

**RELATIONSHIP BETWEEN FINANCIAL DERIVATIVES AND FINANCIAL
PERFORMANCE OF SELECTED LISTED COMMERCIAL BANKS IN
KENYA**

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**A Thesis Submitted in the School of Business and Economics in Partial
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Science in Finance and Investments of Kenya Methodist University**

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DECLARATION AND RECOMMENDATION

Declaration

I declare that this thesis is my original work and has not been presented for a degree or any other award in any other University.

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Recommendation

We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

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DEDICATION

I dedicate this thesis to my wife and my children for their enormous support during this study.

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ABSTRACT

Market globalization has tremendously increased exposing banks into different forms of financial risks. Financial risks when inadequately managed may cause the financial performance of commercial banks to decline. Managing these financial risks amongst other ways, involve creating tradable instruments such as derivatives to offset them. This study examined the relationship between financial derivatives and financial performance of selected listed commercial banks in Kenya. The objectives of the study were to assess the influence of swaps, options, forwards and futures on financial performance of listed commercial banks in Kenya. Four theories that were espoused in this study included risk management theory, capital irrelevance theory, financial intermediation theory and normative decision-making theory to guide swaps, options, forwards and futures respectively. Descriptive research design was used when collecting data using closed ended questionnaires from the selected 11 listed commercial banks in Kenya. Required data was provided by risk managers, operations managers, operations managers and marketing managers to participate in the study. Census sampling technique was used due to the small target population hence every listed commercial bank was included. To ensure validity and reliability, pre-test questionnaires was sent to six respondents who were selected by simple random method of sampling from the non-listed banking sector. The six respondents were junior officers in risk, credit, operations and marketing departments of non-listed commercial banks in Meru Kenya. The collected data was then coded using the SPSS 24.0 software. The coded data was analyzed quantitatively using the descriptive statistics such as mean, percentage and standard deviation while inferential statistics such as person correlation analysis were used. Linear regression models were also used. Further on, the tables, graphs were used when indicating the analysis results. The study indicated that there was a linear relationship between financial derivatives and financial performance of selected listed commercial banks in Kenya. The study discovered that sales of swaps contracts was low and there were increasing costs associated with these kind of derivatives hence reducing profits. In addition, since most forwards take a long time to mature, when banks were restructuring their computerized systems, they lost client's contact information through misplacement or not correctly capturing in the new system. These results proved that the banks lacked enough qualified staff to amicably handle all issues and report on time. In addition, it was evident that the banks did not have complete infrastructure set up that is required to run financial derivatives such as futures. The study recommends that there should be a aggressive marketing initiatives in the banking sectors to enable incorporation of more clients into derivatives contracts.

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ABBREVIATIONS AND ACRONYMS

CA	Capital adequacy
CBK	Central bank of Kenya
CMA	Capital market authority
ETD	Exchange traded derivatives
NIM	Net interest margin
NPM	Net profit margin
ROA	Return on asset
RO	Robust optimization
ROE	Return on equity
TOC	Traded over the counter

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Kenya's vision 2030 whose aim is provision of high-quality life to its citizens requires the backing of banking sector to offer reliable financial services. These services include on the one hand, having extremely active and economical levels of savings to finance the country's investment needs. On the other hand, having steady savings morale in long run to improve the capital base in banking sector fostering consistency in profitability in different accounting periods. Over the years as commercial banks have been in pursuit for even higher profits in their commerce function, banking' market globalization has tremendously increased exposing them into different forms of financial risks such as risks from credit, risks from interest rates, risks from foreign exchange, risks from commodities, risks from operations and systemic risks amongst others (Ogbonna, 2018). Financial risks when inadequately managed have caused the financial performance of commercial banks to decline. Managing these financial risks amongst other ways, involved creating tradable instruments such as derivatives to offset them.

Derivatives trading began as a measure to support goods availability in the market at the right time and also a tactic to eliminate any change of value of the goods. This stimulated contract-based commerce which involved contracts between traders to satisfy their desires. Various parties borrowed the concept of derivatives to minimize any losses. For example, farmers were always assured of income despite prevalent

cases of crop catastrophes while traders would indemnify themselves to fund their forthcoming trade undertakings.

This provided a basis for fair trade in the market (Waswa & Wepukhulu, 2018). The practice of derivatives trading has grown over time and has been a very important aspect in the world economy. Most global organizations have utilized derivatives in a huge way to cushion themselves against uncertainty. For example, International Swaps Derivatives Association (2019a) categorically stated that when market participants such as commercial banks participated in derivatives market, they reduced their mark-to-market exposure. Mark-to-market global exposure in 2019 reduced by 77.9% (International Swaps Derivatives Association [ISDA], 2019a). A report by Bank of International Settlements in 2019 shed light that the over-the-counter balances of derivatives grew to \$640 trillion in June 2019 from \$ 544 trillion in 2018.

1.1.1 Financial derivatives

Muhia (2018) defined a financial derivative as any financial instrument whose price is attached to the value of principal assets such as bonds, equities, monetary exchange and interest rates. Certified Financial Analysts Institute [CFAI] (2013) added that financial derivatives did not get their value from intrinsic cash flows but from other principal security or index. Therefore, financial derivatives in this study weretaken to mean financial instruments inform of contracts which derived their values from attached principal assets and in which were used to manage financial market risks that emanate from outdated lending and borrowing undertakings. The four primary kinds of derivatives instruments were swaps, options, forwards and futures. A swap was an understanding where two entities decided to exchange

periodic payments of the agreed type of currency (Federal Reserve Bank of New York [FRBNY], 2012; Reserve Bank of Australia [RBA], 2018). An option was a financial derivative instrument that gave owners the rights and did not force them to purchase or vend an indicated amount of an underlying asset at a strike price or exercise price at or earlier than the expiry date of the options (European Central Bank [ECB], 2019a; Office of Comptroller of the Currency [OCC], 2019).

A forward contract was a customized understanding between a purchaser and a seller whereby the purchaser approved to buy an underlying asset at a pre-determined price at the time of purchase from the seller, but the delivery of the asset was done at a future date (Bosonalfa, 2019). Therefore, the contract was settled when delivery was made. A future was a standardized, marking to market understanding that mandated an entity (buyer seller and clearing house) to purchase or vend an item in future date at a pre-determined price to hedge against rapid increase or decrease of price to the purchaser or vendor respectively (Giudici et al., 2019).

Financial derivatives contracts had advanced over time with a number of securities with different speculative and hedging purposes. On the one hand, when speculating, the owners of derivatives profited from stakes made on change of value of the underlying assets. Hedging on the other hand involved having insurance over the underlying assets. Derivatives were commonly traded over the counter and through an exchange forum. Over the counter was highly unregulated hence carried more risk exposure and the parties involved were victims of price hiking while in exchange forum derivatives were standardized. Traders were always encouraged to understand the inherent risks associated with the principal assets, price and expiry dated of derivatives. This was because, derivatives such as over the counter credit swaps were

blamed for the financial crisis of 2008 as they steered high levels of hedging which were catastrophic in the long-run (European Commercial Bank, 2019a). Many banks' financial performances declined to a point of banks being closed down.

1.1.2 Financial performance

Financial performance was defined by Greenwood and Boyan (1990) as any income generated by an organization after it had utilized the available resources. Delaney et al. (2016) adds that it was an independent measure of a firm's utilization of basic means of business to create returns. In this study, financial performance was taken to mean any income in an organization derived from its legal operational activities that did not put it into any intentional financial risks. Ernst and Young (2018) defined commercial banks as monetary institutions that were mandated by the government of the country and law bound to allow savings, receive payments from customers and issue loans to borrowers. It was the desire for banks to realize viability in their financial service provision. They acquired this viability by applying plans that involved reducing costs and risks while maximizing returns (African Development Bank [ADB], 2018; Chepkorir, 2018).

Organizations in different industries quantified financial performance contrarily. For instance, agricultural organizations used Return on Assets (ROA) to measure performance. This was derived by dividing total revenue generated by total assets of the organization (Singh et al., 2019). Construction industries used Gross Profit Ratio (GPO), general and administrative, expense as a percentage of revenue, pre-tax income as a percentage of revenue and Debt to Equity Ratio (DEO) (CLA, 2018). GPO was the revenue generated from a contract less any costs associated directly with the contract. It was derived by dividing revenue generated from construction by

gross profit. General and administrative, expense as a percentage of revenue was derived by dividing construction revenue by expenses such as day to day utilities. Pre-tax as a percentage of revenue was derived by dividing construction revenue by pre-tax return. DEO was derived by dividing equity by total liabilities.

In this study, financial performance was measured by Return on Asset (ROA), Return on Equity (ROE), Net Interest Margin (NIM). This was because ROA, ROE and NIM were acknowledged by Central bank of Kenya (CBK) as financial performance quota in Kenya (Central bank of Kenya [CBK], 2018). Sari (2019) indicated that NIM quantified sales capability in creating net income. ROA quantified the banks's capability to create profits derived from investment undertakings (Sari, 2019). ROE quantified the bank's capability to create incomes founded on individual bank's capital (Sari, 2019). NIM quantified bank's capability to create interest income less interest expenses based on average earning assets (Yao et al., 2018). CA quantifies bank's capital to its risk (Fliginskih et al., 2019).

Commercial banks in developed nations have had numerous challenges which have greatly affected their financial performances. For example, American bank's tariff wars, block-chain, quantum computing, presence of shadow banks, market risks, liquidity risks, credit risks such corporate debt risk and unregulated non-bank lenders risk have greatly threatened the future financial performance of banks in America (Federal Deposit Insurance Corporation [FDIC],2019; Faisal et al., 2019; Deloitte, 2020). European banks have had an experience of retrenchment from international markets as banks become smaller, impaired policy making processes, debt sustainability concerns, decreased customer margins, low rate of cross-border

financing, alarming increase in risk premiums, low market liquidity and unpredictable investor behavior (Deloitte, 2019a; Deutsche Bank, 2019).

High capital costs requirements, declining loan growth from small banks, deteriorating asset quality, non-performing loans, low retail deposit growth, credit risks, poor management of monitoring and screening of borrowers have affected Asian banks such in Bangladesh and China (Faisal et al., 2019; KPMG, 2019; McKinsey, 2019). In Africa, banks in West African countries like Nigeria and Ghana have had issues on computer and internet frauds, slow adaptation of financial innovations, system breakdowns, insufficient skilled personnel and insolvency to a point of being closed down (Ejike & Cird, 2019; Price Waterhouse Cooper, 2019). South African banks have suffered low financial performance due to shadow financial services (Sheunesu, & Tewari, 2019). In northern Africa, a country like Egypt faced problems relating to non-banking competitors, high operational costs and high regulation on banking business models (African Business Magazine, 2019). Looking at East African banks' like in Tanzania, Uganda and Rwanda difficulties in low deposits, attenuation of loanable funds, competition from non-banking monetary structures, non-performing loans have been prevalent (Lotto, 2019; Mbonigaba, 2019).

In Kenya, low financial performance was still been a menace to many commercial banks. The problems experienced included issues related to technological fraud, competition from unregulated mobile lenders, non-performing loans, credit risks, market risks, collapsing of banks, weakening of asset quality, deteriorating credit growth in private sectors and when financial innovations are not quickly adopted by

clients(Cytonn, 2019a; Kenya Bankers Association [KBA], 2019; Mohamud, & Mungai, 2019). These concerns amongst others were forcing banks in Kenya to substitute outdated banking approaches with other financial innovations like mobile banking, internet banking and M-Pesa facilities to increase their financial performances (Abdullai& Micheni, 2018; Njoroge & Mugambi, 2018). Derivatives as a most recent financial innovation was not so much widespread among the commercial banks in Kenya (Bowen et al., 2017; Engaza, 2016). The reason being due to poor operational facilities including solitariness to trading daises, underprivileged trading structures, feeble trading guidelines and lack of dominant counterparty (Engaza, 2016).

1.1.3 Commercial banks in Kenya

The government of Kenya issued mandate to Central bank of Kenya (CBK) to oversee forty-two commercial banks, one mortgage finance company, thirteen microfinance banks, nine representative offices of foreign banks, seventy-four foreign exchange bureaus, nineteen remittance providers and three credit reference bureaus (CBK, 2018). Financial institutions such as banks often acted as market makers for more commonly traded instruments in the derivative market (Schoen, 2017). Being market makers entailed being prepared to quote both the bid price and the offer price. Previously, there were concerns of banks having derivative products that had been credited from portfolios that had risky underlying assets such as mortgages or non-performing loans making the products become worthless hence losses (Hull, 2018; Schoen, 2017).

1.1.4 Listed commercial banks in Kenya

According to Nairobi Securities Exchange (NSE), eleven banks in Kenya qualified to be listed on NSE website after meeting the requirements of registration, deposit size and net asset value (CBK, 2018). They included ABSA Bank, Stanbic Holdings, I&M Holdings, Diamond Trust Bank, HF Group, KCB Group, National Bank NIC Group, Standard Chartered Bank, Equity Group Holdings and Co-operative Bank. These listed commercial banks in Kenya were considered as large banks. Their deposit size value and net asset value in 2018 was 70 percent, while all other commercial banks' value was 30 percent (CBK, 2018). Therefore, how large banks performed financially played a huge role in ascertaining the direction of the economy in Kenya. The financial performances of these banks were consequently pegged to ensuring that they had command on hedging as many financial risks associated with them as possible (Hull, 2018). Consequently, not all listed commercial banks had been trading derivatives hence this study only concentrated with the selected listed commercial banks that were involved in derivatives trading.

1.2 Statement of the Problem

Ideally, developed nations had been cautiously trading through over-the-counter derivatives in Canada, Australia, Sweden and Belgium (Bank of International Settlement, 2018). In Africa, countries like Nigeria and Ghana had begun appreciating derivatives. The Central Bank of Nigeria permitted operation of derivatives such as options, forwards, swaps and TOC futures (Edu, 2019). In Ghana, Bank of Ghana had intervened in forex market through forwards funded contracts to reduce risks and regulate the prices (Aryee, 2019). Commercial banks in Kenya had been at the forefront in acclimating financial innovations such as derivatives over

time. Through the Kenyan capital market, there had been establishment of the Nairobi Securities Exchange's NEXT derivatives market which traded in future derivatives such as equity index futures and single stock futures (NSE, 2019a; 2019b). All these initiatives had boosted the financial performance of banks.

However, despite the vital role financial derivatives contracts played in improving profitability of Kenyan commercial banks, low profitability concerns had still engulfed the financial performance of listed commercial banks in Kenya (CBK,2018)Derivatives expansion was still at its early stages with non-existent Exchange Traded Derivatives and under-developed OTC derivatives markets. When banks were limited to trade in terms of only few futures derivatives, the commission fees' income that could have been earned from forwards, options and swaps derivatives became an opportunity cost. Also, the risks that could have been mitigated by hedging through them, prevailed causing low financial performance of listed commercial banks.

Studies done before had aggressively disputed on whether financial derivatives contribute positively or negatively towards profitability of banks (Ruiz, 2018; Santhapalii, 2018; Vo et al., 2019a).Locally, the available studies had dwelled mostly on challenges facing derivatives uptake in Nairobi Securities Exchange and not in commercial banks (Cyttonn, 2019b; Bowen et al., 2017; Eganza, 2016). This study therefore concentrated on the relationship that exists between financial derivatives practices and the financial performance of selected listed commercial banks in Kenya.

1.3 General objective

The general objective of the study was to establish the relationship between financial derivatives and financial performance of selected commercial banks in Kenya

1.4 Specific objectives

The specific objectives are:

- i. To determine the relationship between swaps and financial performance of selected listed commercial banks in Kenya.
- ii. To ascertain the relationship between options and financial performance of selected listed commercial banks in Kenya.
- iii. To establish the relationship between forward and financial performance of selected listed commercial banks in Kenya.
- iv. To assess the relationship between futures and financial performance of selected listed commercial banks in Kenya.

1.5 Research hypotheses

The following statistical hypothesis will be subjected to the statistical analysis;

H₀1: There was no relationship between swaps and financial performance of selected listed commercial banks in Kenya.

H₀2: There was no relationship between options and financial performance of selected listed commercial banks in Kenya.

H₀3: There was no relationship between forward and financial performance of selected listed commercial banks in Kenya.

H₀4: There was no relationship between futures and financial performance of selected listed commercial banks in Kenya.

1.6 Significance of the study

Commercial banks being the largest participants in the financial derivatives market would benefit by getting information on why they trade in derivatives and the benefits they could get. That is, by understanding the link between financial derivatives practices and financial performance, they would be sharper on their approach towards the developing derivatives market in Kenya so that they can make most out of it without exposing themselves to greater risks.

Understanding the performance of the currently available financial derivatives in Kenya in relation to profitability of banks, non-banking institutions was equipped on what was currently transpiring in the financial derivatives market. This was because commercial banks act as intermediaries, buyers or sellers in the derivatives market.

Financial regulators would find this study beneficial in the sense that they would understand the issues lingering around financial derivatives and the recommended solutions for a guaranteed return in an uncertain environment. Evidence provided in this study on the relationship between financial derivatives practices and financial performance of selected listed commercial banks in Kenya would empower shareholders to renew their predicted strategies towards appreciating a recent financial innovation such as financial derivatives would improve their wealth immensely.

Commercial bank customers would benefit greatly on knowledge provided by this study because they would be educated on the two ways of trading in financial derivatives. On one hand, high risk takers customers who were after huge profits would find this research useful for, they would know on how to approach over the counter derivatives market while on the other hand, the low-risk takers customers

who were cautious on losing would also get information on where to begin while trading on exchange traded derivatives.

