most appropriate proxies for measuring asset quality because they have a direct influence on bank profitability. Banks should strive to reduce the non-performing loans to enhance increase in profitability. A lower fraction of non-performing loans in comparison to total loans means a good financial performance for banks (Dang, 2011; Sangmi & Nazir, 2010).

Management efficiency also determines the bank's performance. Total asset growth, earnings growth rate as well as loan growth rate are used to measure management efficiency. It is also measured basing on the level of operational efficiency in managing operational expenses. Management efficiency is usually measured qualitatively using

subjective analysis of management and control systems, quality of staff and organizational discipline (Asha et al., 2014).

Reilly and Brown (2000) assert that a firm's profitability can be used to assess the degree of efficiency by firm's management in raising funds and allocating capital to the various investment opportunities available to a firm, thereby using profits as a cushion against losses for instance on loans or due to un foreseen fluctuations in interest charged. Hussein and Abdullah (2015) explain that management decisions that have a direct link with the balance sheet items and the financial statements are used as parameters to measure financial performance and therefore, cash inflows and out flows from the operating activities including total revenues from the sales can be used for this purpose. A higher Profit to income ratio means that the bank is highly profitable. A lower expense to asset ratio means that management is efficiently utilizing its financial resources thus depicting a higher quality of management (Sophocles et al., 2005; Vincent & Berhanu, 2013).

Liquidity management also determines bank's performance. It is the bank's capability to pay off its financial obligations as and when they arise. Adequate liquidity leads to better financial performance by increasing the profits of the bank. The current asset ratio, cash to deposit ratio as well as customer savings to bank asset ratio are used to measure the liquidity level of a bank. The higher these ratios are, the better the liquidity hence better performance. A lower bank loan to customer deposits ratio shows a better position to pay off the bank's debt and at the same time able to maintain enough cash to facilitate withdrawals by the bank's clients (Dang, 2011; Kennedy & Jacky, 2013).

External forces also shape the banks external environment thus determining financial performance and are usually considered to be beyond the bank's control but, managers should take proactive actions to identify them and adequately prepare suitable strategies that will enable banks to positively interface with them in order to achieve the set financial targets. The major external factors exerting influence on the banks performance are Gross Domestic Product (GDP), interest as well as inflation rates (Hussein & Abdullah, 2015; Sophocles et al., 2005).

GDP is one of the external factors that influence performance of the entire economy including commercial banks. GDP growth is linked to increases in the levels of economic activities in a particular country. This increase will lead to better standards of living of the people and encourages them to participate in the banking activities. This will increase the level of business activity in the commercial banks since they act as financial intermediaries in the transfer of money thus improving profitability and financial performance of banks. For instance, an increase in GDP during an economic boom leads to a rise in demand for bank credit. This increases interest revenue thus increasing bank profitability (Bikker & Hu, 2002).

Interest rates also determine financial performance of banks. A rise in interest rates creates a wider spread between interest paid on savings and interest charged on loans. For instance, a reduction in interest rate charged on loans during a recession reduces the growth in bank loans and also increases the ratio of non-performing loans, which consequently results into losses. Therefore, decreasing interest rates charged on loans reduces the profitability of commercial banks (Podder, 2012; Lipunga, 2014). A

persistent increase in interest rate charged on loans reduces the borrower's ability to repay the loan forcing banks to write off those loans as bad debts. The failure by the bank to recover the principal amount and the accrued interest on loans extended as credit to the customers reduces profitability of the bank (Makkar & Singh, 2013).

Inflation rates also determine the financial performance of banks. Inflation is the persistent rise in prices of goods as well as services. It is generally accepted that high rate of inflation leads to increase on interest on loans thus generating higher revenue to commercial banks. Anticipated or un-anticipated inflation determines bank performance differently. For instance, an expected rise in inflation rate will force commercial banks to re-adjust the interest rate so as to fully cater for the expected increase thus leading to a positive impact on the financial performance. Alternatively, un-anticipated increase in the rate of inflation will cause cash flow problems to the borrowers and this may result into premature termination of loan agreements thus causing financial loss to commercial banks. An increase in inflation rate may also lead to a faster increase costs of operation in case the bank delays to appropriately adjust its interest rate thus, reducing the profitability of the bank (Adamu et al., 2014; Ibrahim & Abdul, 2010).

2.4 Empirical Studies

Aysel and Fatma (2017) studied the relationship between profitability and financial product innovations in Turkey using data from the central bank for a time span of 10 years (2006-2015). Regression analysis was conducted and the outcomes show that NIM

(Net Interest Margin), ROA, ROE have a positive correlation with the financial product innovations developed by the banks.

Phelistus (2015) assessed the effect of financial product innovation on financial performance Kenyan banks over a time span of 4 years (2011-2014). A descriptive design was used and the 43 commercial banks constituted the study population. Secondary data from published central bank's annual reports were used to carry out this study. The regression scrutiny was done and the study found out that product innovations positively affect financial performance.

Alber (2011) assessed the profit competence of the Saudi Arabian commercial banks for a time span covering 1998-2007. The study revealed a positive effect on profit efficiency by the financial innovations of ATMs as well as cellular phone banking whereas POS terminals, PC and Mobile banking didn't increase profit efficiency.

Hassan et al., (2010) studied the financial performance of banks with various channels as an innovation in comparison to conventional Italian banks. They found out the implementation of wireless banking platforms to be positively influencing bank's financial performance, being assessed using ROA together with ROE.