In attainment of vision 2030 in Kenya, there was an urgent need to supply the economy with financial resources. Once information was derived from this study that there was guaranteed way through which financial derivatives can work, external investors would be attracted to Kenyan financial derivatives hence improved foreign direct investments in Kenyan economy. Investors who were limited on few financial instruments such as bonds and shares, would expand their investment decisions by considering to invest in financial derivatives products.

This study would be useful to academicians and researchers who would want to expound more in future on financial derivatives in Kenya, since they would find relevant and foundational facts. The study would contribute new knowledge in finance when relationship between financial derivatives practices and financial performance of selected listed commercial banks in Kenya would be undoubtedly well-known.

1.7 Scope of Study

This study was conducted in Kenya. The concentration was on all selected 11 listed commercial banks in Kenya. Key data was on swaps, options, forwards, futures and financial performance of listed commercial banks in Kenya. Risk managers, operations managers, credit managers and marketing managers were the respondents in this study.

1.8 Limitations of the study

Key limitation in this study was the short duration in which Kenyan financial derivatives market had been in operation hence respondents did not understand fully the concept of financial derivatives practices intensely. The last limitation considered in this study was factorial change in parameters used in scrutinizing the financial performance of listed commercial banks in Kenya. A good example was either increase or decrease of bank's assets in each accounting year due to banking functions such as issuance of loans and sale of securities (Nguyen et al., 2018).

1.9 Delimitations of the study

The nature of questionnaires that were used were closed ended questionnaires so that the respondents in listed commercial banks who had no in-depth knowledge of financial derivatives were catered for. Not considering financial performance indicators such as Return on Invested Capital (RIC) and Deposit Liabilities (DL) would minimize the limitation of factorial change in parameters used in scrutinizing the financial performance of listed commercial banks in Kenya.

1.10 Assumptions of the study

This study was directed by the assumption that for derivatives to prevail in Kenya, regulations enacted to enforce derivatives trading, derivative's knowledge, attitude related to involved parties, financial infrastructure and how stiff international derivatives markets competed with Kenya was fair and reasonable. These assumptions assisted in reducing partiality towards dissecting robust optimization as an intervening variable between financial derivatives uptake and financial performance of listed commercial banks in Kenya.

1.11 Definition of Terms

Bit price and Offer prices

This was the buying price and selling price respectively (Bank for International Settlements,2019b).

Hedging

Hedging was the act of insuring oneself from potential risk that was foreseen in future due to market variables activities (Bowen et al., 2017).

Speculating

Speculation was the act of buying securities with an expectation that you would get profit once you sell them in future but also bearing in mind that you faced an exposure to loss incase their worth declines (Edu, 2019).

Underlying

This was the foundation for securities. That was, what gives securities their worth (Engaza, 2016).

Over the Counter

The gentleman's agreement between parties involved in derivatives market to sell or buy financial derivatives without having a physical place to meet so that they could carry out their trading (Bank for International Settlements, 2019).

Portfolios

A group of securities that a buyer or seller in derivatives market possessed (Hull, 2018).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter contained the theoretical framework and empirical review section which comprised of the reviews done by existing literature related on the influence of the financial derivatives such as swaps, options, forwards and futures on the performance of selected commercial banks in Kenya. The study then concluded with a conceptual framework and operationalized framework.

2.2 Theoretical framework

The theoretical framework was underpinning on the nature of the association between financial derivative and performance of selected commercial banks in Kenya. Risk management theory, capital irrelevance theory and financial intermediation theory were used in providing explanation on the hypothesized relationship among financial derivative and performance.

2.2.1 Risk Management Theory

Swaps financial derivatives were guided by risk management theory in this study. Stulz (1996) and Froot (1993) came up with theory and it contended that for external funding costs to be reduced, banks had to exploit hedging stratagems. According to Admati (2012), in uncomplimentary external setting, banks could bargain that getting external capitals to be costly. A bank somewhat circumvented the prerequisite for refinancing by hedging un-spreadable menaces such as exchange and interest rate risks hence funding cost was cut(Froot, 1993).This theory was applicable in this

study because Thakor and Boot (1991) oblique that banks that partook in considerable off-balance sheet happenings diminished their risks revelations comparative to those that issue loans based on the current economic situation. However, this rested on the acuity that a bank's capital was withheld in loans issued and in which condensed the bank's debtor's asset replacement delinquent sheathe future interest rates growths.

This theory was criticized by Morisson (2005) that on the occurrence that banks partook in the credit derivatives market, the informational price of a bank credit ceased to be. That was, the bank did not worry about loan defaults. This made the bank relax on measures used to verify that borrowers were able to repay the loans once issued. The basic business function of huge banks was transactions and creating derivatives amongst other with banking products (Marinc & Boot, 2008). When a bank got associated in derivatives markets, this could be prompted by a purpose to make revenue instead of having hedging needs.

2.2.2 Financial intermediation theory

Financial intermediation theory guided options financial derivatives in this study. The theory was established by Diamond (1984) and stated that any unmanageable risks could not be undertaken by a banking institution. When banks were allowed to participate in systematic risk hedging, it resulted to an extra attenuation of allocation charges to screen debtors of loans. Financial intermediation theory was used in this study because hedging certified banks to get exceptional proceeds from divergence by diminishing the allocation charges that motivated lending. Diamond (1984) specified that not only did allocation monitoring deduce economies of scale but also gave a motive on why shareholders could not worry about monitoring the bank. Diamond (1984) originated out that the bank's risk declined when the risk expands in

size and when there was portfolio divergence, the risk vanishes completely. The theory was criticized by various studies such as (Allen&Santomero (1997); Scholtens & Wensveen,2000). They argued that financial intermediation theory did not appreciate the role played by lenders on risk management in the banking field.

2.2.3 Capital irrelevance theory

Forward financial derivatives were guided by capital irrelevance theory. The theory that was developed by Modigliani and Miller (1958), pinpointed that equity of a bank in perfect economy was not affected by hedging operations or mode of financing. This theory was used in the study because, in reality aspects such as imperfect economy caused banks to hedge to lessen charges associated with crises that were financial in nature, improve net income, reduce operational charges and unevenness in information. An organization with a curved projected business tax obligation function and whose key purpose was enlarging its worth, was sensitive to taxed charged on its gross income and used hedging to decline its tax obligation (Smithson et al., 1993; Smith & Stulz, 1985).

A growth in the pretax proceeds would cause an improvement in the aids of hedging if the net income function was more concave by the tax function. Synchronously Stulz and Smith (1985) suggested that hedging could cause a bridged projected cost of insolvency as the financial crises shrunk with the abridged differences in cash flow. Stein et al. (1993) sign posted that the demand for costly exterior funding was abridged because of enlarged cash flows from hedging. Thus, hedging happenings of banks were stimulated by their bidding to reduce the forth coming investment's costly exterior funding desires. The theory was criticized that it dwelt on the lack of practicality in eliminating the properties of income tax and anguish costs from the

investment edifice of a firm. It became cumbersome to test the theory since majority of the factors affecting the worth of a firm were income, assets and market prospects

2.2.4 Normative decision-making theory

Normative decision-making theory was advanced by Erich Leo Lehmannin 1950. Future financial derivatives were steered by normative decision-making theory. The theory was based on the intellectual basic adoptions made by an entity that had the capacity to plan and execute. That was whether it was a routine choice or extra extensive choice. Normal reasoning which entailed an entity's action at any certain juncture, was totally influenced by the entity's opinions and needs in the coming future. In as much as normative decision-making theory was a concept of opinions and needs, it was also a concept of choice. That was, the measurements involved in entity's partiality audacities and the gratification effects to the general conditions. This sought to have slight justification of reasonableness on the suitable principles, partialities and rational opinions in the current state.

Normative decision-making theory was adopted in this study because, when handling uncertainty according to normative decision-making theory, an entity could choose a decision that had utmost anticipated results which led to having solutions that influenced its future (Lempert, 2019). Most choices made were always surrounded with uncertainty aspects especially where possibilities could not be evocatively stated. In those conditions, the objective to have value intensification was not realistic (Lempert, 2019; Singh et al., 2015; Wright, 2014). There was therefore need to apply normative standard for coherent decision making in those conditions. As an alternative, a bank that was always in quest of make best use of the expected

value of a choice result which was normally affected by various factors and in reality, mostly did not come to pass, the bank could make the most of the future financial derivatives to have acceptable results. Normative decision-making theory could be criticized in that it gave small room to improve our intuition (Baron, 2004).

2.3 Empirical review

The study investigated various past studies so that to examine the gaps. These gaps would form the baseline for the current study. Empirical review was provided in section 2.3.1 to 2.3.5. Thereafter, the study provided a summary of the gaps in section 2.3.6.

2.3.1 Swaps and financial performance of selected listed commercial banks

A swap was an understanding where two entities decided to exchange periodic payments of the agreed type of currency (Federal Reserve Bank of New York [FRBNY], 2012; Reserve Bank of Australia [RBA], 2018). The types of swap contracts were plain vanilla swaps, equity swaps, currency swaps, interest rate swaps, interest equity swaps, commodity swaps, zero coupon swaps, credit default swaps, total return swaps, basis swaps, debt swaps, variance swaps, amortizing swaps, constant maturity swap, accreting swap and subordinated risk swaps (FRBNY, 2019a; Securities and Exchange Commission [SEC], 2019; International Monetary Fund [IMF], 2019a; Ito et al., 2018).

In developed nations, Bank for International Settlements [BIS] (2019) triennial survey of 1,300 banks in America on foreign exchange turnover in April 2019 established that over the counter-forex swap's growth was 91% between 2018 to 2019. In another report by FRBNY (2019) on the foreign exchange and interest rate derivatives market's turnover in the America which increased their scope of analysis

from 2016 to 2019 conquered with Bank for International Settlements that foreign exchange swaps grew and their trading was 42 percent of turnover, up from 31 percent in 2016.

There had been developments on swap transactions regulations in America such as the one documented in Securities and Exchange Commission (SEC) in 2019. SEC (2019) while closely following Dodd-Frank Act and 1934's Securities Exchange Act, had espoused measures that began being applied in October 2019 such as capital and margin necessities for security-reliant swap traders (SRSTs) and main security-reliant swap partakers (MSRSPs). Also, seclusion necessities for SRSTs, and noticed necessities with reverence to seclusion for SRSTs and MSRSPs. There was an upsurge of the least after-tax capital necessities for broker-traders approved to utilize core models to calculate after tax capital and recommending the convinced capital and seclusion necessities for broker-traders that are not SRSTs to the level they engross in security-reliant swap (SEC, 2019).

Compulsory swaps clearance through a central house and automated trading to identical swaps had brought a tough debate on whether it was really worth the course comparing the foreign exchange swaps volumes traded to have slightly improved or mostly stagnant (Guo et al., 2019). A survey done by Guo et al.(2019) on developments in foreign exchange and over-the-counter derivatives markets shared the stated reasons for this low growth. Guo et al. (2019) indicated that there had been caused by vagueness within market system, uncertainty in agreeing on international trading rules especially in the American SEC trading guidelines and European rules, separate liquidity pool and high cost equated to non-cleared swaps derivatives.

Developments made by International Bank for Reconstruction and Development (IBRD), (2019) starting from 30th June 2019 on the appearance of various FDCs on statement of affairs had transformed to align with the current market state. According to IBRD (2019), this move net derivative asset and liability spots, and the associated currency security acknowledged, by the other party in precise settings when a legitimate enforceable principal netting contract is present between IBRD and other affiliated parties. This was a modification as of the earlier appearance, where interest rate swaps were presented on the statement of affairs on a net basis by instrument, and currency swaps were presented on a gross basis, showing the way in which, these instruments were paid.

In developing nations, Ito et al. (2018), the study majored on debt swaps for financing education focusing on new funding resources. Ito et al. (2018) confirmed that one advantage of using debt swap was that it declined the debt obligation of emerging nations and discharges funds for communal growth. Ito et al. (2018) put across an interesting finding that between 1980 to 2000s, debt for education swaps were a common financial innovation but the innovation went under in 2010s. He gave an account of the lifespan for these debt swaps that was how they began and ended especially after the financial crisis of 2008.

Ito et al. (2018), reviewed studies in countries such as Cameroon and Indonesia to contend for the practicability of debt-for-education swaps to pursue monetary support. However, the study noted that for these swaps to work in the future, there could be conditions such as: large swap size to have convincing influence on larger economy of the borrower nation; Lender nations could screen how the money was expended while regarding the independence and proprietorship of borrower nations

in progress ventures. There were limitations against realization of debt swaps in social development. Ito et al. (2018) explained that it took many years to get returns from debt swaps, default rates by borrower nations and borrower nations allocating returns realized by debt swaps in their budgets.

A documentation by Federal Ministry for Economic Cooperation and Development [FMECD] (2019) on debt relief whereby it considered debt-for-development swaps, agreed that swaps have demonstrated their significance as growth strategy tools. According to FMECD (2019), conduct of bilateral debt swaps by Germany from 1993 had proved effective whereby it relinquishes some of the debts coming from Monetary Cooperation as long as the recipient emerging nation utilizes the resources for different infrastructural developments. So far Germany has relinquished 929 million euros of debts after the developing nations involved contented their obligations.

2.3.2 Options and financial performance of selected listed commercial banks

An option was a financial derivative instrument that gave owners the rights and did not force them to purchase or vend an indicated amount of an underlying asset at a strike price or exercise price at or earlier than the expiry date of the options (Al-slehat et al., 2018; European Central Bank [ECB], 2019b; Office of Comptroller of the Currency (OCC), 2019). The types of options were; put options, call options, exchange traded options, over the counter options, option type by expiration, option type by underlying security, equity options, employee stock options, cash settled options and exotic options (Options Trading [OT], 2019).

According to Futures Industry Association (FIA) (2019), a global remarkable record of 7.3 billion options contracts in 2019 as compared to 6.4 billion options contracts

in 2018 signified an improvement of 13% of options trading volumes. This was determined after FIA considered 80 global exchanges' monthly information on option contracts. Two thirds of the 884.6 million options trading contracts in 2019 were options.

Although there had been global improvements in options trading, accounting for financial derivatives such as options has remained a challenging area within General Accepted Accounting Principles [GAAP] (Ernst & Young 2019). Ernst and Young (EY) (2019) on a report of financial developments, gave a comprehensive guide on derivatives and hedging. The guide stated that though the Financial Accounting Standard Board [FASB] had made attempts to amend the original FASB statement No.133 which concerned itself with derivatives accounting, its complexity and scope as collated in topic 815 at Accounting Standards Codification remained challenging. For example, at commencement, if the option was in terms of monetary terms, its price had time worth and intrinsic worth. With adjustment in volatility of the underlying asset, time worth fluctuates and normally degenerated as the option reached its expiration date. If the option was exercised at expiration, the price was only its intrinsic price. Therefore, when exercised, an option had a different price due to its time worth constituent which had reduced from its original fair value to zero, but the hedged underlying asset did not have an offsetting variation in price related to the time worth degeneration.

Bank for International Settlement (2019) triennial survey of 1,300 banks in America on foreign exchange turnover in April 2019 established that OTC forex option's 16% growth was significantly small compared to its counter parts such as forward's growth which was 43% and swap's growth which was 91%. This report on low

growth in America agreed with a survey conducted by Federal Reserve Bank of New York (FRBNY) in 2019 on the foreign exchange and interest rate derivatives market's turnover in the United States. FRBNY showed that foreign exchange option trading had declined by to 5% from 6% in 2016. This raised concerns of the stand of American banks' attitude towards adoption of options as a way to hedge foreign exchange risk.

Doojin and Heejin (2019) did a study on noise traders, mispricing, and price adjustments in derivatives markets. They acknowledged that the main reason why there was always a price disagreement in out-of-money type of option was because of the presence of domestic investors. They discovered that presence of domestic investors was positively correlated with price disagreements in Korea. Doojin and Heejin (2019) also considered the market in which the price disagreements occurred and concluded that the market would eventually alter to eliminate any mispricing caused by domestic participants. That was to say, in developed nation's financial markets, there were price disagreements when trading various financial derivatives because they had more domestic investors than foreign investors, but at the end of the day the market would adjust itself to correct any form of mispricing in the market. There was therefore need to establish whether developing nation's financial market would adjust themselves and how they would behave when there were price disagreements. Kenya's derivatives market by the virtual of facts was growing, price disagreements will be there in future.

Rastogi and Athaley (2019) on their study on volatility integration in spot, futures and options markets, found out that there was no connection between instability in option market and instability in other financial derivatives such as spot and futures

markets. That meant that option market behaved differently from other markets. The study advised that one could hedge using options such as call and put options. Since this study was done in India, there was need to ascertain whether in Kenya options market would behave that way or different and whether investors could use options to hedge their investments or not. Another report by Bank for International Settlement (BIS) (2019) on fragmentation in global financial markets whether it was good or bad for financial stability, showed that fragmentation was the main issue affecting developed nations financial markets. Market fragmentations happened when trading instructions were directed to many trading locations that contested with each other. BIS pointed out that over the last decade, markets such as market shares of traditional option stock exchanges had reduced significantly as electronic communication networks had developed cheaper and faster systems to trade stock. The growth prospects of options derivatives developing nations such as Asia is high. Singh and Singh (2018) compared the development rate of financial derivatives between developed and developing economies in Asia. They confirmed that though the derivatives trading volume in developed economies was multiple times the developing nations, the rate of growth in derivatives trading of instruments such as options was higher in developing Asian economies. There was therefore need to ascertain the exact growth rate of financial derivatives in Kenya. Mertzanis and Allam in (2018) did a study on political instability and herding behavior which derived evidence from Egypt's stock market. This main focus was the 2011 revolution which caused instability in Egypt. The study pointed out that adverse herding behavior exhibiting non-linearity over the instability period. This study was important because most developing nation's derivatives markets especially in Africa

had been found to be affected by poor leadership and political instability in some way. Therefore, taking Egypt as a case scenario it's significant to know how a bank would or an investor could hedge risks in markets that did not have dominance of severe microstructure environments in the stock market. Mertzanis and Allam (2018) ascertained further that indeed dominance of severe microstructure environments in the stock market could have affected the herding behavior of investors during the political instability. Knowledge of these would assist in developing very suitable options derivative structures that would work even during daring political instability in developing nations.

In developing nations, Assuming et al. (2018) who did a comparative study on financial inclusion in Sub-Saharan Africa, they analyzed 31 sub-Saharan countries with information acquired from global index database. The study found out that the cumulative level of financial inclusion has improved meaningfully in the 31 nations. This showed that even though there were challenges, developing nations in Africa's knowledge on various financial matters such as options derivatives was improving but at a slow rate.

Onura (2019) gave comprehensive reasons on low derivatives market activities in West Africa. The study on effect of capital market on economic growth and development of Nigeria (2000 - 2017), brought into focus that among other reasons why capital market in Nigeria had not developed was because of unavailability of internet services, poor capital market security and unfavorable governmental policies with political selfish interests. The presence of low concentration of foreign owned banks in Nigeria which was 6% according to (Nachum and Ogbechie, 2019) had greatly affected the derivatives market. The study which concentrated on

understanding the negative aspects of having 94% locally owned banks in Nigeria, shed light that the country had greatly lost in terms of foreign direct investments making it lag behind especially in application of derivatives market in its stock exchange. The highly imbalanced market structure, weak competition strength and low proficiencies of Nigerian banks had been the norm, no wonder they could not compete effectively with countries like Kenya in the capacity of the derivatives. To curb this trend, there had been recent developments in Nigeria to ensure that there were high derivatives activities. The Nigeria stock Exchange which came second after South Africa had begun financial derivatives trading in 2020. Nigeria stock Exchange involved derivatives like options in its market to hedge and manage risks. This was seen as a measure to deepen the derivatives market in West Africa region. Kenya being the pacesetter of capital markets in East Africa, Capital Market Authority Kenya (2019) stated that the capital market authority had developed strong guidelines to back capital market in Kenya. It had developed enticements to encourage capital markets implements, authorized intermediaries, and started new capital markets instruments such as options and executing a widespread investor training and communal awareness. Despite these strategies and guidelines, the uptake of capital market instruments in Kenya such as option's derivatives had been low (Capital Market Authority Kenya, 2018). The main reasons for this low uptake were issues pertaining discouragement of latent issuers by unfavorable laws that inhibited them from raising resources for being considered to be listed at Nairobi Securities Exchange; price instability in the capital markets; disinclination to recognize and instrument daring, inventive processes to have latent issuers both public and private to list at Nairobi Securities Exchange; and tough opposition from other quick return

vehicles that had short term returns as conflicting to long-term nature of derivatives investments returns for example gambling.

2.3.3 Forwards and financial performance of selected listed commercial banks

A forward contract was a customized understanding between a purchaser and a seller whereby the purchaser approved to buy an underlying asset at a pre-determined price at the time of purchase from the seller, but the delivery of the asset was done at a future date (Bosonalfa, 2019). Therefore, the contract was settled when delivery was made. The types of forward contracts were commodity forwards, interest rate forwards, foreign exchange forwards, closed outright forwards, flexible forwards, long-dated forwards and non-deliverable forward (Coppola, 2019; European Securities and Market Authority, 2014).

Previous literature in developed nations that had been done gives a vivid description of the nature of progression of forward derivatives in the developed nation's financial markets. A study such as FRBNY in 2019 on the foreign exchange and interest rate derivatives market's turnover in the America, showed a 1% increase in outright forward market turnover as compared to 2016. It had 18% while in 2016 it had 17% turnover. This was an agreement with Bank of International Stability [BIS] (2019) triennial survey of 1,300 banks in America on foreign exchange turnover in April 2019. BIS also recognized that between 2018 and 2019, over the counter forex forward's growth was 43% and \$1,000 billion increase in interest rate forwards derivatives which was 27% of the total interest rate derivatives market in 2019. That showed that there had been growth in forwards markets over the years.

In a BIS quarterly review report in December 2019 on international banking and financial market developments, it showed that outright forwards derivatives growth

was highly facilitated by non-bank electronic market-maker firms (NBEMMF). NBEMMF used swift, algorithmic approaches which depended on swiftness instead of statement of affairs to trade huge amounts of outright forwards derivatives. NBEMMF entered the derivatives market through the prime broker firms whose trading relied on spot prices and thereby contributing to the increase in spot gross revenue. The advantage of using NBEMMF was that it applied passive approaches and revealed who was providing the capital in the market through a system of customer associations. That was, a counterparty such as a bank's asset manager knew they were transacting with a non-bank market-maker firm and rely additionally on the firm for their foreign exchange capital provision desires in the future as repeat clients. These NBEMMF had developed to be an essential part of foreign exchange intermediation and very important in ascertainment of capital requirement environments, especially in the spot forward market. Contrary to their advantages, NBEMMF's dominant part played by credit risk, huge client's losses transactions led to capital fatalities for prime broker's firms. These fatalities systematically triggered even higher financial crisis in the financial sectors globally.

Shin and Pyo (2019) on a study on liquidity hedging with futures and forward contracts found out that when a firm could wish to maintain a minimum amount of risky debt in their portfolio, forward contracts could be utilized to hedge risk. This was best applicable when the firm had long-term liquidity goals on how to maintain stable financial structure. This study used a hypothetical model engaging stochastic disparity comparisons for forward prevaricating. The demerits of using stochastic models were that it allowed incomplete derivative functions to appear in the approximation, making the solution derived biased (Sauer, 2004).Bank of England

(BOE) report on Euro money foreign exchange in 2018 attested that-forwards had become less worthy and costlier due to statement of affairs' capital requirements banks were mandated to encounter. This had decreased bank's desire for long-term credit risk hedge. This survey did not include short-dated forwards hence it was inconclusive to state that forwards were less worthy without counting in all types of forwards. However, another survey that was done in 2019 by BOE on BIS' triennial survey of foreign exchange and over-the-counter interest rate derivatives markets in UK contradicted that the average daily turnover in forward transactions increased from \$266 billion in April 2016 to \$542 billion in April 2019. How could forward contracts become less worthy while their transactions had improved over the three-year period?

In developing nation's forward markets such as Korea, India and Brazil, Bank for International Settlements in 2019 itemized that various nature of forwards trading activities had improved. The triennial central bank survey on foreign exchange turnover in April 2019, said that closed outright forwards grew by 43%, which were more common than foreign exchange swaps. This proved that developing markets were adopting to forward derivative markets strongly. Deloitte (2019b) report on international tax which put into focus a developing country like Argentina, stipulated that financial companies regulated by central bank beginning from the year 2018 were mandated to apply the international financial reporting standards (IFRS) in their operations. IFRS scope's application would spread to how derivatives inclusive of forwards transactions were conducted and reported. All this had been done to ensure that forward derivatives growth was reliable in Argentina. This created a concern to

understand why financial institutions were being forced to apply IFRS in the first place?

According to United Nations (UN) in 2019a, on managing commodity price risk in commodity dependent developing countries, appreciated that commodity markets were unpredictable hence creating risk and uncertainty for dependents. UN challenged governments and traders of commodities to brain storm on available risk controlling implements such as forwards derivatives amongst others near them and choose ones that suited their commodity insurance needs. This was a clear indicator that institutions such as UN saw there was need to do more research and also hedge against risks among commodity dependent developing nations and not only developed nations.

According to Chidaushe (2018), on the impediments and best practice use of derivatives in Zimbabwe, Botswana and South Africa elaborated that the banks in Botswana and South Africa utilized amongst other derivatives such as options, swaps and options, simple forward agreements were averagely utilized while Zimbabwe's banks utilize only simple forward agreements in their derivatives market. This showed that in derivatives utilization dispersion was uneven in these developing nations. The study did not give reasons as to why there was low application of simple forwards agreements in a country like Zimbabwe.

2.3.4 Futures and financial performance of selected listed commercial banks

A future was a standardized, marking to market understanding that mandated an entity (buyer seller and clearing house) to purchase or vend an item in future date at a pre-determined price to hedge against rapid increase or decrease of price to the

purchaser of vendor respectively (Giudici & Vinogradov, 2019). The items traded could be securities such as stock and bonds. Future contracts purposes included speculation, hedging, arbitraging, liquidity, price discovery and participants' speculations (Gacheru, 2016).

In developed nations, Covington and Burling LLP (2017) study on U.S. regulation of futures and derivatives which put into light some of compliance issues for end-users, inveterate that amongst problems affecting futures market included liquidity risk, poor market integrity and transparency in the futures activities. The report indicated that America's remedy to the issues included registering and inclusive regulating futures exchanges; compulsory clearing of futures products; strong recordkeeping and timely reporting; and implementation of controls against creative accounting, swindle, and untrue reporting. There was therefore a need to establish the challenges faced by Kenyan listed commercial banks while operating in derivatives markets.

A prior literature on inferring term rates from secured overnight financing rate (SOFR) futures prices by (Heitfield and Park, 2019) was done as a result of federal reserve suggestion of American markets commencement of utilization of SOFR in all their financial contracts that presently use US dollar LIBOR in their transactions. Heitfield and Park (2019) scrutinized the viability of applying SOFR futures prices to hypothesize forward-looking term reference rates that are theoretically comparable to US dollar LIBOR rates frequently applied in loan agreements. Heitfield and Park (2019) found out that futures-implied term rates precisely forecast gained compounded overnight rates through vast periods. The study considered this in the long-term duration from the year 2000, hence it would be necessary to approach it in short-term period to see the consecutive results.

Following the 2019 Brexit where United Kingdom's (UK) attempted to exit the European Union (EU) without an official departure contract, (Covington and Burling 2017; Institute for Government [IG], 2018) warned that parties involved in European derivatives market had aired issues that would have a negative impact of Brexit on the market. These issues included broken markets and liquidity shortages. Shortages in liquidity would stir up trading charges and harden completion of large transactions. Given a period of time, this would demotivate competition and increase charges to trade in futures derivative markets in European Economic Area (EEA) and the UK.

In African developing nations, derivatives market was taking strong roots of establishment. A country like Mauritius had in place a multi-commodity spot and derivatives exchange platform and clearing house (Absa, 2019). The report on Africa financial markets index elaborated further that Mauritius had put robust structures that were globally acknowledged enforceable dominant contracts. In West Africa, a country like Ghana developed commodities exchange where purchasers and vendors transacted products contracts such as products futures contracts ensuing guidelines given by the exchange (Ghana Commodity Exchange [GCE], 2018). This diminished the risks to bankers by having a warehouse receipt structure which would be utilized as security for credits (GCE, 2018). Other African nation such as South Africa had a wide-range of modest and complex financial futures derivatives that were fairly used (Chidaushe, 2018).

According to Gyamerah et al. (2019), hedging crop yields against weather uncertainties from a weather derivative perspective, the influence of climate on farming in current years had become a main global worry. Gymerah et al. (2019)

sought out how agriculture could utilize weather hedging management tools such as commodity futures. In their study they considered maize's relationship with weather variables. They ascertained that the main weather variable that influenced maize was temperature. They applied a mean-reverting model with a time-varying swiftness of mean reversion, cyclical mean, and volatility that hinged on the local regular temperature in their study. Founded on futures pricing models, futures options, and futures basket for increasing regular temperature and budding degree-days were obtained. Pricing futures on baskets decreased terrestrial base risk, as purchasers had the chance to choose the most suitable weather positions with their anticipated weight penchant. The study concluded that by using these pricing models, farmers and other interested parties could hedge their produces counter to the dangers of severe weather.

The Nairobi Securities Exchange's NEXT derivatives market which was established in 2019, have seen to it some Kenyan banks such as Barclays bank, Equity bank and Kenya Commercial Bank (KCB) join to trade their futures (African Market, 2019). A part from banks, other companies such as Safaricom, East African Breweries Limited (EABL), and British American Tobacco (BAT) had put up their futures in the NEXT derivatives market. Entrance by many organizations in a derivative market increased its turnover ratio, which had a positive influence on stock market volatility (Bank for International Settlement, 2016). A related study in the influence of derivatives activities on turnover ratio, was Jongadsayakul (2019) who did a study on understanding the determinants of investor behavior in SET50 index futures and options markets.

2.3.5 Summary of the research gaps

The previewed related literature on swaps derivatives on developed nations showed various concerns. These concerns included: Vagueness within various swap market system; uncertainty in agreeing on international trading rule; high cost equated to non-cleared swaps derivatives; low growth of foreign exchange swaps volumes trading; currency risk fissure in banks causing a mismatch between their on-balance sheets and liabilities; Huge scattering in interest rate swap operation prices; high default rates caused by borrower nations; borrower nations allocating returns realized by debt swaps in their budgets; and weak financial grounds to facilitate the escalating debts.

The most outstanding concerns extracted from existing literature on options market included amongst other issues such as complexity and scope of Financial Accounting Standard Board statement no. 133, negative attitude by banks towards adoption of options as a way to hedge foreign exchange risk, new market entrants and disruptive technologies, issues on how to price options, wrong political priorities; bad governance decisions; insufficient knowledge and relevant expertise in derivatives market; lack of regulated derivative market to cater hedging needs in the market; and most banks being not permitted to hedge risks using derivatives.

Issues raising concerns on forwards derivatives included: deterioration of value and high costs due to statement of affairs' capital requirements' banks are mandated to encounter; slowed down of central clearing regulation of over the counter derivatives market due to low volume transactions; availability of a cleared substitute a low accessibility to clearing services; slow implementation of the final rules that require higher capital requirements for non-centrally cleared derivatives; specification

concerns of the features; low application of simple forwards agreements; and ineffectiveness in hedging using forward derivatives hence giving a negative mark to market value.

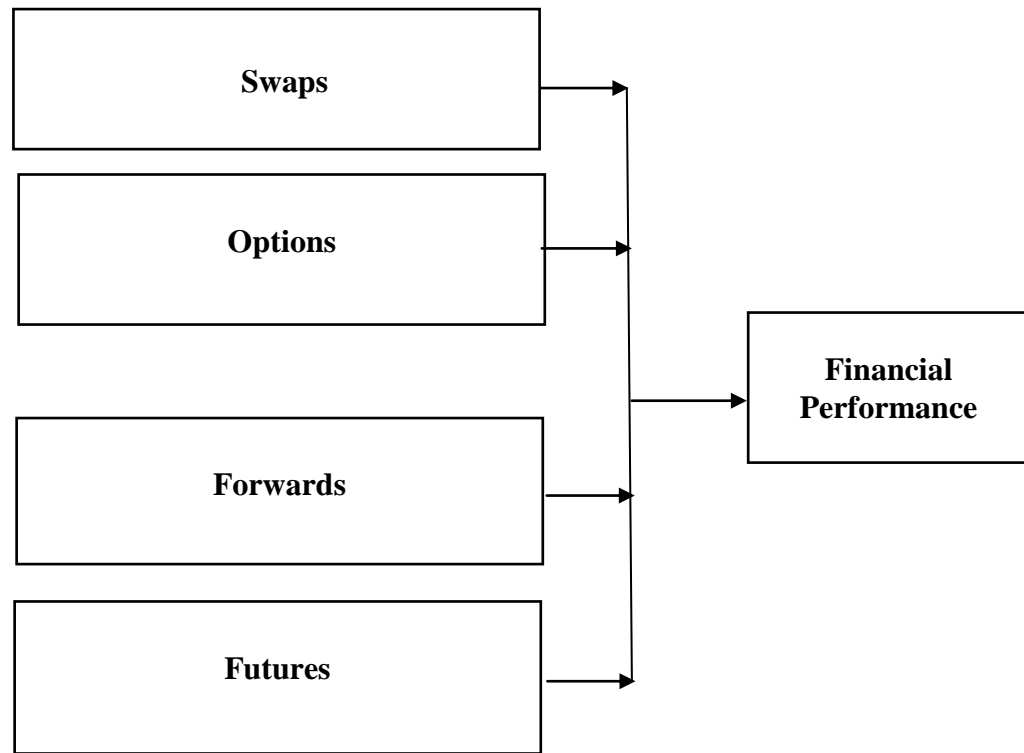
Studies reviewed on futures paint a picture of problems facing futures derivatives. The problems included: liquidity risks, poor market integrity and transparency in the futures activities; broken markets and liquidity shortages; unavailability of information on over-the-counter futures derivatives causing financial stress; high risks, price volatilities; weather uncertainties; poor management and hedging of risk; low price discovery and its stabilization; insufficient market structures and their efficiency.