Shirley and Mallick (2006) studied the influence of using IT banking platforms as financial innovations in the banking industry in the US by hypothetically and empirically assessing how IT spend affects profits of the bank through offering technology enabled competitive financial services. Sixty-eight US banks were studied for a time span of 20

years so as to evaluate how the adoption of IT as a financial innovation impacted the banks' profitability. It was revealed that the banks experienced cost savings although, a higher spend on IT created network effects that reduced profits. The researchers assert that the degree of the network effect determines the correlation between IT expenditure and the bank's performance meaning, if the effect is less, expenditure on IT will reduce expenses, enlarge market index consequently increasing revenues and profit of the bank.

Catherine and Herick (2016) investigated the correlation between financial novelty and performance of the 43 banks for 5 years (2011-2016). Primary data was used and a census was carried out on all the 43 banks. Regression scrutiny discovered a negative correlation between financial product innovation and banks' performance.

Antonnet (2014) used explanatory design to determine correlation between product innovation and financial performance of banks in Kenya for three years (2012-2014). Questionnaires and interviews were adopted to gather data from a sample of 106 respondents from 9 commercial banks chosen by means of census method. Secondary data was also obtained from CBK's reports. SPSS was used to analyse data and the findings showed a negative and insignificant relationship between innovation and performance

Zipporah (2015) used descriptive design to assess the correlation between innovations and performance of the 43 Kenyan banks for a time span of 5 years (2009-2013). Secondary data from CBK's annual reports was used and regression analysis was carried out. Bank innovations were found to positively influence financial performance.

Patrick (2015) also used descriptive design to assess the influence of financial innovation on performance of the forty-three banks in Kenya for 4 years (2011-2014). Secondary data from CBK's annual reports was used and regression analysis was carried out. Pearson correlation analysis and Multiple Regression scrutiny revealed a positive correlation between financial product innovation and banks' performance.

James (2014) studied the impact of financial product innovations on profitability of Kenyan banks using a questionnaire and secondary data sources for 5 years (2008-2012). The study population was 44 commercial banks. Sixteen banks as well as 4 members of each of the bank's management were selected through sampling. Findings from regression analysis showed that financial product innovations greatly affected the profitability of the banks.

Mwangi (2013) conducted a study on financial product innovations and performance of the 43 Kenyan banks. Secondary data from CBK's annual reports was used and regression analysis was carried out. Regression analysis discovered a strong positive relationship between financial product innovations and bank income, profits, and ROA.

2.5 Conceptual Framework

Figure 2.1 depicts the relationship between the autonomous parameter and the predicted/dependent parameters. The autonomous parameter was financial product innovation in the banking sector particularly innovations that were unique to commercial banks. The variable was measured by automated clearing house (ACH) by considering

the proportion of revenue from cheques and EFts cleared through the ACH to total bank revenue and Agency banking measured by the proportion of agency banking revenue to total bank revenue. The control variables were asset quality measured by the proportion of gross non performing loans to gross loans and advances, capital adequacy measured by the proportion of share holders' funds to total bank assets. The dependent parameter was financial performance measured by ROA, considering the proportion of profit or loss before tax to bank's total assets.