2.4 Conceptual frame work

The conceptual framework depicted the nature of the linkage between dependent and the independent variables. It provided the pictorial representation of the hypothesized relationship and helped the researcher to mark the bound of his or her scope of the study. In this study, the financial performance was the dependent variable while the financial derivative was the independent variable. As shown in the figure 2.1;

Figure 2.1

Conceptual framework



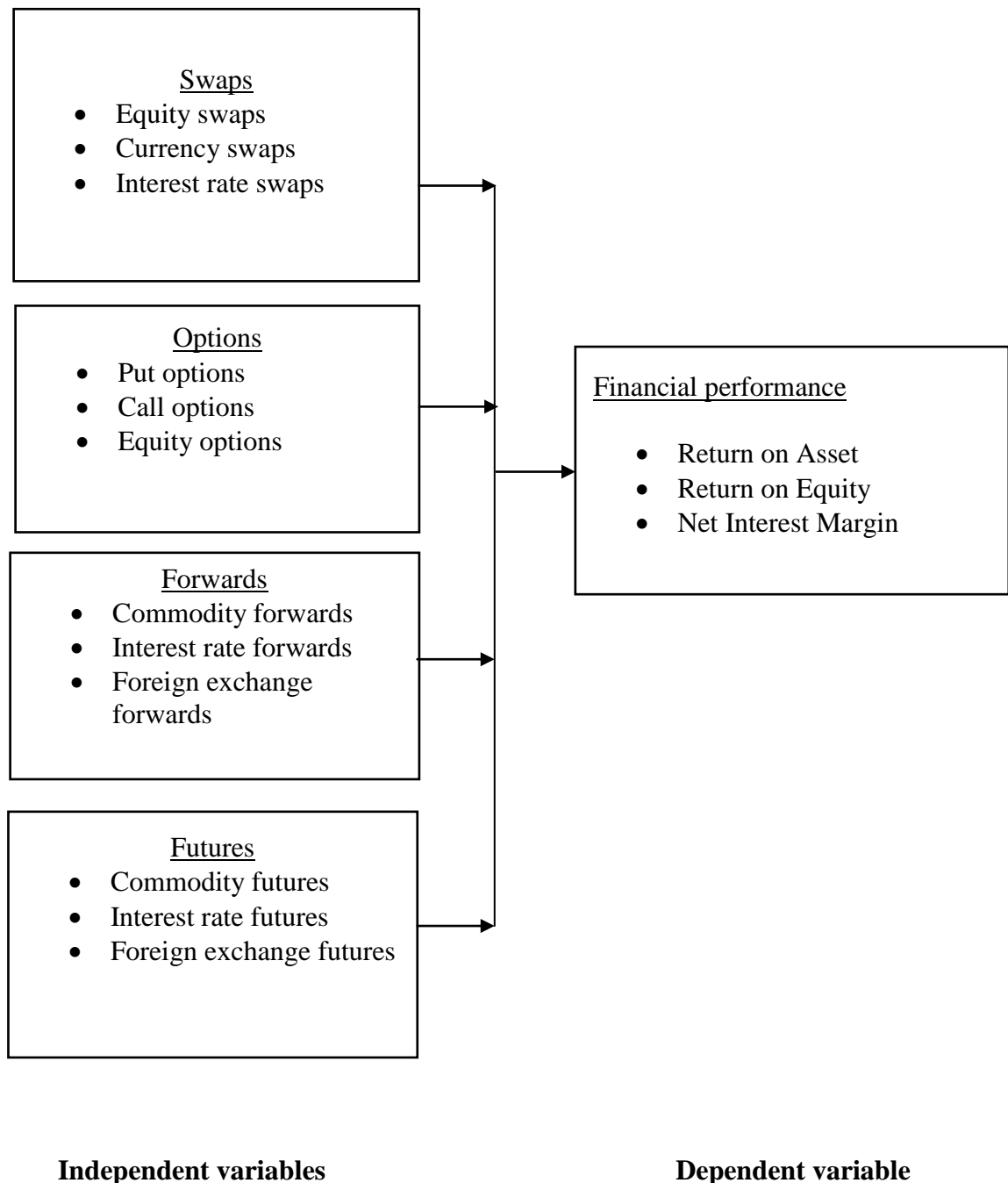
Independent variables

Dependent variable

2.4.1 Operationalized framework

Figure 2.2

Operational framework



Financial performance was the dependent variable in this study. Financial performance's variations on the selected listed commercial banks in Kenya were examined in terms of return on asset, return on equity and net interest margin. Swaps, options, forwards and futures were the independent variables under scrutiny in this study. Equity swaps, currency swaps, interest rate swaps, interest equity swaps and credit default swaps were used to indicate swaps. Put options, call options, equity options, exchange traded options and over the counter options were used to indicate options. Commodity forwards, interest rate forwards, long-dated forwards, closed outright forwards and foreign exchange forwards were used to indicate forwards. Financial futures, commodity futures, interest rate futures, foreign exchange futures and stock market index futures were used to indicate futures.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deliberated the research methodology which was applied in the study. It was arranged to depict the research design, location of the study, target population, data collection methods and the data analysis

3.2 Research design

Ghauri and Gronhaug (2005) stated that a research design contains a strategy that was used to gather information on the study for effective analysis. Descriptive research design was consulted in this study. This was due to the fact that the study elaborated the area of research, ascertain the relationship and offered an explanation on the fathomed relationship. Descriptive research design was used in ascertaining the kind of relationship that existed between financial derivatives and financial performance of selected commercial banks in Kenya.

3.3 Location of study

This study was located at the head offices of listed commercial banks existing in Kenya. This was because financial derivatives operations such as purchase and selling of FDCs were mainly conducted at head offices because all of these departments were located in head offices in Nairobi.

3.4 Target population

A population was a cluster of people, items or objects whose illustrations were used for measurement (Kombo & Tromp, 2003). It denoted to total cluster of people or rudiments that had the slightest shared feature. The population should have a precise appropriate description, which the study was covering. The population of this study was the selected 11 commercial banks quoted at NSE, Kenya. Information was given by risk managers, operations managers, credit managers and marketing managers at each of the 11 commercial banks listed at NSE as at 1st September, 2018.

Risk managers were concerned with assessing and appraising any likely risks that might bound the general position, wellbeing, security and financial development in a bank. They were treasured in this study because when handling FDCs, they had to be well-versed about the intended purpose, inspecting and report any losses that might be caused by internal activities of the bank such as purchasing, selling and intermediating FDCs in financial markets.

Credit managers were also concerned in confirming full amenability and certification of FDCs procedures. They tracked the amenability by conducting full FDCs purchase, sales and intermediation process audit. Therefore, they were needed in this study as respondents because they comprehended what established a good FDC and were closely tangled in the central business of FDCs.

Operations manager's involvement in FDCs was crucial in financial security of the bank. They were accountable in management of the procedures involved when handling any financial dealings in the bank. Their response were key in this study because of their involvement in facilitating payments of FDCs buyers, FDCs sellers

and fees received during the FDCs intermediation in financial markets between the bank and parties involved.

Marketing managers were involved in providing advertising, promotion, and selling of FDCs to various potential and current clients. They provided marketing strategies that were applicable as far as FDCs are concerned. In addition, they also handled any sales problems related to the products and services.

Table 3.1. Shows the target population. It displays entire number of anticipated respondents who are senior risk managers, senior operations managers, senior credit managers and senior marketing managers in each of the listed commercial banks.

Table 3.1

Target Population

Listed commercial banks and population categories	Risk managers	Credit managers	Operations managers	Marketing managers	Total
ABSA	2	2	3	2	9
Co-operative Bank	3	4	6	4	17
Diamond Trust Bank	2	3	5	3	13
Equity Group Holdings	3	4	6	6	19
HF Group	2	2	4	3	11
I&M Holdings	2	3	6	6	17
KCB Group	3	4	4	5	16
National Bank of Kenya	1	2	4	3	10
NCBA Plc Group	3	3	4	3	13
Stanbic Holdings Plc	2	2	6	5	15
Standard Chartered Bank	2	4	5	5	16
Total	25	33	53	45	156

3.5 Sampling techniques and sample size

Sampling was the method of choosing a smaller group from a whole population from the undertakings of the study, to act represent the larger complete population (Mugenda, 2008). This study used Census method because the total population of 156 was not a very large population. That is all the respondents in the population had an equal chance of being counted.

3.6 Research instruments

Implementation of self-administered questionnaires which had open and closed ended questions was applied in this study. The closed ended questions engaged a 5 points tabular Likert scale just like Mwanja (2018) and Ng'eno (2019) successfully applied in their studies. Ordinal scaled questions in the questionnaires directed respondents on what manner to reply the questions relating to options, forwards, futures, and swaps. The reason why this study agreed to use self-administered questionnaires, was because questionnaires encouraged consistent ways of replying hence easing measurements of ideas quantitatively.

3.6.1 Pre-testing of questionnaire

It was vital to pre-test the questionnaires that were used in the study so as to guarantee that the queries questioned are effective and straightforwardly grasped by respondents. Six respondents from non-listed commercial banks in Meru were nominated by simple random method. These non-listed commercial banks located at Meru were not comprised in the key study. The six nominated respondents were 6 junior officers in risk, credit, operations and marketing departments of the banks. A junior officer was any personnel with less experience level. Junior officers were authorized to perform fewer demanding tasks in an organization as compared to

senior supervisors. They were answerable to senior supervisors pertaining the assigned tasks. The junior officers were dispensed with the surveys to reply to them. The sole purpose of doing this was to rearticulate queries that the nominated respondents did not comprehend thereby ensuring unfailing questionnaires during the main study.

3.7.2 Reliability of research instruments

Reliability was the trustworthy aptitude of an investigation instrument's outcomes when applied at a target populace (Cooper & Schindler, 2014). It guaranteed that outcomes would continue being unswerving when used again. To make sure questionnaires were dependable; the study had a pilot test as defined in section 3.6.1. Computation of Cronbach alpha constant value in defining the steadfastness of the instruments. According to Cooper and Schindler (2014), the reply frequency should have a least Cronbach alpha constant frequency of 0.7 or above which expresses high steadfastness in research.

3.7 Data collection procedure

The researcher sought introduction letter from Kenya Methodist University (KeMU). This letter was used to apply online for research permit from National Commission for Science, Technology and Innovation (NACOSTI). Once the researcher got the research permit, authorization was also sought from the bank management. Once the bank agreed, the researcher then proceeded and gathered data by the use of questionnaires. The study used the services of two research assistants who were trained at the commencement of the data collection procedure. They were equipped with confidence when introducing themselves to respondents and fluent elaboration to respondents on the pertaining of the questions. The research assistants then issued

the questionnaires to the respondents and informed them that they would pick the questionnaires after 5 days for the analysis. Once the five days ended, the respondents then proceeded to pick the questionnaires for analysis. Once done with the analysis, the questionnaires were stored in a safe place under lock and key.

3.8 Data analysis and presentation

The collected data was cleaned for completeness and consistency in preparation for analysis. Once cleaned, the data was exported into the Statistical Package for Social Sciences (SPSS) for analysis. The data collected was then analyzed using descriptive and inferential statistics. Descriptive statistics entailed the use of measures of central tendency like the mean, frequencies, percentages and standard deviation. Inferential statistics on the other hand was used to draw conclusions. The study conducted an F-test to establish the significance of the independent variables (swaps, options, forwards and futures) against the dependent variable (financial performance). The significance of variables was observed at 95% confidence level whereby, variables with a 'p' value of 0.05 and below were deemed significant while those with 'p' values above 0.05 were deemed insignificant.

3.8.1 Analysis of quantitative data

Multiple regression analysis was used in this case in order to determine the relationship between financial derivatives practices and financial performance of selected listed commercial banks in Kenya. The following regression models were used:

$$Z = \beta B + \beta_1 A_1 + \beta_2 A_2 + \beta_3 A_3 + \beta_4 A_4 + \hat{\epsilon} \dots \dots \dots (3.1a)$$

Where:

Z = Dependent variable (Financial performance of listed commercial banks)

β_i = Coefficients to be estimated

β_B = Constant

A1= Independent variable (Swaps)

A2 = Independent variable (Options)

A3 = Independent variable (Forwards)

A4 = Independent variable (Futures)

$\hat{\epsilon}$ = Error term

3.8.2 Analysis of documents (qualitative data)

Horizontal analysis technique was utilized in analyzing secondary data in this study.

This was an analysis method that related two or more years of an individual organization's financial information which was articulated in percentage form.

Horizontal analysis technique was applied in this study because a financial performance for 3 years beginning from the year 2016 to 2018 of various individual listed commercial banks was required. The study concentrated on financial reports such as statement of affairs and the income statement as secondary data constitutes.

The following formula 3.8a was used in analyzing the reports horizontally.

3.8a Base year's (A) net income- Year B's net income.....

Base year's (A) net income

3.9 Ethical consideration

The investigator primarily sought out consent to undertake the study from Kenya Methodist University (KeMu). Consent approval by KeMu allowed the researcher to acquire a research certification from the National Council of Science, Technology and Innovation (NACOSTI) to conduct the study. The investigator then requested authorization from the management members of various listed commercial banks by an authorization letter (Appendix I). Authorization by the management of various listed commercial banks gave the researcher the power to give the study's respondents letters of introduction (Appendix II). These letters pronounced the purpose of the study, agreement of the study and what was enthusiastically anticipated from the respondents while maintaining high levels of respondent's identity confidentiality.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter indicates the results of the analyzed data. The chapter has reliability statistics and response rate. Later on, the chapter gives diagnostic tests such as normality, linearity, multi collinearity and heteroscedasticity. Descriptive statistics of the four variables of the study, linear regression that includes model summary of variables separately and combined. Regression coefficients of all the variables are derived to determine the multiple regression analysis which concludes the chapter.

4.2 Reliability Test

The study pre-tested the questionnaires on 6 respondents from non-listed commercial banks in Meru were nominated by simple random method. These non-listed commercial banks located at Meru were not comprised in the key study. The six nominated respondents were 6 junior officers in risk, credit, operations and marketing departments of the banks. The results are indicated on Table 4.1.

Table 4.1
Reliability Statistics

Instrument	Cronbach's Alpha	N of Items
Questionnaire	.726	6

The results indicate the Cronbach Alpha was 0.726 for the 6 tested questionnaires. According to Cooper and Schindler (2012), the ranges of reliable Cronbach's alpha values should be between 0.7 and 1. This means that the pre-tested questionnaires were reliable and could be used in the main study.

4.3 Response Rate

This study issued 156 questionnaires to various study's respondents who were risk managers, operations managers, credit managers and marketing managers. The returned questionnaires were 137 (87.8%) while 19(12.2%) were not returned

4.4 General Information

The study inquired on how long the banks had been in operations from the respondents. Various respondents indicated the following information as shown on Table 4.2

Table 4.2
General Information

Years of operations of the Bank	Frequency	Percent	Cumulative Percent
Less than 20 years	0	0	0
Between 21-40 years	37	27	27
Between 41-60 years	91	66	93
Above 61 years	9	7	100
Total	137	100	

According to Table 4.2, 91(66%) banks had been in operations between 41-60 years while 37(27%) banks had been in operations between 21-40 years. Interestingly no listed banks in Kenya had operated in less than 20 years. These results indicated that non-listed Kenyan banks had enough experience in terms of operating years. These years boosted their capacities to generate establishment income, enact financial structures to support financial derivatives and other requirements as directed by Capital Markets Authority [CMA]. The findings also are in concurrent with Deloitte (2020) report which indicated that Kenyan banks had accumulated immense wealth of years in operations with most of them having over 15 years experience in operations.

4.5Diagnostics Tests

The study was also able to perform different types of diagnostic tests on the collected data to determine its suitability for doing linear regression analysis. The diagnostics tests done were normality, linearity, multicollinearity, autocorrelation, and heteroscedasticity test.

4.5.1 Normality

To determine whether the variables were normally distributed, the study performed the Normality test. The study used One-Sample Kolmogorov-Smirnov Test to determine the normality test since the data was above fifty respondents. Table 4.3 gave normality test.

Table 4.3

Normality Test- One-Sample Kolmogorov-Smirnov Test

		Swap	Options	Forwards	Futures	Financial Performance
N		137	137	137	137	137
Normal Parameters ^{a,b}	Mean	15.0876	17.0219	13.4234	15.7664	14.5401
	Std. Deviation	3.09761	2.53350	4.20560	3.88296	2.64301
Most Extreme Differences	Absolute	.127	.270	.136	.203	.247
	Positive	.064	.219	.136	.138	.151
	Negative	-.127	-.270	-.102	-.203	-.247
Kolmogorov-Smirnov Z		1.484	3.163	1.593	2.374	2.895
Asymp. Sig. (2-tailed)		.064	.103	.212	.052	.117

a. Test distribution is Normal

The results indicate that the asymp p-value for swap was 0.064; options p-value was 0.103; forwards p-value was 0.212; futures p-value was 0.052; and financial performance p-value was 0.117. Mishra et al. (2015) indicated that normality is normally indicated when the asymp value was above 0.05. Therefore, it was concluded that the data set was normally distributed.

4.5.2 Linearity

Linearity was performed to establish the relationship between and within the variable's groups in the study. In determining the linearity of the variables, when the value significance deviation from Linearity is above 0.05, then the relationships between the independent variables were linearly dependent (Vatcheva et al., 2016). If the value significance deviation from Linearity was less than 0.05, then the relationship between independent variables with the dependent was not linear (Vatcheva et al., 2016). Table 4.4 shows the results from the linearity test.

Table 4.4
Linearity Test

			Sum of Squares	df	Mean Square	F	Sig.
Financial performance		(Combined)	118.697	13	9.131	1.351	.193
	Between Groups	Linearity	49.641	1	49.641	7.345	.008
		Deviation from Linearity	69.056	12	5.755	.851	.598
	Swaps	Within Groups	831.332	123	6.759		
		Total	950.029	136			
Options		(Combined)	70.542	9	7.838	1.132	.345
	Between Groups	Linearity	27.302	1	27.302	3.943	.049
		Deviation from Linearity	43.239	8	5.405	.780	.621
		Within Groups	879.488	127	6.925		
		Total	950.029	136			
Forwards		(Combined)	121.002	14	8.643	1.272	.234
	Between Groups	Linearity	14.178	1	14.178	2.086	.151
		Deviation from Linearity	106.824	13	8.217	1.209	.281
		Within Groups	829.028	122	6.795		
		Total	950.029	136			
Futures		(Combined)	175.565	14	12.540	1.975	.025
	Between Groups	Linearity	34.063	1	34.063	5.366	.022
		Deviation from Linearity	141.502	13	10.885	1.715	.066
		Within Groups	774.464	122	6.348		
		Total	950.029	136			

Table 4.4 indicates that swaps deviation from linearity were 0.598; Options were 0.621; Forwards were 0.281; and futures were 0.066. This shows that all the four variables of the study relationship with independent variable was linear since they were all above 0.05.

4.5.3 Multicollinearity

The coefficient assessments can swing fiercely dependent on which other autonomous factors that is in the model. The coefficients become touchy to little changes in the model. Multicollinearity lessens the accuracy of the gauge coefficients, which debilitates the factual intensity of your relapse model. For data to be free of multicollinearity, tolerance level should be above 0.2 and VIF should be below 5. The study therefore assed to check if there was a multicollinearity issue in the data. The results are shown in Table 4.5.

Table 4.5

Multicollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Swaps	.524	1.907
Options	.925	1.082
Forwards	.674	1.484
Futures	.411	2.436

According to Table 4.5 Swaps had a tolerance value of 0.524 and VIF of 1.907; Options had a tolerance value of 0.925 and VIF of 1.082; Forwards had a tolerance value of 0.674 and VIF of 1.484; Futures had a tolerance value of 0.411 and VIF of 2.436. These results therefore indicated that the study variables did not have multicollinearity problem.

4.5.4 Autocorrelation

The study also performed autocorrelation test. This kind of test was important in detecting whether the data is random or not, and whether data can be relied upon for intended analysis. This test was done using Durbin Watson. When the Durbin Watson value is less than 0 but more than -1, there is negative autocorrelation. If the value is above 0, there is a positive autocorrelation. Table 4.6 gives the results on autocorrelation test.

Table 4.6
Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.868 ^a	.755	.730	2.46552	1.650

a. Predictors: (Constant), Swaps, Options, Forwards, Futures

b. Dependent Variable: Financial performance

From the Table 4.6, Durbin Watson was 1.650. This value was above 0 indicating a strong correlation between variables of the study.

4.5.5 Heteroscedasticity

This study performed heteroscedasticity test on the variables under investigation using correlation coefficients values. Table 4.7 gives the results obtained.

Table 4.7
Heteroscedasticity Test

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	4.041	2.219		1.821	.071
Swaps	.156	.094	.238	2.156	.063
Options	.203	.087	.149	1.793	.075
Forwards	.206	.061	.328	3.365	.241
Futures	.128	.085	.188	1.507	.134

a. Dependent Variable: Financial Performance

The results in Table 4.7 indicated that swaps had significance level of 0.063; Options had a significance value of 0.075; Forwards had a significance value of 0.241; and futures had a significance value of 0.134. Therefore, there was no heteroscedasticity problem with the variables of study since all the significant values were all greater than 0.05.

4.6 Descriptive Statistics of Financial Performance

The study examined the influence of financial derivatives on financial performance. This was measured by posing some sentiments in Likert scale where response choices included strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). Table 4.8 shows the results.

Table 4.8
Descriptive Statistics on Financial Performance

Statements N=137	1	2	3	4	5	Mea n	Std Dev
Swaps have improved financial performance of the bank	5(3%)	61(45%)	0(0%)	71(52%)	0(0%)	3.00	1.06
Options have improved financial performance of the bank	3(2%)	32(23%)	0(0%)	68(50%)	34(25%)	3.72	1.14
Forwards have improved financial performance of the bank	3(2%)	3(2%)	0(0%)	12(9%)	119(87%)	4.76	0.76
Futures have improved financial performance of the bank	8(6%)	52(38%)	3(2%)	71(52%)	3(2%)	3.07	1.11

The results on Table 4.8 indicate that majority of the respondents agreed that forwards has magnificently improved financial performance of the banks. This statement had a mean of 4.76 and a standard deviation of 0.76. The same study also indicated that respondents also disagreed that swaps had improved financial performance of the banks. This statement had a mean of 3.00 and a standard deviation 1.06. Bowen et al. (2017) confirmed that swaps kind of derivatives were easily affected by many factors that were beyond the originating banks and securities market hence very unpredictable in improving performance on their indicators in banks.

4.6.1: Financial performance indicators

The researcher assessed the financial performance of listed banks. The financial performance indicators such as ROE, ROA and NIM for a period between 2016-2018. The rates were analyzed and their means derived as indicated on Table 4.9.

Table 4.9
Financial Performance Indicators

Variable	N	Mean	StdDev
ROE	11	3.0	1.73
ROA	11	4.5	0.12
NIM	11	3.6	1.89

According to Table 4.9, the performance indicators such as ROA had the highest mean of 4.5 and standard deviation of 0.12, while ROE had the lowest mean of 3.0 and a standard deviation of 1.73. It is therefore indicating that owners of the banks had not benefitted maximally from the financial derivatives venture. This could be as a result of high costs associated with derivatives operations requirements hence leaving very low dividends for the equity holders to enjoy. Capital Market Authority Kenya (2019) indicates that for derivatives exchange market NSE approval, there are specific requirements that banks are supposed to adhere to and in which are very expensive.

4.7 Descriptive Statistics of the Influence of Swaps on Financial Performance

The first objective of the study was to establish influence of swaps on financial performance. This first objective had indicators such as equity swaps, currency swaps, and interest rate swaps. To achieve this objective, the study developed a questionnaire that had statements. In the questionnaires, the respondents were either supposed to 1-Strongly disagree, 2-disagree, 3- Neither agree nor disagree, 4- Agree and 5- Strongly agree. Table 4.10 gave the results derived

Table 4.10
Descriptive Statistics on Swaps

Statements N=137	1	2	3	4	5	Mean	Std Dev
Intermediation's role of the bank between equity swap's buyers and sellers has improved spreads	0(0%)	29(21%)	0(0%)	56(41%)	52(38)	3.96	1.11
Equity swaps have increased sales of the bank related to derivatives.	3(2%)	29(21%)	0(0%)	56(41%)	49(36)	3.87	1.18
Centrally clearing have reduced risks associated with defaulted equity	4(3%)	13(9%)	2(2%)	54(39%)	64(47)	4.18	1.10
Paid up equity swaps have reduced their storage costs	20(15)	24(17%)	2(2%)	27(20%)	64(46)	3.66	1.55

According to Table 4.10, most of the respondents agreed that centrally clearing had reduced risks associated with defaulted equity. It had a mean of 4.18 and a standard deviation of 1.10. However, the most disagreed statement indicated that paid up equity swaps had reduced their storage costs. It had a mean of 3.66 and a standard deviation of 1.55. These results show that though swaps clients had ensured they pay up on the bought swap contracts, there was a significant number of unbought swap contracts whereby currencies remained hence the storage costs did not decline. This meant that a volatility of forex exchange was delimiting clients from engaging highly on swap contracts especially in tandem with dollar-shilling volatility. In agreement, Bank for International Settlements (2018) indicated that over the counter derivatives such as swaps contracts were minimally purchased due to forex exchange volatility despite having incentives such as the benefit of central clearance.

4.7.1 Model Summary of Swaps

The study examined further the level of linear relationship between swaps and financial performance. This was done through the using a model summary. Table 4.11 gives the results derived.

Table 4.11

Model Summary of Swaps

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.479 ^a	.229	.245	2.58255	1.144

a. Predictors: (Constant), Swaps

b. Dependent Variable: Financial Performance

The results indicate that swaps had an R value of .479^a and Durbin Watson value of 1.144 showing there is a strong correlation between the two variables, while the R-

square is 0.229. This implies that swaps as a paradigm predicted 22.9% of financial performance variable in this study. The remaining 77.1% is due to other factors not examined in this specific single paradigm. These results mean that sales of swaps contracts was low and there were increasing costs associated with these kind of derivatives hence reducing profits. A previous study such as Bosonalfa (2019) agreed with the results in that when derivatives risk exposure is disclosed, there was less purchases leading to low influence on bank profits.

4.7.2 Analysis of Variance of Swaps

The study had the first hypothesis that there was no relationship between swaps and financial performance of selected listed commercial banks in Kenya. To ascertain whether indeed the hypothesis was true or not, the study evaluated the analysis of variance (ANOVA) of the Swaps variable. Table 4.12 gives the results.

Table 4.12
Analysis of Variance of Swaps

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	49.641	1	49.641	7.443	.007 ^b
Residual	900.388	135	6.670		
Total	950.029	136			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Swaps

Table 4.12 indicated the significant p-value was 0.007. This being below than 0.05 enabled the study reject the null hypothesis that there was no relationship between swaps and financial performance of selected listed commercial banks in Kenya. That

is, swaps had a statistically significant relationship with financial performance. This means that in as much as swaps had no much profits, their significance towards contributing to financial performance could not be looked down. This is because everything relating to banking activities related to how Kenyan shilling verse American dollar in foreign exchange trading would perform. The higher the gap between the two, the more it became more expensive in banking operations. Bowen et al. (2017) named foreign exchange trading as one of the factors that influence growth of derivatives market and also as a factor that affect businesses performance Kenya.

4.8 Descriptive Statistics of the Influence of Options on Financial Performance

The second objective of the study was to establish influence of options on financial performance. This second objective had indicators such put options, call options and equity options. To achieve this objective, the study developed a questionnaire that had statements. In the questionnaires, the respondents were either supposed to 1- Strongly disagree, 2-disagree, 3- Neither agree nor disagree, 4- Agree and 5- Strongly agree. Table 4.13 gave the results derived.

Table 4.13*Descriptive Statistics on Options*

Statements	1	2	3	4	5	Mean	StdDev
N=137							
Clear procedure used to solve options price discrepancies	2(2%)	1(1%)	0(0%)	18(13%)	116(84%)	4.79	0.62
Options derivatives market activities are improving in this bank	0(0%)	29(21%)	0(0%)	70(51%)	38(28%)	3.85	1.05
Strong guidelines established to cushion investors due to low information of underlying assets.	0(0%)	19(14%)	0(0%)	69(50%)	49(36%)	4.08	0.96
Frequent training to customers and staff	0(0%)	9(7%)	0(0%)	69(50%)	59(43%)	4.30	0.78

The results indicate that most respondents agreed that there were clear procedures used to solve options price discrepancies. It had a mean of 4.79 and standard deviation of 0.62. However, most respondents disagreed that options derivatives market activities were improving in the banks. It had a mean of 3.85 and standard deviation of 1.05. These results indicated that commercial banks were really incurring more costs as compared to profits generated. This is because there could be errors made by the employees when engaged in various options derivatives markets. However, trainings were being continuously done as indicated by a mean of 4.30 and

standard deviation of 0.78. European Central Bank (2019b) confirms that various errors made during derivatives transactions significantly affected the overall profit generations of the banks.

The study also inquired through an open-ended questionnaire format on the challenges of investors not having full knowledge on various financial matters such as options derivatives in improving financial performance of banks. The respondents indicated that when clients did not know a lot about on financial products they tend to avoid purchasing or telling their close associates on the products; incase of losses from options products made through blind purchases of the products, the bank may lose the clients and probably face legal issues when sued by the clients. In agreement, Hasbrouck (1993) indicates that when assessing the security market's quality, one of the assessments ranges on how much clients know in terms of the purchased securities such as derivatives.

The study inquired the various procedures used by investors to purchase options products in your bank. Most banks respondents indicated that there are brochures issuance given to clients to educate them on the various types of options. Thereafter, they fill-in options purchase forms that are accompanied with various copies of documents such as Identification cards, KRA pin certificates, and banking account details. Once verified, the bank opens a CDC account which would be used in making purchase or sales of options derivatives. They are given the current options prices and quantity available. They then order and pay the options derivatives purchased. The bank then issues them with certificates to validate the purchase. Federal Reserve Bank of New York (2019a) gives also a more detailed procedure for buying options in a bank.

These results indicate that indeed bank staff needed to up their game on explaining full information on the options derivatives so that when a client is making the purchase, they are well knowledgeable. This knowledge should begin from the procedures followed when making a purchase, sale or transfer of option derivatives in the securities exchange market.

.8.1 Model Summary of Options

The study examined further the level of linear relationship between options and financial performance. This was done through the using a model summary. Table 4.14 gives the results derived.

Table 4.14

Model Summary of Options

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.793 ^a	.629	.712	2.61439	1.292

a. Predictors: (Constant), Options

b. Dependent Variable: Financial Performance

The results indicate that options had an R value of .793^a and Durbin Watson value of 1.292 showing there is a strong correlation between the two variables, while the R-square is 0.629. This implies that options as a paradigm predicted 62.9% of financial performance variable in this study. The remaining 37.1% is due to other factors not examined in this specific single paradigm. These results mean that when financial derivatives owners were given the rights and not forced to purchase or vend an indicated amount of an underlying asset at a strike price or exercise price at or earlier than the expiry date of the options, there was an above average purchase. Ogbonna (2018) confirm that financial derivatives owners in Nigeria were given the rights and not forced to purchase or vend options hence improvement in options' transactions.

4.8.2 Analysis of Variance of Options

The study had the second hypothesis that there was no relationship between options and financial performance of selected listed commercial banks in Kenya. To ascertain whether indeed the hypothesis was true or not, the study evaluated the analysis of variance (ANOVA) of the options variable. Table 4.15 gives the results.

Table 4.15

Analysis of Variance of Options

Model	Sum of Squares	Df	Mean Square	F	Sig.
1					
Regression	27.302	1	27.302	3.994	.018 ^b
Residual	922.727	135	6.835		
Total	950.029	136			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Options

Table 4.15 indicated the significant p-value was 0.018. This being below than 0.05 enabled the study to reject the null hypothesis that there was no relationship between options and financial performance of selected listed commercial banks in Kenya. That is, options had a statistically significant relationship with financial performance. This meant that options had a noted relevance as far as financial performance of banks is concerned.

Onura (2019) also found out that when Nigerian capital markets introduced various derivatives such as option, it led to profitability not only at capital markets but also originating financial institutions such as banks.

4.9 Descriptive Statistics of the Influence of Forwards on Financial Performance

The third objective of the study was to establish influence of forwards on financial performance. This third objective had indicators such as commodity forwards, interest rate forwards, and foreign exchange forwards. To achieve this objective, the study developed a questionnaire that had statements. In the questionnaires, the respondents were either supposed to 1-Strongly disagree, 2-disagree, 3- Neither agree nor disagree, 4- Agree and 5- Strongly agree. Table 4.16 gave the results derived.

Table 4.16*Descriptive Statistics on Forwards*

Statements	1	2	3	4	5	Mean	StdDev
N=137							
Forward derivatives growth has been highly facilitated by online banking systems such as RTGS	11(8%)	36(26)	0(0%)	46(34)	44(32)	3.55	1.38
There is a clear pricing structure on forwards derivatives in this bank	11(8%)	42(31)	2(2%)	55(40)	27(19)	3.33	1.31
Customers get oriented on various types of forward derivatives such as commodity forwards, interest rate and foreign exchange forward	30(22)	15(11)	12(9)	18(13)	62(45)	3.49	1.65
Maturity dates of forward contracts are communicated on clients and processing of payments is done without any hitches.	40(29)	20(15%)	11(8%)	25(18%)	41(30%)	3.05	1.65

The results show that most of the respondents agreed that customers got oriented on various types of forward derivatives such as commodity forwards, interest rate forwards and foreign exchange forwards. It had a mean of 3.49 and a standard deviation of 1.65. However, the respondents disagreed greatly on a mean of 3.05 and standard deviation of 1.65 that maturity dates of forward contracts are communicated on clients and processing of payments is done without any hitches. What this means is that most of forward agreements are not kept as per agreement hence resulting to mismatch when processing payments. In addition, since most forwards take a long time to mature, when banks are restructuring their computerized systems, they lose client's contact information through misplacement or not correctly captured in the new system hence causing lack of communications. This kind of issue was also noticed by (Yeşildağ, 2019). According to Yeşildağ (2019) one of the financial risks and derivative use of non-financial companies in Turkey was as a result of computer restructuring hence not capturing all clients' information in the new system due to lack of resources such as qualified human resources.

In addition, the study examined various open-ended questions. The first question required respondents to highlight the relevance of International Financial regulations standards (IFRS) regulation on forward derivative market. The respondents indicated that IFRS provided the guidelines on how to properly record derivatives transactions, update books of accounts, develop income statement on derivatives operations, and maintain accounting and financial integrity in derivatives operations. Price Water house Cooper (2019) equated that emerging relevance of IFRS in banking business was on recording, updating and generating various financial reports.

The study also required respondents to explain how managing commodity price risk in forward derivatives influenced growth of financial performance of the banks. The respondents indicated that when clients discovered that the banks had hedged against any misfortunes related to unexpected losses, they developed confidence to purchase more forward derivatives contract. Lastly the study inquired on the causes of low application of simple forwards agreements in the banks. The respondents stated that lack of exhaustive marketing; low confidence of bank management on the forwards hence not emphasizing the importance of forwards to staffs so as to offer suggestions to walk-ins; and limited financial knowledge of derivatives products in general among clients so that they can narrow down to forward agreements were the causes. Shahid et al. (2019) also indicated that reasons that were exposing banks on credit risk that affected the securities related to lack of management support and poor knowledge on all products by staff.

4.9.1 Model Summary of Forwards

The study examined further the level of linear relationship between forwards and financial performance. This was done through the using a model summary. Table 4.17 gives the results derived.

Table 4.17

Model Summary of Forwards

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.903 ^a	.815	.808	2.63291	1.286

a. Predictors: (Constant), Forwards

b. Dependent Variable: Financial Performance

The results indicate that forwards had an R value of .903^a and Durbin Watson value of 1.286 showing there is a strong correlation between the two variables, while the R-square is 0.815. This implies that forwards as a paradigm predicted 81.5% of financial performance variable in this study. The remaining 18.5% is due to other factors not examined in this specific single paradigm. These results show that forward derivatives contracts were highly purchased by clients as compared to other derivatives such as swaps, option and futures. However, there was still a room for improvement on incorporating clients in all sectors of the economy. This is because, it was discovered that there was unexhaustive marketing initiatives by the banks leading to clients having limited knowledge on who can access these financial products. Ikiao (2018) found similar results in that poor marketing and low financial product knowledge hampered the development of Kenyan derivatives market.