Independent Variables   **Control Variables**   **Dependent Variable**

Financial product Innovation   Financial Performance

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┌─────────────────────────┐      ┌──────────────────────────┐
│ Automated Clearing House│      │ Asset quality            │
│ (ACH)                   │      │                          │
│                         │      │ • Proportion of gross non│
│ • Proportion of revenue │      │   performing loans to    │
│   from cheques and EFts │      │   gross loans and        │
│   cleared through the ACH│     │   advances               │
│   to total bank revenue │      │                          │
└─────────────────────────┘      └──────────────────────────┘
                                                                ┌──────────────┐
                                                                │ Return on    │
                                                                │ Assets (ROA) │
                                                                └──────────────┘
┌─────────────────────────┐      ┌──────────────────────────┐
│ Agency Banking          │      │ Capital adequacy         │
│ • Proportion of agency  │      │                          │
│   banking revenue to total│    │ • Proportion of share    │
│   bank revenue          │      │   holders' funds to total│
│                         │      │   bank assets            │
└─────────────────────────┘      └──────────────────────────┘
```
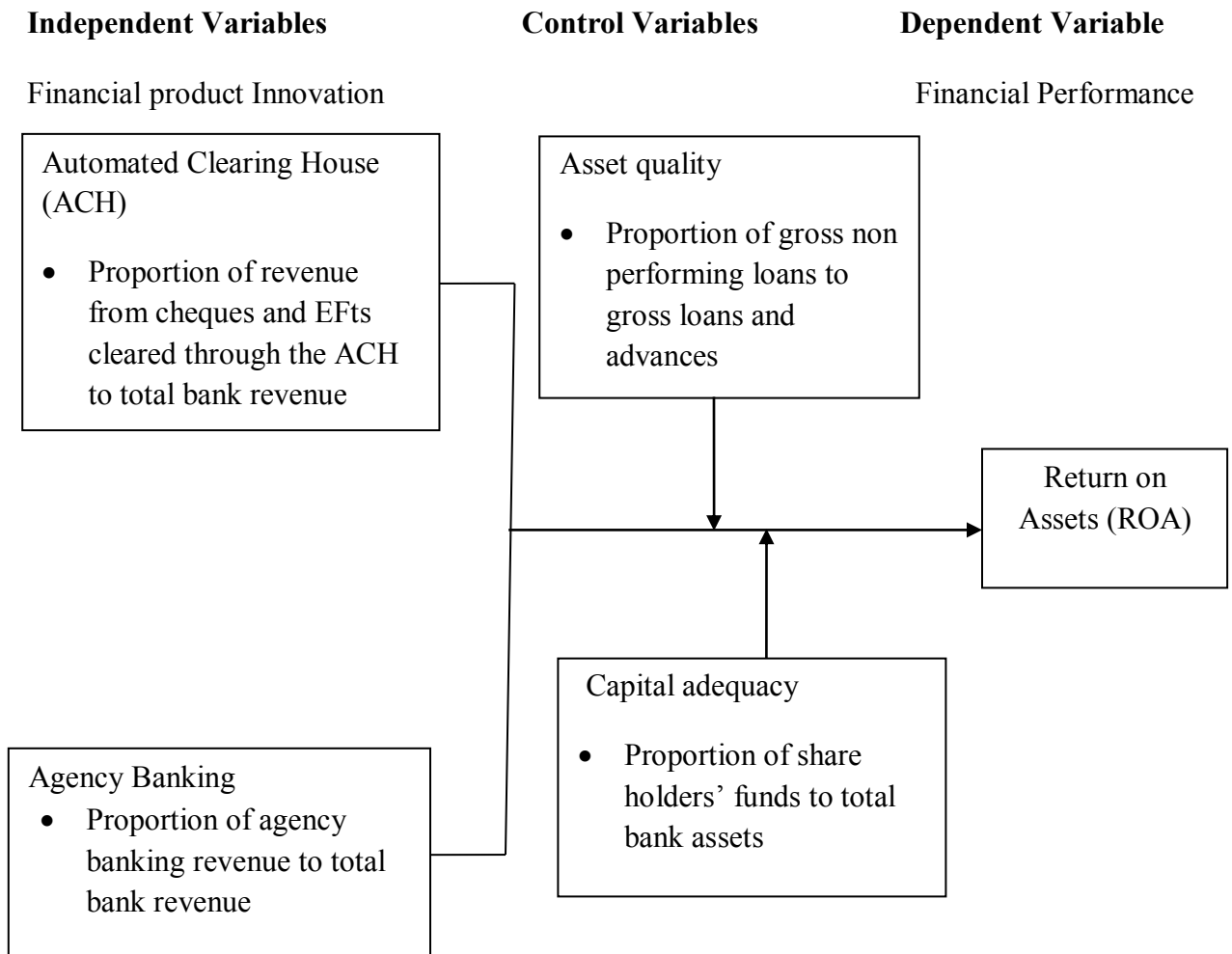
Figure 2.1: Conceptual Framework

Source: Researcher (2018)

2.6 Summary of Literature Review

Theories and their relevance to the study, various parameters used in measuring the

financial performance and the empirical studies by other researchers have been presented

in the chapter. The researcher has further developed the conceptual framework

highlighting the link between the predictor and predicted variables.

CHAPTER THREE

METHODOLGY

3.1 Introduction

The chapter entails the style adopted in carrying out the study. A further detailed explanation of the data collection methods for gathering the secondary data that was essential in executing the study successfully is discussed. The design and the study population are also explained in detail. Data analysis and diagnostic tests with reasons why they are deemed appropriate for the study are further discussed in detail.

3.2 Research Design

Millett et al. (2003) assertion is that research design enhances the cohesion that binds the research project. It configures the project including the major sections, study samples or groups, programs/treatments, parameters used in measurement, and all the methods used in answering the research problem at hand.

The descriptive design was preferred to give a detailed explanation of the link between the response and the predictor variables. Descriptive analysis technique involves the process of giving a systematic and accurate account of facts and description of events, population and areas of interest. It also helps in unveiling relationships and determining the links between and among predetermined variables by closely examining them (Catherine, 2002).

The use of this design further eliminated any chance of interference by the researcher in the subject under study leading to objective study results. Past data can be manipulated so as to replicate studies carried out in previous periods or even to study a variety of research problems under investigation. This helped the researcher to analyse the relationships between the dependent parameter and the various independent parameters (Donald & Pamela, 2008).

3.3 Population and Sample Size

A study population means a sound clear cluster of people, proceedings, essential elements, collection of items, households or services being studied. Sample size refers to the number of units that have been chosen from the study population for data collection purposes (Mugenda & Mugenda, 2003). Forty-two banks in Kenya were used as the study population. Two commercial banks were in receivership and one bank was under statutory management. The researcher preferred not to sample the population to ensure that every bank was represented in the study.

3.4 Data Collection

Catherine (2002) explains secondary data as data gathered from previous research studies. Secondary data from the CBK supervision reports as well as the commercial bank's reports published annually. The dependent parameter was the ROA (proportion of profit before tax to bank's total assets) for each of the commercial banks obtained from the CBK annual reports.

The Automated Clearing House (proportion of revenue from cheques and EFts cleared through the ACH to total bank revenue) and Agency banking (proportion of agency banking revenue to total bank revenue) were the independent variables. This data was gathered from the bank annual reports from CBK. This data was considered to be valid and reliable since the CBK is the regulator of the banking sector in Kenya. The control variables were Asset quality (proportion of gross non performing loans to gross loans and advances) and Capital adequacy (proportion of share holders' funds to total bank assets). This data was obtained from the annual audited financial statements for each bank, and then cross-checked with data obtained from CBK's reports. A five year study time span (2013-2017) was used because of a large number of financial transactions per year and other data to be analysed.

3.5 Study Variables

The variables of the study were grouped as independent, control and dependent. The independent parameter was financial product innovation in the banking sector particularly innovations that were unique to commercial banks. The variable was measured by Automated Clearing House (proportion of revenue from cheques and EFts cleared through the ACH to total bank revenue) and Agency banking (proportion of agency banking revenue to total bank revenue). This data was collected from CBK's website as well as the bank annual supervision reports from CBK. This data was considered to be valid and reliable since the CBK is the regulator of the banking sector in Kenya. The control variables were Asset quality (gross non-performing loans divide by gross loans and advances) and Capital adequacy (proportion of share holders' funds to total bank

assets). This was obtained from the banks' annual audited financial statements and cross checked with data obtained from CBK's reports. The dependent variable was financial performance measured by ROA (proportion of profit before tax to bank's total assets) for each of the 42 commercial banks obtained from the CBK annual reports.

3.6 Data Analysis

Catherine and Gretchen (2011) define data analysis as a procedure for organizing and explaining of the data collected. The regression model was preferred so as to find out the relationship between the predictor and predicted parameters and SPSS was adopted to scrutinize the data collected.

The model was expressed as shown below

$$Y = a + \beta_1 R_1 + \beta_2 R_2 + \beta_3 R_3 + \beta_4 R_4 + \varepsilon$$

Where:-

Y : ROA = $\underline{\text{Profit/Loss Before Tax}}$

        Total Bank Assets

a : Y intercept.

$\beta_1 and \beta_2$ are regression coefficients for the independent variables.

β_3 and β_4 are regression coefficients for the control variables.

R_1 = $\underline{\text{Revenue from Cheques and EFTs Cleared through ACH}}$
                Total Bank Revenue
R_2 = $\underline{\text{Revenue from Agency banking}}$
       Total Bank Revenue

R_3 = $\underline{\text{Gross Non Performing Loans}}$
        Gross Loans and Advances

$R_4 =$ Share Holders' Funds
          Total Bank Assets

ε = Random term

3.7 Diagnostic Tests

A 1-tail t-test at 5% significance level was conducted so as to check the significance of independent parameters of financial product innovation as predictors of financial performance of banks. The assumption was that for $p < 0.05$, the relationship would be significant otherwise, it was insignificant. Correlation scrutiny was conducted to determine the correlation coefficient (r) as well as coefficient of determination (r^2). The value of r lies between -1 and +1. For r = +1, would mean the existence of perfect positive correlation between the variables, zero means there is no correlation, -1 means the variables are perfectly negatively correlated. The nearer to +1, the stronger the relationship would be whereas the nearer to -1, the weaker the relationship. The square of r (r^2) determined the proportion of the predicted parameter that was attributed to the predictor parameter. A higher value meant a larger fraction of the predicted parameter was attributed to the predictor parameter. A lower value meant that a smaller proportion of the predicted parameter was attributed to the predictor parameter.

The Shapiro-Wilk test was used as a means of confirming the normality of the data. The assumption was that if the significant value of the result was > 0.05, it meant that the data was normally distributed. If the significant value was less than 0.05, it would imply that the data considerably deviated from normal distribution.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This entails an interpretation of the study findings. Out of the 42 licensed commercial banks in Kenya, Two were in receivership whereas one bank was under statutory management. The results are premised on the statistical analysis of secondary data gathered from audited financial records for 39 commercial banks as well as data gathered from the bank annual supervision reports from CBK for 5 years (2013-2017).

4.2 Descriptive Statistics

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
ROA (%)	195	-.3214	.5150	0.0198	.0526
ACH (%)	195	-1046.3926	9468.3608	94.4815	682.4214
Agency Banking (%)	195	-929.8332	9930.0877	86.4929	711.0004
Asset Quality (%)	195	0.0000	2.5876	.1064	.20389
Capital Adequacy (%)	195	0.0000	1.7157	.1667	.12904
Valid N (listwise)	195				

Source: Research Findings (2018)

The mean of the return on assets for the period of study was 0.0198 which implies that significant returns were not realized on the assets of commercial banks in Kenya. With a maximum value = 0.5150, minimum value = -0.3214 and standard deviation = 0.0526 indicated that the digression of ROA during the period of study was high. The coefficient

of variability was 2.6566 which indicates a high variability in financial performance between the best and least performing banks.

The result shows that the mean of total revenue from cheques and EFTs cleared through the ACH to total bank revenue during the period of study was 94.4815 billion which imply that banks had a worth noting proportion of revenue from cheques and EFTs cleared through the ACH as compared to total bank revenue. The minimum and maximum values were -1046.3926 and 9468.3608 billion respectively and the standard deviation was 682.4214 which denote a high deviation. The coefficient of variability was 7.2228 indicating a high variability in revenues from cheques and EFTs cleared through the ACH for the commercial banks.

The result further states that the mean of revenue from agency banking to total bank revenue was 86.4929 billion which is relatively high, denoting a fairly large proportion of revenues from agency banking compared to total bank revenue. The minimum value was -929.8332 whereas the maximum value was 9930.0877 billion. The standard deviation was 711.0004 implying a high deviation. The coefficient of variability was 8.2203 indicating a relatively high variability in revenues generated from agency banking.

The mean of asset quality during the period of study was 0 .1064. This is higher than the mean of ROA by 0.0866 which implies that banks had a higher proportion of non-performing loans compared to total bank assets. The minimum value was 0.0000; maximum value was 2.5876 and the standard deviation was 0 .20389. The results further

indicate a coefficient of variability of 1.91626. This means there was a high variability in asset quality among the banks during the period of study.

The total shareholders' funds to total assets had a mean = 0.1667. The minimum value was 0.0000; maximum value was 1.7157 and the standard deviation was 0.12904. The coefficient of variability was 0.77408 which shows a relatively lower variability in the proportion of shareholders' funds to total bank assets in comparison to other variables used in the study.