4.9.2 Analysis of Variance of Forwards

The study had the third hypothesis that there was no relationship between forwards and financial performance of selected listed commercial banks in Kenya. To ascertain whether indeed the hypothesis was true or not, the study evaluated the analysis of variance (ANOVA) of the forwards variable. Table 4.18 gives the results.

Table 4.18

Analysis of Variance of Forwards

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.178	1	14.178	2.045	.005 ^b
	Residual	935.852	135	6.932		
	Total	950.029	136			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Forwards

Table 4.18 indicated the significant p-value was 0.005. This being below than 0.05 enabled the study reject the null hypothesis that there was no relationship between forwards and financial performance of selected listed commercial banks in Kenya. That is, forwards had a statistically significant relationship with financial performance. The results meant that forwards contributed majorly on financial performance of banks as far as derivatives market is concerned.

4.10 Descriptive Statistics of the Influence of Futures on Financial Performance

The fourth objective of the study was to establish influence of futures on financial performance. This fourth objective had indicators such as commodity futures, interest rate futures, and foreign exchange futures. To achieve this objective, the study developed a questionnaire that had statements. In the questionnaires, the respondents were either supposed to 1-Strongly disagree, 2-disagree, 3- Neither agree nor disagree, 4- Agree and 5- Strongly agree. Table 4.19 gives the results derived.

Table 4.19*Descriptive Statistics on Futures*

Statements N=137	1	2	3	4	5	Mean	Std Dev
There are customized future products such as the ones that hedge crop yields against weather uncertainties from bad weather derivative	6(4%)	27(20%)	0(0%)	35(26%)	69(50%)	3.98	1.30
The bank ensures that all government regulations in conducting futures derivative s functions are followed	3(2%)	19(14%)	1(1%)	28(20%)	86(63%)	4.28	1.5
There are equipped staff who have wealth of experience in handling futures derivatives	15(11%)	16(12%)	5(4%)	20(15%)	81(58%)	3.99	1.45
The turn-around time for handling clients complained is within 3-5 days duration	23(17%)	19(14%)	6(4%)	42(31%)	47(34%)	3.52	1.49

According to Table 4.19, most respondents agreed that the banks ensure that all government regulations in conducting futures derivative s functions are followed. It had a mean of 4.28 and standard deviation of 1.5. However, most respondents disagreed that the turn-around time for handling clients complained was within 3-5 days duration. It had a mean of 3.52 and a standard deviation of 1.49. These results proved that banks lacked enough qualified staff to amicably handle all issues and report on time. In addition, it was evident that the banks did not have complete infrastructure set up that is required to run financial derivatives such as futures. That is why there could be delays. In agreement, Jongadsayakul (2019) complains that some of the determinants influencing investor behavior in SET50 index futures markets was majorly due to lack of infrastructure and human capital.

The study inquired also through an open-ended questionnaire on various issues faced by Kenyan listed commercial banks while operating in derivatives markets. The respondents harmoniously indicated that lack of skilled staff, high costs and unfair government regulations on financial derivatives. In addition, the study inquired the structures that were used in banks to have enforceable dominant futures derivatives contracts. The structures indicated included having a way of ensuring clients undergo training on futures derivatives; secured CDC accounts that send text message once a purchase or a sale of futures is done; and continuous customer care services which run for 24 hours per day. Lastly, the study inquired on the determinants of investor behavior in futures markets in the banks. The respondents indicated that price volatility, government policies and regulations; and management systems in place in the banks. Rastogi and Athaley (2019) also established that price volatility,

government policies and management structures enable futures derivatives to exist and thrive for a periodic space of time.

4.10.1 Model Summary of Futures

The study examined further the level of linear relationship between futures and financial performance. This was done through the use of a model summary. Table 4.20 gives the results derived.

Table 4.20
Model Summary of Futures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.653 ^a	.426	.029	2.60479	1.184

a. Predictors: (Constant), Futures

b. Dependent Variable: Financial Performance

The results indicate that futures had an R value of .653^a and Durbin Watson value of 1.184 showing there is a strong correlation between the two variables, while the R-square is 0.426. This implies that futures as a paradigm predicted 42.6% of financial performance variable in this study. The remaining 57.4% is due to other factors not examined in this specific single paradigm. In agreement, futures derivatives are majorly affected by volatility issues hence futures lowly affect financial performance of the banks. In agreement, Hull (2018) states that the higher the risk associated with a derivative or financial product, the lower the impact to financial performance.

4.10.2 Analysis of Variance of Futures

The study had the fourth hypothesis that there was no relationship between futures and financial performance of selected listed commercial banks in Kenya. To ascertain whether indeed the hypothesis was true or not, the study evaluated the analysis of variance (ANOVA) of the forwards variable. Table 4.21 gives the results.

Table 4.21
Analysis of Variance of Futures

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	34.063	1	34.063	5.020	.027 ^b
	Residual	915.967	135	6.785		
	Total	950.029	136			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Futures

Table 4.21 indicated the significant p-value was 0.027. This being below than 0.05 enabled the researcher reject the null hypothesis that there was no relationship between futures and financial performance of selected listed commercial banks in Kenya. That is, futures had a statistically significant relationship with financial performance. These results are in agreement with Vo et al. (2019b) who explained the relevance of derivatives to growth of four global economies. According to Vo et al. (2019b), futures derivatives contribute a lot on financial performance due to ability todictate their price changes unlike other form of derivatives.

4.11 Multiple Linear Regression

The study assessed model summary, ANOVA and regression coefficients of the relationship between combined independent variables and the dependent variable.

4.11.1 Model Summary of Financial Derivatives

The study examined further the level of linear relationship between combined financial derivatives and financial performance. This was done through the using a model summary. Table 4.22 gives the results derived.

Table 4.22

Model Summary of Financial Derivatives

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.869 ^a	.755	.730	2.46552	1.650

a. Predictors: (Constant), Swaps, Options, Forwards, Futures

b. Dependent Variable: Financial Performance

The results indicate that financial derivatives had an R value of .869^a and Durbin Watson value of 1.650 showing there is a strong correlation between the two variables, while the R-square is 0.755. This implies that financial derivatives as a paradigm predicted 75.5% of financial performance variable in this study. The remaining 24.5% is due to other factors not examined in this specific single paradigm. These results mean that in general, when derivatives sales and purchases are done in an informed manner can significantly contribute towards the financial performance of banks. Capital Market Authority Kenya (2019) revealed that indeed financial performance of banks in Kenya had improved due to incorporation of derivatives as part of their products.

4.11.2 Analysis of Variance of financial derivatives

The study had intentions of ascertaining the linear relationship between financial derivatives and financial performance of selected listed commercial banks in Kenya. To ascertain the presence of this influence, (ANOVA) was conducted. Table 4.23 gives the results.

Table 4.23

Analysis of Variance of Financial Derivatives

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	147.632	4	36.908	6.072	.000 ^b
	Residual	802.397	132	6.079		
	Total	950.029	136			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Swaps, Options, Forwards, Futures Independent variable3,

According to Table 4.23, the significance level was 0.000. Since it was less than 0.05, the study indicated that there is a linear relationship between financial derivatives and financial performance of selected listed commercial banks in Kenya. It is also supported by a report from CBK (2018). According to CBK (2018), trading on financial derivatives had contributed to increase in the income levels of the banks in the financial year 2017/2018.

4.12 Regression Coefficients

The study also analyzed regression coefficients of financial derivatives and financial performance. It was discovered that swaps had a $\beta=.156$, $P=0.033$; options had a $\beta=.0.203$, $P=0.075$; Forwards had a $\beta=-0.206$, $P=.0.241$; and futures had a $\beta=0.128$, $P=0.134$. The results are indicated in Table 4.24.

Table 4.24
Regression Coefficients of Financial Derivatives

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	4.041	2.219		1.821	.071
Swaps	.15	.094	.238	2.156	.063
Options	.203	.087	.149	1.793	.075
Forwards	.206	.061	.328	3.365	.241
Futures	.128	.085	.188	1.507	.134

a. Dependent Variable: Financial Performance

The general model of the study was: $Z = \beta B + \beta_1 A_1 + \beta_2 A_2 + \beta_3 A_3 + \beta_4 A_4$. Where: Z was financial performance; B was constant; A1 was swaps; A2 was options; A3 was forwards; and A4 was futures. When the coefficients were put into the model the model was: financial performance = $4.041(B) + 0.156(A_1) + 0.203(A_2) + 0.206(A_3) + 0.128(A_4)$. That was to say by adding a unit of A1, A2, A3, A4, financial performance increased or decreased by $4.041 + 0.156 + 0.203 + 0.206 + 0.128$. These results indicate that the combined results show that the model is valid and is statistically significant, but each construct becomes insignificant in a combined model as indicated by sig. values in the regression weight table. These results were also found by Chepkorir (2018) when the study established that portfolio diversification were insignificant when combined together.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The study examined relationship between financial derivatives and financial performance of selected listed commercial banks in Kenya. The objectives of the study were to assess the influence of swaps, options, forwards and futures on financial performance of listed commercial banks in Kenya. Four theories that were used in this study included risk management theory, capital irrelevance theory, financial intermediation theory and normative decision-making theory to guide swaps, options, forwards and futures respectively. Descriptive research design was used when collecting data using closed ended questionnaires from the selected 11 listed commercial banks in Kenya. Required data was provided by 156 risk managers, operations managers, operations managers and marketing managers to participate in the study. Census sampling technique was used due to the small target population hence every listed commercial bank was included. Data was analyzed using descriptive statistics on all variables; mean, percentages and standard deviations. Later on, univariate and multiple linear regression analysis were done.

5.2 Summary of the results

The study provided summary of the results gotten after analysis was conducted. The results analyzed on each variable are provided in section 5.21 to 5.2.4.

5.2.1 Swaps

The first objective of the study was to establish influence of swaps on financial performance. This first objective had indicators such as equity swaps, currency swaps, and interest rate swaps. Most of the respondents agreed that centrally clearing had reduced risks associated with defaulted equity. It had a mean of 4.18 and a standard deviation of 1.10. However, the most disagreed statement indicated that paid up equity swaps had reduced their storage costs. It had a mean of 3.66 and a standard deviation of 1.55. The results further indicated that swaps had an R value of .479^a and Durbin Watson value of 1.144 showing there was a strong correlation between the two variables, while the R-square was 0.229. This implied that swaps as a paradigm predicted 22.9% of financial performance variable in this study. Swaps also had a significant p-value of 0.007.

5.2.2 Options

The second objective of the study was to establish influence of options on financial performance. This second objective had indicators such put options, call options and equity options. Most respondents agreed that there were clear procedures used to solve options price discrepancies. It had a mean of 4.79 and standard deviation of 0.62. However, most respondents disagreed that options derivatives market activities were improving in the banks. It had a mean of 3.85 and standard deviation of 1.05. The results further indicated that options had an R value of .793^a and Durbin Watson value of 1.292 showing there was a strong correlation between the two variables,

while the R-square was 0.629. This implied that options as a paradigm predicted 62.9% of financial performance variable in this study. Options also had a significant p-value of 0.018.

5.2.3 Forwards

The third objective of the study was to establish influence of forwards on financial performance. This third objective had indicators such as commodity forwards, interest rate forwards, and foreign exchange forwards. Most of the respondents agreed that customers got oriented on various types of forward derivatives such as commodity forwards, interest rate forwards and foreign exchange forwards. It had a mean of 3.49 and a standard deviation of 1.65. However, the respondents disagreed greatly on a mean of 3.05 and standard deviation of 1.65 that maturity dates of forward contracts are communicated on clients and processing of payments is done without any hitches. The results further indicated that forwards had an R value of .903^a and Durbin Watson value of 1.286 showing there was a strong correlation between the two variables, while the R-square was 0.815. This implied that forwards as a paradigm predicted 81.5% of financial performance variable in this study. Forwards also had a significant p-value of 0.005.

5.2.4 Futures

The fourth objective of the study was to establish influence of futures on financial performance. This fourth objective had indicators such as commodity futures, interest rate futures, and foreign exchange futures. Most respondents agreed that the banks ensure that all government regulations in conducting futures derivative s functions are followed. It had a mean of 4.28 and standard deviation of 1.5. However, most respondents disagreed that the turn-around time for handling clients

complained was within 3-5 days duration. It had a mean of 3.52 and a standard deviation of 1.49. The results further indicated that futures had an R value of .653^a and Durbin Watson value of 1.184 showing there was a strong correlation between the two variables, while the R-square was 0.426. This implied that futures as a paradigm predicted 42.6% of financial performance variable in this study. Futures also had a significant p-value of 0.027.

5.3 Conclusion of the study

The study indicated that there was a linear relationship between financial derivatives and financial performance of selected listed commercial banks in Kenya. Swaps had a statistically significant relationship with financial performance. The results showed that though swaps clients had ensured they paid up on the bought swap contracts, there was a significant number of unbought swap contracts whereby currencies remained hence the storage costs did not decline. This meant that a volatility of forex exchange was delimiting clients from engaging highly on swap contracts especially in tandem with dollar-shilling volatility. The study discovered that sales of swaps contracts was low and there were increasing costs associated with these kind of derivatives hence reducing profits.

Options had a statistically significant relationship with financial performance. The results indicated that commercial banks were really incurring more costs as compared to profits generated. This is because there could be errors made by the employees when engaged in various options derivatives markets. In addition, when financial derivatives owners were given the rights and not forced to purchase or vend an indicated amount of an underlying asset at a strike price or exercise price at or earlier than the expiry date of the options, there was an above average purchase

Forwards had a statistically significant relationship with financial performance. The results indicated that most of forward agreements are not kept as per agreement by either party failing to keep their word hence resulting to mismatch when processing payments. In addition, since most forwards take a long time to mature, when banks were restructuring their computerized systems, they lost client's contact information through misplacement or not correctly capturing in the new system hence causing lack of communications. In addition, the results showed that forward derivatives contracts were highly purchased by clients as compared to other derivatives such as swaps, option and futures. However, there was still a room for improvement on incorporating clients in all sectors of the economy. This is because, it was discovered that there was unexhaustive marketing initiatives by the banks leading to clients having limited knowledge on who can access these financial products

Futures had a statistically significant relationship with financial performance. These results proved that the banks lacked enough qualified staff to amicably handle all issues and report on time. In addition, it was evident that the banks did not have complete infrastructure set up that is required to run financial derivatives such as futures. That is why there could be delays. In addition, futures derivatives are majorly affected by volatility issues hence futures lowly affect financial performance of the banks.

5.4 Recommendation of the study

The study recommended that there should be a revival of aggressive marketing initiatives in the banking sectors to enable incorporation of more clients into swaps derivatives contracts. Further on, the bank management should also ensure that foundational training is offered on forex trading to its staff. This will enable equip

bank staff on how to trade on swaps derivatives at safer margins and more realistically to avoid massive unexpected losses that would turn off clients. In addition, the government should enact reasonable policies that range from costs charged and laws that enable banks to engage in derivatives markets without any fear whatsoever on prejudice. There should be a partnership between banks and insurance firms so that the funds are secured by insurance firms. This initiative would promote confidence of the clients towards entrusting the banks with their money invested in swaps derivatives.

On options, the study recommends that the bank staff need to up their game on explaining full information on the options derivatives so that when a client is making the purchase, they are well knowledgeable. This knowledge should begin from the procedures followed when making a purchase, sale or transfer of option derivatives in the securities exchange market. In addition, any costs associated with the options derivatives should be fully communicated to clients priorly to avoid premature termination of options derivatives contracts. Further on, there should be more training on banks staffs by the bank management so that they are equipped with knowledge on the specifics of options derivatives trading. By doing so, the chances of errors would be minimized.

The study recommends that on the forward derivatives, the bank management should come up with policies that are initially communicated to clients on the repercussions of not keeping their end of bargain. Strict fines should be charged to few rogue clients who do not fulfill the full conditions of the forward contract. The government should also develop policies on any late payments or loss of client's data by the

banks. These policies should be enacted so as to safeguard the interests of the clients who have active forward contracts through the banks. The policies could range from hefty fines and provoking the license of the bank when they complain are extreme. Further on, the marketing department should promote various creative marketing initiatives that leads to clients having full knowledge on who can access these financial products. This would sharpen the knowledge of clients to a point that they could even bring in referrals from their close friends, colleagues and relatives.

On futures derivatives, the study recommends that commercial banks management should incorporate more qualified staff in their human resource pool. This should be done by recruiting qualified staff who have wealth of experience in trading futures derivatives. The NSE should regulate the trading activities on futures derivatives to create a reasonably competitive platform that is workable for banks. The government of Kenya should also add more laws that guide banks and investors on future derivatives activities so that they are protected from unnecessary volatility losses.

5.5 Suggestions of future research

Since derivatives have just began in NSE, the current study concentrated on the four main types of derivatives which were swaps, options, forwards and futures. The future studies should incorporate more types of derivatives in their examination to determine their influence on financial performance.

Further on, the current study examined the influence of derivatives on financial performance of listed commercial banks. Future studies should explore the influence of derivatives on the performance of other financial institutions such as NSE, investment firms and also non -financial institutions that trade on derivatives.