4.3 Correlation Analysis

The correlation analysis presents the strength of relationship between the variables. Pearson correlation was preferred to analyse the connection between the predicted and the predictor variables. The magnitude of the linear relations was measured using correlation coefficient (r). The value of r is assumed to be between -1 and +1. For r = +1, implies perfect positive (+) correlation, 0 means no correlation, -1 means the variables are perfectly negatively correlated. The nearer to +1, the stronger the relationship whereas the nearer to -1, the meagre the relationship between the variables.

Table 4.2 Correlations

		ROA	ACH	Agency Banking	Asset Quality	Capital Adequacy
Pearson Correlation	ROA	1.000				
	ACH	-.017	1.000			
	Agency Banking	-.017	.998	1.000		
	Asset Quality	-.114	.103	.103	1.000	
	Capital Adequacy	.534	-.022	-.024	-.015	1.000
Sig. (1-tailed)	ROA					
	ACH	.404				
	Agency Banking	.403	.000			
	Asset Quality	.055	.073	.074		
	Capital Adequacy	.502	.376	.369	.414	

Source: Research Findings (2018)

Table 4.2 shows negative (-) correlation (r) = -0.017 between ROA and the proportion of revenues from cheques and EFTs cleared through ACH to total bank revenue. The (r^2) = 0.000289 meant that 0.0289% of the ROA was explained by the proportion of revenues from cheques and EFTs cleared through ACH to total bank revenue. Table 4.2 also shows a negative correlation (r) of -0.017 between ROA and the proportion of revenue from agency banking to total bank revenue. The (r^2) = 0.000289 meant that 0.0289% of the ROA was explained by proportion of revenue from agency banking to total bank income. Table 4.2 further shows a correlation coefficient (r) of -0.114 between ROA and asset quality. The (r^2) = 0.012996 meant that 1.2996% of ROA was explained by asset quality. Finally, Table 4.2 shows that there was moderate positive correlation (r) of +0.534 between ROA and capital adequacy. The (r^2) = 0.285156 meant that 28.5156% of the ROA was explained by capital adequacy.

4.4 Data Validity

Table 4.3: Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.161	4	.040	20.457	.000[b]
Residual	.381	194	.002		
Total	.542	198			

a. Dependent Variable: ROA

b. Predictors: (Constant), Capital Adequacy, Asset Quality, Agency Banking, ACH

Source: Research Findings (2018)

The Anova table contains information on the variability within the regression model. The model significance was tested at 95% confidence level. The calculated F statistic = 20. 457. The regression model had an overall p = 0.000 which was < the significant level = 0.05. The null hypothesis stating that there was no relationship between the outcome variable and predictor variables was rejected.

Table 4.4: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ROA	.206	195	.000	.584	195	.000
ACH	.361	195	.000	.142	195	.000
Agency Banking	.377	195	.000	.119	195	.000
Asset Quality	.301	195	.000	.381	195	.000
Capital Adequacy	.232	195	.000	.433	195	.000

a. Lilliefors Significance Correction
Source: Research Findings (2018)

Table 4.4 entails the result of test of normality. The numerical test compares a sample score that is normally distributed with the data. The Shapiro-Wilk test was used as a means of proving normality of data. The assumption was that if the significant value of the test result was > 0.05, it meant that data was normally distributed. If the significant value was less than 0.05, it implied that the data considerably deviated from normal distribution. From the result above, p = 0.000, was < 0.05, suggesting that the data was not normally distributed. This was partly explained by a constant correlation of -0.017 between ROA and the independent variables of ACH and Agency banking. This was further explained by the apportionment of industry revenues from cheques and EFTs cleared through the ACH as well as revenues from agency banking. These were apportioned basing on the market index for each bank per year in order to get the values of revenues from cheques and EFTs cleared through ACH and revenues generated by agency banking. The values got were divided by the respective total revenues for each bank per year in order to get the proportion of revenues contributed by ACH and agency banking.

4.5 Regression Analysis

This presents the findings based on the analytical model used. Table 4.5 below contains the result of the regression analysis of the outcome and response variables as well as the result of the Durbin-Watson test.

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.545a	.297	.282	.04432	.297	20.457	4	194	.000	1.158

a. Predictors: (Constant), Capital Adequacy, Asset Quality, Agency Banking, ACH

b. Dependent Variable: ROA

Source: Research Findings (2018)

The correlation between ROA and the predictor variables (R=0.545 was greater than 0.5) meaning there was a strong positive correlation between ROA and the predictor variables. The coefficient of the regression analysis denotes the amount of deviation in the predicted variable that is to say ROA that is explained by the predictor variables. The square of R=0.297 reveals that 29.7% of the changes in ROA was attributed to predictor variables. The Durbin-Watson test statistic was 1.158 which indicated that no correlation existed among the residuals in the model.

Table 4.6: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.012	.005		-2.278	.024
ACH	-1.574E-05	.000	-.206	-.193	.847
Agency Banking	1.554E-05	.000	.212	.198	.843
Asset Quality	-.027	.016	-.106	-1.753	.081
Capital Adequacy	.216	.024	.533	8.846	.000

Source: Research Findings (2018)

The multiple linear regression scrutiny was done so as to understand the statistical relationship between the predictor and predicted parameters used in the model. The significance of the relationship between the variables was analysed at 5% level of significance. The assumption was that if the obtained p was < 0.05, the relationship was significant, otherwise, it was insignificant. Predictor variables except capital adequacy had p values that were greater than 0.05 thus revealing insignificant relationships.