REFERENCES

- Abdullai, H. M., & Micheni, E. M. (2018). Effect of internet banking on operational performance of commercial banks in Nakuru County, Kenya. *International Journal of Economics, Finance and Management Sciences*, 6(2), 60-65. <https://doi.org/10.11648/j.ijefm.20180602.14>.
- Absa Group Limited (2019). *Absa Africa financial markets index 2019*. <https://www.omfif.org/wp-content/uploads/2019/10/Absa-Africa-Financial-Markets-Index-2019.pdf>
- African Business Magazine (2019). *Special report: Africa's top 100 banks 2019*. <https://africanbusinessmagazine.com/africas-top-100-banks/special-report-africas-top-100-banks-2019/>
- African Development Bank (2018). *Information statement report*. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Financial-Information/2018_-Information_Statement.pdf
- African Market (2019). *Barclays futures begin trading at the Nairobi derivatives market*. <https://www.african-markets.com/en/stock-markets/nse/barclays-futures-begin-trading-at-the-nairobi-derivatives-market>
- Allen, F., & Santomero, A. M. (1997). The theory of financial intermediation. *Journal of Banking & Finance*, 21(11), 1461-1485. [https://doi.org/10.1016/S0378-4266\(97\)00032-0](https://doi.org/10.1016/S0378-4266(97)00032-0)
- Al-slehat, Z. A. F., Al-Sharif, B. M., & Qwader, A. (2018). The factors affecting the use of financial derivatives' instruments: An applied study on the Jordanian commercial banking sector. *Accounting and Finance Research*, 7(3), 67-77. <https://doi.org/10.5430/afr.v7n3p67>
- Aryee, G. I. (2019). *Bank of Ghana's forwards forex exchange sale to inspire the growth of derivative market*. <https://www.ghanaweb.com/GhanaHomePage/business/BoG-s-forward-FX-sale-to-inspire-the-growth-of-derivative-market-799091>
- Asuming, P. O., Agyei, L. G. O., & Mohammed, J. I. (2018) Financial Inclusion in Sub-Saharan Africa: Recent Trends and Determinants, *Journal of African Business*, 20 (1), 112-134. <https://doi.org/10.1080/15228916.2018.1484209>
- Bank for International Settlements (2019). *Statistical release: OTC derivatives statistics at end of June 2019*. https://www.bis.org/publ/otc_hy1911.pdf
- Bank for International Settlements (2018). *Incentives to centrally clear over-the-counter (OTC) derivatives. A post-implementation evaluation of the effects of the G20 financial regulatory reforms – final report*. <https://www.bis.org/publ/othp29.pdf>
- Bank for International Settlements (2016). *The failure of covered interest parity: FX hedging demand and costly balance sheets*. <https://www.bis.org/publ/work590.pdf>
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal Personality and Social Psychology*, 51(6), 1173-1182. <https://pubmed.ncbi.nlm.nih.gov/3806354/>

- Bosonalfa (2019). *Risk disclosure booklet*. http://bosonalfa.com/ru/system/files/page/13/risk_disclosure_booklet_050919.pdf
- Bowen, E. C., Kaburu, M., & Mwambia, F. (2017). Factors influencing growth of derivatives market in Kenya: A case study of Nairobi Securities Exchange. *The Strategic Journal of Business & Change Management*, 4(3), 704-723. <http://strategicjournals.com/index.php/journal/article/download/535/559>
- Capital Market Authority Kenya (2019). *Derivatives exchange market NSE approval*. https://www.cma.or.ke/index.php?option=com_content&view=article&id=562:press-release-derivatives-exchange-market-nse-approval&catid=12:press-center&Itemid=207
- Central Bank of Kenya (2018). *Annual report and financial statements 2017/18*. https://www.centralbank.go.ke/uploads/cbk_annual_reports/665458124_Annual%20Report%202917%2018%20low%20resolution.pdf
- Certified Financial Analysts Institute (2013). *Fundamentals of futures and options*. (1st Ed.). CFA Institute Research Foundation. <https://www.cfainstitute.org/-/media/documents/book/rf-publication/2013/2013-rf-v2013-n3-1-pdf.ashx>
- Chepkorir, A. (2018). *Influence of portfolio diversification on financial performance of commercial banks listed on nairobi securities exchange, Kenya*. (Master's thesis, Jomo Kenyatta University of Agriculture and Technology). Kenya. <http://ir.jkuat.ac.ke:8080/bitstream/handle/123456789/4593/AGNES%20CHEPKORIR.pdf?sequence=1&isAllowed=y>
- Chidaushe, W. K. (2018). The impediments and best practice use of derivatives in Zimbabwe, Botswana and South Africa. *Journal of Business & Financial Affairs*, 7(2), 1-12. <https://doi.org/10.4172/2167-0234.1000333>.
- Cooper, D.R., & Schindler, P.S. (2014). *Business research methods*, (12th Ed.). McGraw-Hill/Irwin.
- Coppola, F. (2019). *How do types of forwards contracts differ*. <https://www.americanexpress.com/us/foreign-exchange/articles/different-types-of-forward-contracts/>
- Covington & Burling LLP (2017). *U.S. regulation of futures and derivatives: Compliance issues for end-users*. <https://fia.org/sites/default/files/Compliance%20Issues%20for%20End%20Users.pdf>
- CLA construction and investment group corp (2018). *The 2018 CLA construction benchmark report*. <https://www.claconnect.com/resources/articles/2019/-/media/files/white-papers/2018-core-benchmark-report.pdf>
- Cytonn (2019a). *Quarter one 2019 banking sector review*. <https://cytonn.com/downloads/kenya-listed-commercial-banks-review>
- Cytonn (2019b). *Understanding the derivatives market*. <https://cytonnreport.com/topicals/understanding-the-derivatives-1>
- Delaney, D., Mcmanus, L., & Lamminmaki, D. (2016). The nature and effectiveness of sponsorship performance measurement systems. *Australasian Marketing Journal*, 24(1), 29-37. <https://doi.org/10.1016/j.ausmj.2015.12.001>
- Deloitte (2020). *Banking and capital markets outlook*. <https://documents.deloitte.com/insights/2020bankingoutlook>

- Deloitte (2019a). *Banking and capital markets outlook: Reimagining transformation*. <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Financial-Services/gx-fsi-dcfs-2019-banking-cap-markets-outlook.pdf>
- Deloitte (2019b). *International tax: Argentina highlights 2019*. <https://www2.deloitte.com/content/dam/Deloitte/ar/Documents/tax/dttl-tax-argentinahighlights-2019.pdf>
- Deutsche Bank (2019). *How to fix European banking and why it matters*. https://www.dbresearch.com/prod/rps_en-prod/prod0000000000488973/how_to_fix_european_banking%e2%80%a6_and_why_it_matters.pdf
- Doojin, R., & Heejin, Y. (2019) Noise traders, mispricing, and price adjustments in derivatives markets, *The European Journal of Finance*, 26(1), 33-45. <https://doi.org/10.1080/1351847X.2019.1692887>
- Edu, K. (2019). *Managing foreign exchange denominated liabilities: Issues & options*. <http://www.mondaq.com/Nigeria/x/721390/Commodities+Derivatives+Stock+Exchanges/Managing+Foreign+Exchange+Denominated+Liabilities+Issues+Options>
- Engaza, M. R. (2016). *Factors that inhibit the development of financial derivatives in the Kenyan financial sector* (Master's thesis, United States International University-Africa). Kenya. <http://erepo.usiu.ac.ke/bitstream/handle/11732/2496/Factors%20That%20Inhibit%20the%20Development%20of%20Financial%20Derivatives%20in%20the%20Kenyan%20Financial%20Sector.pdf?sequence=1&isAllowed=y>
- Ejike, S. I., & Cird, P. (2019). Effect of bank innovations on financial performance of commercial banks in Nigeria. *European Journal of Accounting, Finance and Investment*, 5(4), 40-57. https://www.researchgate.net/profile/Cird_Publication2/publication/333340514_effect_of_bank_innovations_on_financial_performance_of_commercial_banks_in_nigeria/links/5ce7c79e458515712ebdc779/effect-of-bank-innovations-on-financial-performance-of-commercial-banks-in-nigeria.pdf?origin=publication_detail
- Ernst & Young (2019). *Financial reporting developments: A comprehensive guide derivatives and hedging (before the adoption of ASU 2017-12)*. [https://www.ey.com/publication/vwluassetsdld/financialreportingdevelopments_bb0977_derivatives_3january2019-v2/\\$file/financialreportingdevelopments_bb0977_derivatives_3january2019-v2.pdf](https://www.ey.com/publication/vwluassetsdld/financialreportingdevelopments_bb0977_derivatives_3january2019-v2/$file/financialreportingdevelopments_bb0977_derivatives_3january2019-v2.pdf)
- European Central Bank (2019a). *The anatomy of the Euro area interest rate swap market*. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2242~b1f459eb90.en.pdf>
- European Central Bank (2019b). *Derivatives transactions data and their use in central banks analysis*. https://www.ecb.europa.eu/pub/economic-bulletin/articles/2019/html/ecb.ebart201906_01~dd0cd7f942.en.html#toc1
- European Securities and Market Authority (2014). *Clearing obligation under EMIR*. <https://www.esma.europa.eu/sites/default/files/library/2015/11/esma-2014-1185.pdf>
- Faisal, A., Shahid, I., & Bilal, A. (2019). The impact of bank capital, bank liquidity and credit risk on profitability in post crisis period: A comparative study of

- US and Asia. *Cogent Economics & Finance*, 7(1), 1-18.
<https://doi.org/10.1080/23322039.2019.1605683>
- Federal Deposit Insurance Corporation (2019). *Risk review report*.<https://www.fdic.gov/bank/analytical/risk-review/full.pdf>
- Federal Ministry for Economic Cooperation and Development (2019). *Debt relief: Debt-for-development swaps*. <https://www.bmz.de/en/issues/development-financing/DebtRelief/Schuldenumwandlungen/index.html>
- Federal Reserve Bank of New York (2019a). *The Long and Short of It: The Post-Crisis Corporate CDS Market*.
https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr879.pdf
- Federal Reserve Bank of New York (2012). *An analysis of OTC interest rate derivatives transactions: Implications for public reporting*.
https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr557.pdf
- Fliginskih, T. N., Usatova, L. V., Solovjeva, N.E., Kalutskaya, N. A., Zaboony, O.H., & Majd, A. (2019). Evaluating and forecasting the capital adequacy for commercial banks. *Journal of RevistaEspacios*, 40(24), 1-23.
<http://www.revistaespacios.com/a19v40n24/a19v40n24p23.pdf>
- Futures Industry Association (2019). *Half- year data on futures and options volume trends*.<https://fia.org/file/9144/download?token=JSvgr4nr>
- Gacheru, K. K. (2016). *Impact of derivatives trading on spot markets: Price discovery* (Degree project, Strathmore University). Kenya.
<https://suplus.strathmore.edu/bitstream/handle/11071/5322/Impact%20of%20derivatives%20trading%20on%20spot%20markets%20price%20discovery.pdf?sequence=1&isAllowed=y>
- Ghana Commodity Exchange (2018). *Operationalizing the Ghana commodity exchange*.https://gcx.com.gh/news/gcx_top_news/operationalizing-the-ghana-commodity-exchange.html
- Ghauri, J., & Grønhaug, D. (2005). *Research methods*.<https://www.getcited.org/pub/103411814>
- Giudici, G., Milne, A., & Vinogradov, D. (2019). Cryptocurrencies: Market analysis and perspectives. *Journal of Industrial and Business Economics*, 23(1), 1-18.
<https://doi.org/10.1007/s40812-019-00138-6>
- Greenwood, J., & Boyan, J. (1990). Financial development, growth, and the distribution of income. *The Journal of Political Economy*, 98(5), 1076-1107.
https://www.jstor.org/stable/2937625?seq=1#page_scan_tab_contents
- Guo, J., Ranasinghe, D., & Zhang, Z. (2019). *Developments in foreign exchange and over-the-counter derivatives markets*.<https://www.rba.gov.au/publications/bulletin/2019/dec/pdf/developments-in-foreign-exchange-and-over-the-counter-derivatives-markets.pdf>
- Gyamrah, S.A., Ngare, P., & Ikpe, D. (2019). Hedging crop yields against weather uncertainties: A weather derivative perspective. *Mathematical and Computational Applications*, 24(3), 1-28.
<https://doi.org/10.3390/mca24030071>

- Hasbrouck, J. (1993). Assessing the quality of a security market: A new approach to transaction cost measurement. *The Review of Financial Studies*, 6(1), 191-212. <https://www.jstor.org/stable/2961993>
- Hayali, A. S. (2019). Looking back again to the Brazilian crises of the 1990s: The role of financial derivatives. *Journal of Innovation Economics & Management*, 2(9), 95-131. <https://doi.org/10.3917/jie.029.0095>
- Heitfield, E., & Park, Y.H. (2019). *Inferring term rates from SOFR futures prices. Finance and Economics Discussion Series 2019-014*. Washington: Board of Governors of the Federal Reserve System. <https://doi.org/10.17016/FEDS.2019.014>.
- Hull, J. C. (2018). *Risk management and financial institutions*. (5th Ed.). Hoboken. <https://books.google.co.ke/books?id=1j1qdwaaqbaj&pg=pa98&lpg=pa98&dq=financial+institutions+such+as+banks+often+act+as+market+makers+for+more+commonly+traded+instruments+in+the+derivative+markets&source=bl&ots=zdtogts-j4&sig=acfu3u2dwevaxobuex4otzxy58qxkeg45g&hl=en&sa=x&ved=2ahuke-wijlt-vr3mahw0bwmbhfifd9yq6aewdxoecagqaq#v=onepage&q=financial%20institutions%20such%20as%20banks%20often%20act%20as%20market%20makers%20for%20more%20commonly%20traded%20instruments%20in%20the%20derivative%20markets&f=false>
- Ikiao, S. M. (2018). *Factors hindering the growth of the derivative market in Kenya* (Master's thesis, KCA University). Kenya. <http://41.89.49.13:8080/xmlui/bitstream/handle/123456789/1410/Ikiao-Effect%20Of%20Internationalization%20On%20Organizational%20Performance%20Of%20Food%20And%20Beverages%20Manufacturing%20Firms%20In%20Kenya.pdf?sequence=1&isAllowed=y>
- Institute for Government (2018). *Understanding the economic impact of Brexit*. <https://www.instituteforgovernment.org.uk/sites/default/files/publications/2018%20IfG%20%20Brexit%20impact%20%205Bfinal%20for%20web%205D.pdf>
- International Bank for Reconstruction and Development (2019). *Management's discussion & analysis and financial statements June 30, 2019*. <http://pubdocs.worldbank.org/en/625641565356285634/IBRD-Financial-Statements-June-2019.pdf>
- International Monetary Funds (2019a). *Request for stand-by arrangement and cancellation of arrangement under the extended fund facility press release; Staff report and statement by the executive director for Ukraine*. <https://www.imf.org/~media/Files/Publications/CR/2019/cr1903.ashx>
- Ito, H., Sekiguchi, R., & Yamawake, T. (2018). Debt swaps for financing education: Exploration of new funding resources. *Cogent Economics & Finance*, 6(1), 1-10. <https://doi.org/10.1080/23322039.2018.156302>
- Jongadsayakul, W. (2019). Determinants of investor behavior in SET50 index futures and options markets: Evidence from Thailand Futures Exchange. *Journal of International Studies*, 12(3), 22-30. <https://doi.org/10.14254/2071-8330.2019/12-3/2>

- Kenya Bankers Association (2019). *Kenya banking industry: Shared value report*.
<https://www.kba.co.ke/downloads/The%20Kenya%20Banking%20Industry%20Shared%20Value%20Report%202019.pdf>
- Kombo, D., & Tromp, D. (2003). *Proposal and thesis writing*. Pauline's Publications Africa.
- KPMG (2019). *Hong Kong banking report 2019: The future of banking*.
<https://assets.kpmg/content/dam/kpmg/cn/pdf/en/2019/06/the-future-of-banking.pdf>
- Lempert, R. J. (2019). *Robust Decision Making (RDM). Decision making under deep uncertainty*. Springer Cham.
https://link.springer.com/content/pdf/10.1007%2F978-3-030-05252-2_2.pdf
- Lotto, J. (2019). Evaluation of factors influencing bank operating efficiency in Tanzanian banking sector. *Cogent Economics & Finance*, 7(1), 1-14.
<https://doi.org/10.1080/23322039.2019.1664192>
- Mbonigaba, C. (2019). Panoramas and experiments in financial performance of commercial banks in Rwanda: Lesson from non-performing loan management. *International Journal of Science and Business*, 3(6), 250-270.
https://www.researchgate.net/profile/Mbonigaba_Celestin/publication/337562793_Panoramas_and_experiments_in_Financial_Performance_of_Commercial_Banks_in_Rwanda_lesson_from_non-performing_loan_management/links/5dde589da6fdcc2837edd325/Panoramas-and-experiments-in-Financial-Performance-of-Commercial-Banks-in-Rwanda-lesson-from-non-performing-loan-management.pdf?origin=publication_detail
- McKinsey & Company (2019). *Asia-Pacific banking review 2019 report: Bracing for consolidation: The quest for scale*.
<https://www.mckinsey.com/~media/mckinsey/industries/financial%20services/our%20insights/bracing%20for%20consolidation%20in%20asia%20pacific%20banking%20the%20quest%20for%20scale/asia-pacific-banking-review-2019-vf.ashx>
- Mertzanis, C., & Allam, N. (2018). Political instability and herding behavior: Evidence from Egypt's stock market. *Journal of Emerging Market Finance*, 17(1), 29–59.
<https://doi.org/10.1177/0972652717748087>
- Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, 22(1), 67–72. https://doi.org/10.4103/aca.ACA_157_18
- Modigliani, F., & Miller, M.H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 48(3), 261–297.
<https://www.jstor.org/stable/1809766>
- Mohamud, A. A., & Mungai, J. (2019). Financial innovation on performance of commercial banks in Garissa County, Kenya. *The Strategic Journal of Business & Change Management*, 6(1), 491-504.
<http://strategicjournals.com/index.php/journal/article/viewFile/1073/1054>
- Mugenda, A. G. (2008) *Social science research: Theory and principles*. Acts Press.
- Mwania, P. M. (2018). *Antecedents of technology adoption and financial inclusion among micro enterprises in Machakos county, Kenya* (PhD thesis, Kenya Methodist University). Kenya.
<http://Phd%20thesis/Previous%20research/Phd-2.pdf>

- Nachum, L., & Ogbechie, C. (2019). Where have foreign banks in Nigeria gone: Market structure, competitive intensity and the capabilities of Nigeria banks. *Africa Journal of Management*, 5(3), 231-253. <https://doi.org/10.1080/23322373.2019.1648999>
- Nairobi securities exchange (2019a). *Equity index product specifications*. <https://www.nse.co.ke/next-derivatives-education-resources.html?download=8670%3Aequity-index-futures>
- Nairobi securities exchange (2019b). *Single stock product specifications*. <https://www.nse.co.ke/next-derivatives-education-resources.html?download=8671%3Asingle-stock-futures>
- Ng'eno, J. C. (2019). *Capital adequacy framework, funds allocation strategy and financial performance of deposit taking sacco in Kenya* (PhD thesis, Kenya Methodist University). Kenya. <http://Phd%20thesis/Previous%20research/phd%20thesis.pdf>
- Nguyen, T., Tripe, D., & Ngo, T. (2018). Operational efficiency of bank loans and deposits: A case study of Vietnamese banking system. *International Journal of Financial Studies*, 6(14), 1-13. <https://doi.org/10.3390/ijfs6010014>
- Njoroge, M. N., & Mugambi, F. (2018). Effect of electronic banking on financial performance in Kenyan commercial banks: Case of equity bank in its Nairobi central business district branches, Kenya. *International Academic Journal of Economics and Finance*, 3(2), 197-215. http://www.iajournals.org/articles/iajef_v3_i2_197_215.pdf.
- Office of Comptroller of the Currency (2019). *Quarterly report on bank trading and derivatives activities*. <https://www.occ.gov/publications-and-resources/publications/quarterly-report-on-bank-trading-and-derivatives-activities/files/pub-derivatives-quarterly-qtr2-2019.pdf>
- Ogbonna, S. I. (2018). Financial derivatives in Nigeria: Piloting a safe risk management tool on a risky regulatory framework. *Journal of Law and Global Policy*, 4(1), 26-35. <https://iardpub.org/get/jlgp/vol.%204%20no.%201%202019/jlgp.pdf>
- Onura, O. G. (2019). Effect of capital market on economic growth and development of Nigeria (2000 - 2017). *International Journal of Academic Research in Business and Social Sciences*, 9(2), 211– 220. [http://hrmars.com/hrmars_papers/Effect_of_Capital_Market_on_Economic_Growth_and_Development_of_Nigeria_\(2000_-_2017\).pdf](http://hrmars.com/hrmars_papers/Effect_of_Capital_Market_on_Economic_Growth_and_Development_of_Nigeria_(2000_-_2017).pdf)
- Options Trading (2019). *Your guide to successful options trading*. <https://www.optionstrading.org/basics/option-types/>
- Price Water house Cooper (2019). *Banking reforms so far: Topmost issues on the minds of bank CEOs*. <https://www.pwc.com/gh/en/assets/pdf/ghana-banking-survey-2019.pdf>
- Rastogi, S., & Athaley, C. (2019). Volatility integration in spot, futures and options markets: A regulatory perspective. *Journal of Risk & Financial Management*, 12(98), 1-15. <https://doi.org/10.3390/jrfm12020098>
- Reserve Bank of Australia (2018). *The Australian OTC derivatives market: Insights from new trade repository data*. <https://www.rba.gov.au/publications/bulletin/2018/jun/pdf/the-australian-otc-derivatives-market-insights-from-new-trade-repository-data.pdf>

- Ruiz, J. L. (2018). Financial development, institutional investors, and economic growth. *International Review of Economics and Finance*, 54(1), 218-224. <https://doi.org/10.1016/j.iref.2017.08.009>
- Santhapalii, G. (2018). A study on financial derivatives with reference to Tata Motors Limited, Chittoor district of Andhra Pradesh, India. *Global Journal for Research Analysis*, 7(4), 430-433. https://www.researchgate.net/profile/Santhapalii_Gautami/publication/326058177_a_study_on_financial_derivatives_with_reference_to_tata_motors_limited_chittoor_district_of_ap_india/links/5b35ba6c0f7e9b0df5d8414b/a-study-on-financial-derivatives-with-reference-to-tata-motors-limited-chittoor-district-of-ap-india.pdf
- Sari, D. W. (2019). Ratio analysis of financial performance of companies LQ45 index listed. *Humanities & Social Sciences Reviews*, 7(3), 419-423. <https://doi.org/10.18510/hssr.2019.7361>
- Sauer, T. (2004). *Numerical solution of stochastic differential equations in finance*. <http://math.gmu.edu/~tsauer/pre/sde.pdf>
- Securities and Exchange Commission (2019). *Capital, margin, and segregation requirements for security-based swap dealers and major security-based swap participants and capital and segregation requirements for broker-dealers*. <https://www.sec.gov/rules/final/2019/34-86175.pdf>
- Schoen, E. J. (2017). The 2007-2009 financial crisis: An erosion of ethics: A case study. *Journal of Business Ethics*, 146(4), 805-820. <https://doi.org/10.1007/s10551-016-3052-7>
- Scholtens, B., & Wensveen, D.V. (2000). A critique on the theory of financial intermediation. *Journal of Banking & Finance*, 24(8), 1243-1251. https://www.researchgate.net/publication/222551349_A_critique_on_the_theory_of_financial_intermediation
- Shahid, M. S., Gul, F., & Naheed, K. (2019). Credit risk and financial performance of banks: Evidence from Pakistan. *International Journal of Business & Management*, 14(1), 144-155. http://dx.doi.org/10.1007/978-3-030-05225-6_9
- Sheunesu, Z., & Tewari, D. D. (2019). Shadow financial services and firm performance in South Africa. *Cogent Economics & Finance*, 7(1), 1-18. <https://doi.org/10.1080/23322039.2019.1603654>
- Shin, Y. & Pyo, U. (2019). Liquidity hedging with futures and forward contracts. *Studies in Economics and Finance*, 36(2), 265-290. <https://doi.org/10.1108/SEF-04-2018-0109>
- Singh, J. B., & Singh, S. B. (2018). Derivative trading in emerging markets: A survey. *Journal of Business Thought*, 8(1), 42-70. <http://www.informaticsjournals.com/index.php/jbt/article/download/21196/17416>
- Singh, K., Misra, M., Kumar, M., & Tiwari, V. (2019). A Study on the Determinants of Financial Performance of U.S. Agricultural Cooperatives. *Journal of Business Economics and Management*, 20(4), 633-647. <http://dx.doi.org/10.3846/jbem.2019.9858>
- Singh, R., Reed, P.M., & Keller, K. (2015). Many-objective robust decision making for managing an ecosystem with a deeply uncertain threshold response. *Ecology and Society*, 20(3), 1-12. <http://dx.doi.org/10.5751/ES-07687-200312>

- Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics* 26(1), 3-27. [https://doi.org/10.1016/0304-405X\(90\)90011-N](https://doi.org/10.1016/0304-405X(90)90011-N)
- United Nations (2019a). *Managing commodity price risk in commodity dependent developing countries*. https://unctad.org/meetings/en/SessionalDocuments/cimem2d46_en.pdf
- Vatcheva, K. P., Lee, M., McCormick, J. B., & Rahbar, M. H. (2016). Multicollinearity in regression analyses conducted in epidemiologic studies. *Epidemiology (Sunnyvale, Calif.)*, 6(2), 227-237. <https://doi.org/10.4172/2161-1165.1000227>
- Vo, D. H., Phuc, V.N., Ha, M. N., Anh, T. V., & Thang, C. N. (2019a). Derivatives market and economic growth nexus: Policy implication for emerging markets. *North American Journal of Economics and Finance*, 47(1), 302-320. <https://doi.org/10.1016/j.najef.2018.10.014>
- Vo, D. H., Huynh, S. V., Anh, T. V., & Ha, D. T. T. (2019b). The importance of the financial derivatives markets to economic development in the world's four major economies. *Journal of Risk & Financial Management*, 12(35), 1-18. <https://doi.org/10.3390/jrfm12010035>
- Waswa, M. N., & Wepukhulu, J. M. (2018). Effect of usage of derivative financial instruments on financial performance of non-financial firms listed at the Nairobi securities exchange, Kenya. *International Journal of Finance and Accounting*, 3(2), 1-18. <https://www.iprjb.org/journals/index.php/IJFA/article/download/724/872/>
- Wright, L. (2014). Information gap decision theory: Decisions under severe uncertainty. *Journal of the Royal Statistical Society Series*, 167(1), 185-186. https://doi.org/10.1111/j.1467-985X.2014.298_4.x
- Yao, H., Haris, M., & Tariq, G. (2018). Profitability determinants of financial institutions: Evidence from banks in Pakistan. *International Journal of Financial Studies*, 6(53), 1-28. <https://doi.org/10.3390/ijfs6020053>
- Yeşildağ, E. (2019). Financial risks and derivative use of non-financial companies in Turkey. *Frontiers in Applied Mathematics and Statistics*, 5(64), 1-9. <https://doi.org/10.3389/fams.2019.00064>

APPENDICES

Appendix I: Letter of Authorization

Date.....

To

Managing Director

Name of the Bank.....

P.O. Box

NAIROBI

Dear Sir/Madam,

**RE: RESEARCH DATA ON RELATIONSHIP BETWEEN FINANCIAL
DERIVATIVES AND FINANCIAL PERFORMANCE OF SELECTED
LISTED COMMERCIAL BANKS IN KENYA.**

I am a student pursuing degree in Master of Science in finance and investment at Kenya Methodist University (KeMU). I' am required to undertake a research as a partial fulfillment for the conferment of the Masters' degree. My research topic is stated above and I am kindly requesting for your assistance in making my research a success.

The purpose of this letter is therefore to request you to grant permission to collect relevant data from your bank from selected respondents. The respondents will be risk managers, credit managers, operation managers and marketing managers. The information collected will be treated with utmost confidentiality and will be used for the purposes on this research only. For your information, the output of this research will add value to banks in Kenya in terms of appreciating how a strong decision-making process can be made on financial derivatives practices which leads to improvement of banks performance.

Yours Sincerely,

PhilipinoMuthine

MFI-3-9157-2/2018

Mobile no: 0728731808

Appendix II: Letter of Consent

Date.....

To.....

.....

Dear Sir/Madam,

RE: COLLECTION OF RESEARCH DATA

My name is Philipino Muthine currently pursuing Master of Science in finance and investments at Kenya Methodist University (KeMU). I am carrying out a research on the “Relationship between financial derivatives practices and financial performance of listed commercial banks in Kenya”. At the moment I am in the process of gathering relevant data for this study. You have been identified as one of the collaborators and respondents in this study and I am kindly requesting for your assistance towards making this study successful by responding to the attached questionnaire. I assure you that your responses will be treated with confidentiality and will be used solely for the purpose of this study.

I thank you in advance for your time and responses. It will be appreciated if you can fill the questionnaire within the next 7 days to enable early finalization of the study.

Yours Sincerely,

Philipino muthine

Master of Science in Finance and Investment Student

Student Reg No. MFI-3-9157-2/2018

Mobile no: 0728731808

Appendix III: Questionnaires

The purpose of this questionnaire is to collect data on relationship between financial derivatives and financial performance of selected listed commercial banks in Kenya.

Instructions

1. Kindly tick as appropriate in the boxes of each question using a tick (√) or cross mark (x).

SECTION A: GENERAL INFORMATION

1: Bank Particulars

Name of the Bank

(Optional).....

How long has the bank been operating

No	Duration	Tick as appropriate
1.	Less than 20yrs	
2.	Between 21-40yrs	
3.	Between 41-60yrs	
4.	Above 61years	

SECTION B: INFLUENCE OF SWAPS ON FINANCIAL PERFORMANCE

This section has statements regarding the influence of swaps on financial performance. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

No	Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
		1	2	3	4	5
1.	Intermediation's role of the bank between equity swap's buyers and sellers has improved spreads in the bank					
2.	Equity swaps have increased sales of the bank related to derivatives.					
3.	Centrally clearing have reduced risks associated with defaulted equity swaps contracts of the bank					
4.	Paid up equity swaps have reduced their storage costs of the banks					

SECTION C: INFLUENCE OF OPTIONS ON FINANCIAL PERFORMANCE

This section has statements regarding the influence of options on financial performance. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

No	Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
		1	2	3	4	5
1.	There is a clear procedure used to solve options price discrepancies					
2.	Options derivatives market activities are improving in this bank					
3.	There are strong guidelines established to cushion investors for loss of money due to concealed information of underlying options assets					
4.	The bank offers frequent training to bank customers and staff on options market					

5.0 What are the challenges of investors not having full knowledge on various financial matters such as options derivatives in improving financial performance of banks?

6. Kindly explain the various procedures used by investors to purchase options products in your bank?

SECTION D: INFLUENCE OF FORWARDS ON FINANCIAL PERFORMANCE

This section has statements regarding the influence of forwards on financial performance. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

No	Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
		1	2	3	4	5
1.	Forward derivatives growth has been highly facilitated by online banking systems such as RTGS					
2.	There is a clear pricing structure on forwards derivatives in this bank					
3.	Customers get oriented on various types of forward derivatives such as commodity forwards, interest rate forwards and foreign exchange forwards					
4.	Maturity dates of forward contracts are communicated on clients and processing of payments is done without any hitches.					

5. Highlight the relevance of International Financial regulations standards (IFRS) regulation on forward derivative market?

6. Explain how managing commodity price risk in forward derivatives influences growth of financial performance of your bank?

7. What are the causes of low application of simple forwards agreements in your bank?

SECTION E: INFLUENCE OF FUTURES ON FINANCIAL PERFORMANCE

This section has statements regarding the influence of futures on financial performance. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

No	Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
		1	2	3	4	5
1.	There are customized future products such as the ones that hedge crop yields against weather uncertainties from bad weather derivative					
2.	The bank ensures that all government regulations in conducting futures derivative s functions are followed					
3.	There are equipped staff who have wealth of experience in handling futures derivatives					
4.	The turn-around time for handling clients complained is within 3-5 days duration					

5.Kindy explain various issues faced by Kenyan listed commercial banks while operating in derivatives markets?

6. Elaborate the structures that are used in this bank to have enforceable dominant futures derivatives contracts?

7. Kindly elaborate the determinants of investor behavior in futures markets in your bank?

SECTION F: FINANCIAL PERFORMANCE

This section has statements regarding financial performance. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

No	Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
		1	2	3	4	5
1.	Swaps have improved financial performance of the bank					
2.	Options have improved financial performance of the bank					
3.	Forwards have improved financial performance of the bank					
4.	Futures have improved financial performance of the bank					

Thank you for your feedback

Appendix IV: Secondary data collection instrument

Secondary data for the listed commercial banks in Kenya from 2016- 2018 will be collected as follows:

Name of the bank.....

Variable	Description	Years		
		2016	2017	2018
ROE	Net income before tax			
	Total equity capital			
ROA	Net income before tax			
	Average total assets			
NIM	Interest income			
	Interest paid to creditors relative to asset value			

Appendix V: List of selected listed commercial banks in Kenya

Number	Listed commercial banks in Kenya
1.	ABSA
2.	Stanbic Holdings Plc
3.	I&M Holdings
4.	Diamond Trust Bank Kenya
5.	HF Group
6.	KCB Group
7.	National Bank of Kenya
8.	NCBAPlc Group
9.	Standard Chartered Bank
10.	Equity Group Holdings
11.	Co-operative Bank of Kenya

Appendix VI: Introduction letter



KENYA METHODIST UNIVERSITY

P. O. Box 167 Meru - 60200, Kenya
Tel: 254-064-30301/31229/30367/31171

Fax: 254-64-30162
Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

May 13, 2021

Commission Secretary,
National Commission for Science, Technology and innovations,
P.O. Box 30623-00100,
NAIROBI.

Dear sir/ Madam,

RE: PHILIPINO MUTHINE (BUS-3-9157-2/2018)

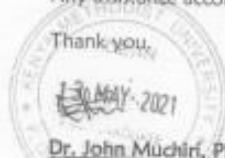
This is to confirm that the above named is a bona fide student of Kenya Methodist University, Department of Business Administration undertaking a Degree of Master of Business Administration. He is conducting research on 'Relationship between Financial Derivatives and Financial Performance of Selected Listed Commercial Banks in Kenya'.

We confirm that his research proposal has been defended and approved by the University.

In this regard, we are requesting your office to issue a permit to enable him collect data for his research.

Any assistance accorded to him will be appreciated.






Thank you,



Dr. John Muchiri, PHD.
Director Postgraduate Studies

Cc: Dean SBUE
COD Business Administration
MBA Co-ordinator
Supervisors

Appendix VII: NACOSTI Research Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 771394	Date of Issue: 20/May/2021
RESEARCH LICENSE	
	
<p>This is to Certify that Mr. PHILIDINO MUTHINE of Kenya Methodist University, has been licensed to conduct research in Nairobi on the topic: RELATIONSHIP BETWEEN FINANCIAL DERIVATIVES AND FINANCIAL PERFORMANCE OF SELECTED LISTED COMMERCIAL BANKS IN KENYA for the period ending : 20/May/2022.</p>	
License No: NACOSTIP/21/10709	
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Appendix v: Publication

<https://carijournals.org/journal/index.php/ijf/article/view/610/815>.

International Journal of finance, 6 (1), 54-69

Philipino, Fredrick & Ruth (2021). The relationship between options derivatives and financial performance of selected listed commercial banks in Kenya.