The analytical model was:

$$Y = a + \beta_1 R_1 + \beta_2 R_2 + \beta_3 R_3 + \beta_4 R_4 + \varepsilon$$

This was re-written as follows:

$$ROA = -0.12 + 0.533 R_4 + 0.005$$

The coefficient of the proportion of revenue from cheques and EFTs cleared through ACH to total bank revenue was -0.206. The p value was 0.847 at 5% level of significance and 95% confidence interval. The p value of 0.847 was > 0.05, revealing an insignificant negative relationship.

The result also suggests that the proportion of agency banking revenue to total bank revenue had a positive (+) relationship with ROA, with a coefficient = 0.212 and p = 0.843 at 5% level of significance. The p value = 0.843 was > 0.05 meaning that there was an insignificant positive relationship.

The standardised coefficient of asset quality was -0.106. The p value was = 0.081 at 5% level of significance. The p = 0.081 was > 0.05. This revealed an insignificant negative (-) relationship between ROA and the asset quality.

The proportion of shareholders' funds to total bank assets had a coefficient of 0.533 at 5% level of significance. The p value was = 0.000, which was < 0.05. The result implies a significant and positive relationship between the predictor variable and ROA.

4.6 Discussion of Research Findings

Regression analysis was adopted using SPSS to understand the relationship between financial product innovation and financial performance of banks in Kenya for the period 2013-2017. From the results of the study, 29.7% of the changes in ROA was attributed to predictor variables.

Pearson Correlation showed a negative correlation (r) of -0.017 between ROA and the proportion of revenues from cheques and EFTs cleared through ACH to total bank revenue. The p value for the proportion of revenue from cheques and EFTs cleared through ACH to total bank revenue was 0.847, which was > 0.05, revealing an insignificant negative relationship between ROA and the predictor variable.

The findings support the studies conducted by Catherine and Herick (2016), Antonnet (2014) where a negative and insignificant relationship between financial product innovation and ROA was revealed. The results also support Shirley and Mallick (2006) who conducted a study to evaluate how the adoption of IT as a financial innovation affected the banks' profitability. It was revealed that the banks experienced cost savings although, a higher spend on IT created network effects that reduced profits. The high spend on IT inform of internet servers and routers as well as other costs incurred to run

and maintain the ACH through which cheques and EFTs are automatically processed increases the operational costs that consequently reduce the proportion of profits generated from cheques and EFTs cleared through the ACH.

Pearson Correlation also shows a negative correlation (r) of -0.017 between ROA and the proportion of revenue from agency banking to total bank revenue. The p value of proportion of revenue from agency banking to total bank revenue was 0.843, which was > 0.05, revealing an insignificant negative (-) relationship between ROA and agency banking.

The findings support Alber (2011) who assessed the profit competence of the Saudi Arabian commercial banks for a time span covering 1998-2007. The study revealed a negative contribution on profit efficiency by innovations of agency banking, POS (Point of Sale) terminals and Mobile banking. In addition, the results disagree with Phelistus (2015) and Zipporah (2015) that revealed a positive and significant relationship between agency banking and ROA. The findings further disagree with the study results of Aysel and Fatma (2017), Hassan et al., (2010), Patrick (2015), James (2014) and Mwangi (2013) whose findings discovered a significant positive relationship between financial product innovation and banks' performance.

Furthermore, Pearson Correlation shows a correlation coefficient (r) of -0.114 between ROA and asset quality. The p value was 0.081, which was > 0.05, showing an insignificant as well as negative (-) relationship between ROA and the asset quality of

banks. The results disagree with Patrick (2015) whose results revealed a significant and positive relationship between asset quality and ROA of commercial banks.

Finally, there was moderate positive correlation (r) of +0.534 between ROA and capital adequacy. The p was = 0.000, < 0.05. The result implies a significant as well as positive (+) relationship between capital adequacy and ROA.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

It entails brief review of the findings, conclusions and recommendation.

5.2 Summary of the Finding

The study objective was to determine the effect of financial product innovation on financial performance of commercial banks in Kenya for the period 2013-2017. The predictor variable (financial product innovation) was measured by automated clearing house (ACH) by considering the proportion of revenue from cheques and EFts cleared through the ACH to total bank revenue, and agency banking measured by the proportion of agency banking revenue to total bank revenue. The control variables were asset quality measured by dividing gross non performing loans by gross loans and advances, capital adequacy calculated by dividing share holders' funds by total bank assets. The dependent parameter was financial performance measured by ROA, considering the proportion of profit or loss before tax to bank's total assets.

Regression analysis was done so as to answer the research objective. Correlation scrutiny was employed to evaluate the relationship between predictor and predicted variables. Shapiro-Wilk test was used as a means of confirming the normality of the data. Pearson Correlation scrutiny was conducted and square of r calculated in order to determine the fraction of ROA that was attributed to each predictor variable. A 1-tail t-test at 95% confidence interval was done in order to establish the strength and magnitude of the

predictor variables as the major determinants of ROA of commercial banks during 2013-2017

Results revealed that 29.7% of the disparities in ROA was attributed to predictor variables. The significant value of the Shapiro-Wilk test was 0.000. This was less than 0.05, suggesting that the data was not normally distributed. This was partly explained by a constant correlation of -0.017 between ROA and the independent variables of ACH and Agency banking. This was further explained by the apportionment of industry revenues from cheques and EFTs cleared through the ACH as well as revenues from agency banking. These were apportioned basing on the market index for each bank per year (2013-2017) in order to get the values of revenues from cheques and EFTs cleared through ACH and revenues generated by agency banking. The resultant values were then divided by the respective total revenues for each bank per year in order to get the proportion of revenues contributed by ACH and agency banking.

The Pearson Correlation showed a negative correlation (r) of -0.017 between ROA and the proportion of revenues from cheques and EFTs cleared through ACH to total bank revenue. This meant that an increase in ACH revenue would result into a 0.017 unit reduction in ROA. The (r^2) = 0.000289 meant that 0.0289% of the ROA was explained by the proportion of revenues from cheques and EFTs cleared through ACH to total bank revenue. The p value for the proportion of revenue from cheques and EFTs cleared through ACH to total bank revenue was 0.847, which was > 0.05, revealing an insignificant negative relationship between ROA and the predictor variable.

Pearson Correlation also showed a negative correlation (r) of -0.017 between ROA and the proportion of revenue from agency banking to total bank revenue. This also meant that an increase in agency banking revenue by 0.017 would result into a proportionate decrease in ROA. The $(r^2) = 0.000289$ meant that 0.0289% of the ROA was explained by agency banking revenue. The p value of proportion of revenue from agency banking to total bank revenue was 0.843, which was > 0.05, revealing an insignificant negative (-) relationship between ROA and agency banking.

Furthermore, Pearson Correlation showed a negative correlation (r) of -0.114 between ROA and asset quality. This meant that an increase in asset quality by 0.114 would result into an equivalent decrease in ROA. The $(r^2) = 0.012996$ meant that 1.2996% of ROA was explained by asset quality. The p value was 0.081, which was > 0.05, showing an insignificant and negative (-) relationship between ROA and the asset quality of the Kenyan commercial banks during 2013-2017.

Finally, there was a moderate positive correlation (r) of +0.534 between ROA and capital adequacy. This meant that an increase in capital adequacy by +0.534 would result into a similar increase in ROA. The $(r^2) = 0.285156$ meant that 28.5156% of the ROA was explained by capital adequacy. The p was = 0.000, which was < 0.05. The result implies a significant as well as positive (+) relationship between capital adequacy and ROA.

5.3 Conclusion

The study looked at financial product innovation and identified the magnitude of the possible relationships between financial product innovation and financial performance

banks in Kenya. Basing on the above findings, the study gives conclusions with reference to how financial product innovation affects financial performance of commercial banks.

Although financial product innovation has a negative correlation with financial performance, banks should continuously invest in novel financial products so as to improve operational efficiency. This is because the Kenyan banking sector is highly competitive and most of the thriving banks have widely embraced financial product innovation in order to reduce costs of operation as well as improve efficiency in the banking operations. The positive contribution of financial product innovation on financial performance may be long term.

From the above findings, it's important to acknowledge that financial product innovation negatively contributes to commercial banks' financial perfromance. Therefore, banks need to invest less resources in order to develop new or modify the existing financial products with less sophisticated technologies so as to be sustainable. Financial sector participants should continuously monitor initiatives that are geared towards developing new or modifying the existing financial products with in their institutions. This can be done through close monitoring of the contribution done by the financial product innovation towards improving banks' performance while concurrently predicting their effects that appear to be meagre.

The findings support the studies conducted by Catherine and Herick (2016), Antonnet (2014) that showed a negative and insignificant relationship between financial product innovation and ROA. The results also support Shirley and Mallick (2006) who conducted a study to evaluate how the adoption of IT as a financial innovation impacted the banks'

profitability. It was revealed that the banks experienced cost savings although, a higher spend on IT created network effects that reduced profits. The findings further support Alber (2011) who assessed the profit competence of the Saudi Arabian commercial banks for a time span covering 1998-2007. The study revealed a negative contribution on profit efficiency by financial innovations namely; agency banking, POS (Point of Sale) terminals and Mobile banking.

Finally, the findings are contrary to the study results by Phelistus (2015) and Zipporah (2015) that revealed a significant positive relationship between agency banking and ROA. The findings further disagree with the study results of Aysel and Fatma (2017), Hassan et al., (2010), Patrick (2015), James (2014) and Mwangi (2013) whose results showed a significant positive (+) relationship between financial product innovation and banks' performance. From the findings, it is clear that financial product innovation had a meager contribution on commercial banks' performance during 2013-2017.

5.4 Recommendation

Since a vibrant banking sector is a very critical factor for growth of the economy, information about financial product innovations should be availed to the regulators who can use it to carry out in-depth analyses of the relationship between banks' performance and the financial product innovations that are introduced or modified from time to time in the financial sector in order to offer guidance to commercial banks together with other financial institutions with regard to the contribution of these innovations on banks' performance.

Practitioners in the banking sector should invest their resources in developing fresh or modifying existing financial products that are appropriate and compatible with the existing technologies in the financial system. Successful financial products will generate more revenues to the innovative firms and individuals. Commercial banks should develop better mechanisms of using innovative financial products and solutions to cater for the unbanked especially in the rural areas. This will facilitate financial deepening; increase bank deposits hence better financial performance of the commercial banks.

Financial product innovation has various challenges. These pose a threat to cyber security, which may lead to reputational risk in the commercial banks leading to loss of confidence by the banks' clients. Financial product innovations are mainly used by bank depositors; thus shortage of banks deposits would put the banks' sustainability at a great risk. On this basis therefore, there should be better management of the financial product innovation in order to strengthen the depositors' confidence in the new or modified financial products. Financial product innovators should build security mechanisms that can detect, deter and possibly report any incidents of financial fraud that may erode the intended benefits of the new or modified financial products.

5.5 Limitations of the Study

The study concentrated on financial product innovations with a particular focus to financial product innovations that are unique to commercial banks as determinants commercial banks' performance for the period 2013-2017 and yet these are not the only determinants. The researcher had to incorporate other determinants of financial performance such as asset quality and capital adequacy as control variables in the model.

Some secondary data was considered as very sensitive competitive information and could not be released by the commercial banks. For instance, data showing the value of revenues from cheques and EFTs cleared through ACH per bank as well as data showing the value of agency banking revenues per bank. The researcher had to apportion the industry revenues from cheques and EFTs cleared through the ACH as well as revenues from agency banking on the basis of the market index for each bank per year (2013-2017) in order to get the corresponding values of revenues from cheques and EFTs cleared through ACH and revenues generated by agency banking. The values got were then divided by the respective total revenues for each bank per year in order to get the proportion of revenues contributed by ACH and agency banking.

Some commercial banks namely; Citibank N.A, Eco bank, Mayfair bank and DIB Bank (Kenya) Limited had not adopted some of the financial product innovations such as Agency banking. The researcher had to consider banks that had adopted agency banking so as to determine its effect on the entire commercial banking sector.

5.6 Suggestion for Further Research

The researcher proposes that more studies should be undertaken so as to determine the effect of financial product innovation on commercial banks' performance. Most of the previous studies put more emphasis on financial innovations in general and therefore, the contribution of the financial product innovation on banks' financial performance has not yet been clearly brought out.

More studies should also be conducted on the effect of system, process as well as institutional innovations and other determinants of financial performance in order to expound on the general picture of financial product innovation since the variables in the model can only account for 29.7% of the disparities in ROA.

Furthermore, the study did not cover all the financial product innovations. The researcher recommends further studies that incorporate other financial product innovations like Real-time interbank switch and the use of currency centres in order to determine their effect on commercial banks' performance.

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APPENDICES

Appendix I: List of Commercial Banks in Kenya

1. African Banking Corporation
2. Bank of Africa Kenya Limited
3. Bank of Baroda (K) Limited
4. Bank of India
5. Barclays Bank of Kenya Limited
6. Charterhouse Bank Limited
7. Chase Bank (K) Limited
8. Citibank N.A Kenya
9. Commercial Bank of Africa Limited
10. Consolidated Bank of Kenya Limited
11. Co-operative Bank of Kenya Limited
12. Credit Bank Limited
13. Development Bank of Kenya Limited
14. Diamond Trust Bank Kenya Limited
15. DIB Bank (Kenya) Limited
16. Ecobank Kenya Limited
17. Equity Bank Kenya Limited
18. Family Bank Limited
19. First Community Bank Limited
20. Guaranty Trust Bank (K) Ltd
21. Guardian Bank Limited
22. Gulf African Bank Limited
23. Habib Bank A.G Zurich
24. I & M Bank Limited
25. Imperial Bank Limited
26. Jamii Bora Bank Limited
27. KCB Bank Kenya Limited
28. Mayfair Bank Limited
29. Middle East Bank (K) Limited
30. M-Oriental Bank Limited
31. National Bank of Kenya Limited
32. NIC Bank Limited
33. Paramount Bank Limited
34. Prime Bank Limited
35. SBM Bank (Kenya) Limited
36. Sidian Bank Limited
37. Spire Bank Ltd
38. Stanbic Bank Kenya Limited
39. Standard Chartered Bank Kenya Limited
40. Trans-National Bank Limited
41. UBA Kenya Bank Limited
42. Victoria Commercial Bank Limited

Source: CBK Annual Supervisory Report (2017)

Appendix II: Data Collection Form

Bank:…………………………………………….

Year	Return on Assets (profit or loss before tax divide by total assets)	Proportion of revenue from cheques and EFTs cleared through the ACH to total bank revenue	Proportion of Agency banking revenue to total bank revenue	Asset Quality (non-performing loans divide by Gross loans and advances)	Capital Adequacy (proportion of shareholders' funds to Total bank assets)
2017					
2016					
2015					
2014					
2013					