EFFECT OF FINANCIAL RISK ON SHAREHOLDERS' WEALTH OF COMMERCIAL BANKS LISTED AT NAIROBI SECURITIES EXCHANGE, KENYA

MOGUSU MARGARET WANJIRU

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DECLARATION AND RECOMMENDATION

Declaration

This research project is my original work and has not been presented for the award of a diploma or conferment of a degree in this or any other institution.

Signature: ……..… Date: …….……

Margaret Wanjiru Mogusu
CM11/39913/19

Recommendation

This research project has been examined, passed and submitted with our approval as University supervisors.

Signature: ……..… Date: …….……

Dr. Isaac Micheni Nkari
Business Administration Department
Chuka University

Signature: ……..… Date: …….……

Dr. Joseph Masinde Wabwire
Management Science Department
Chuka University

DEDICATION

To my husband Ronald Mogusu, my son Francis Oichoe and my dear parents David Maguta and Regina Wakonyo.

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ABSTRACT

Shareholders' wealth is among critical decisions in a firm because it has a bearing on overall investor perception and firm value. There has been concern about the declining value of shareholders' wealth among commercial banks listed at the Nairobi Security Exchange (NSE). Previous studies have linked financial risk to shareholders' wealth. The researchers, however, disagree on the magnitude and direction of the effect. The main objective of the research was to determine the effect of financial risk on shareholders' wealth of commercial banks listed at Nairobi Securities Exchange. The study's specific objectives were to establish the effect of credit risk, liquidity risk, foreign exchange risk, and interest risk on shareholders' wealth. Commercial banks were chosen since they are required by Capital Market Authority to disclose all their financial statements to the public. This study was anchored on Modigliani and Miller Theory, Capital Asset Pricing Model, Financial Distress Theory, and Modern Portfolio Theory. A descriptive research design was adopted. The target population of this study was eleven commercial banks that had been constantly listed at the Nairobi Securities Exchange from 2013 to 2019. A census was conducted to collect data from the eleven banks due to the small size of the population. Data was obtained from published financial statements of all the eleven commercial banks listed at the NSE and the Banking survey publications for seven years from 2013 to 2019. These banks were consistently listed for this period. A checklist was used to guide in collecting secondary data. Data was analyzed using descriptive and inferential statistics with the help of Microsoft Excel and SPSS version 25.0. Multiple regression analysis was used to establish the relationship between variables, and t-statistic at a 5% significance level was employed to test the hypothesis. The overall significance was tested using the F-test. The findings of the study were presented in the form of tables and equations. The study established that credit risk had a significant adverse effect on shareholders' wealth with a regression coefficient of -215.945 and a p-value of 0.039. Further, it was found that liquidity risk and foreign exchange risk had a negative and positive effect with a regression coefficient of -0.556 and 3.764 and p-values of 0.023 and 0.035, respectively. The interaction between operational efficiency and financial risk had a regression coefficient of -17.772 and a p-value of 0.003. The study concluded that credit risk, liquidity risk, and foreign exchange risk had a significant effect on shareholders wealth of Commercial banks listed at the NSE and recommended that Managers should come up with stringent policies of regulating loans, and they can also demand collateral before issuing loans to curb credit risk. Banks should come up with a strategy of holding more liquid assets than liabilities. Banks should come up with ways of diversifying their resources to minimize risk and maximize returns. Commercial banks should emphasize refining their operational efficiency to reduce financial risk and mprove shareholders' wealth. Operational efficiency was found to alter the relationship between financial risk and shareholders' wealth. This studywill be significant to the Central Bank of Kenya and the government while formulating banking policies and regulations and guiding banks in developing–their specific policies of minimizing financial risk. It will also provide further knowledge in the field of Commercial banks' financial risks.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

CBK	**:**	Central Bank of Kenya.
CR	**:**	Credit Risk
EPS	**:**	Earnings per Share
FER	**:**	Foreign Exchange Risk
FR	**:**	Financial Risk
IMF	**:**	International Monetary Fund
LR	**:**	Liquidity Risk
MM hypothesis	**:**	Modigliani and Miller Hypothesis
NACOSTI	**:**	National Commission of Science, Technology and Innovation
NIM	**:**	Net Interest Margin
NSE	**:**	Nairobi Securities Exchange
OE	**:**	Operational Efficiency
ROE	**:**	Return on Equity

CHAPTER ONE
INTRODUCTION

1.1 Background Information

Financial risk refers to the unpredicted changeability in earnings (Christoffersen, 2011). Additionally, Bouchaud and Potters (2003) defined financial risk as the possibility of losing money on an investment. Financial risks occur when a firm is exposed to monetary markets and relies on processes, systems, and people (Hallikas *et al.*, 2004). Financial risk comprises credit risk, market risk, liquidity risk, operational risk, technological risk, foreign exchange risk, and sovereign risk, which brings about changes in financial performance (Dimitropoulos, 2010; Tafri, 2009). According to Angbazo (1997) financial risk is mainly composed of credit risk, liquidity risk, foreign exchange risk and interest rate risk. Organizations face the possibility of loss and gain when they are exposed to financial markets (Srivastava, 2015). Therefore, they should come up with strategies to curb financial risks whenever they emerge.

One of the main motives of managing risk is to decrease the changes in returns or cash flows brought about by financial risk exposure (Dhanini, 2007). According to Drogt and Goldberg (2008), the decrease in cash flows enables the firm to achieve better. Additionally, this will aid in guaranteeing that enough funds are accessible to pay shareholders bonuses and invest in projects that will yield returns over time. An additional alternative for handling financial risk is to ensure that you get rid of bankruptcy and the charges attached to it (Drogt & Goldberg, 2008). Another challenge of COVID 19 has affected share prices and dividend payments in the banking sector (Banking Survey, 2020).

According to Mehri (2015), financial risks affects the shareholder's wealth since it affects the returns to shareholders. To exploit wealth, shareholders need precise and dependable information on what changes shares values. Principles of a well-organized market proposition argue that share values react toward information available to the markets, which possibly will be through financial statements and annual general meetings. The enormous decrease in investors' wealth in the stock markets has been associated with negative information about financial risk creeping into the stock

markets (Mehri, 2015). The standard theory of finance and empirical evidence postulates that projected profits of a market portfolio are based upon the variance of its estimated yields. Hence return to shareholders is affected by the cash flows generated by commercial banks since an increase in financial risk results in reduced cash flows. This relationship is supported by the theoretical foundations of Modern Portfolio Theory (MPT) and the Capital Asset Pricing Model (CAPM).

Credit risk refers to the possibility of default which is a debtor's inability to meet his debt obligations (Chen & Pan, 2012). A good loan plan can be used to enhance prudent overseeing of property value, formulate a set of least canons plus use shared language and approach to assess uncertainty, valuing, records, shares, permission, and morals for valuing and presenting non-performing properties, credit grouping and contingencies (Adekunle *et al.*,2015). An essential function of banks is to receive their customer's funds for safe custody and give out loans, which exposes them to credit uncertainty. This risk is the greatest of all the risks experienced by banks whose performance is highly dependent on precise valuing and well-organized administration of this threat to a more significant magnitude than any other type of risk (Gieseche, 2004). An increase in non-performing loans will reduce profits generated by commercial banks, leading to a decrease in dividends and capital appreciation and this can result in investors withdrawing their shares.

According to Hosna (2009), who did a study on the effect of default loans on capital adequacy ratios and Return on Equity in 4 Swedish banks, an investigation revealed that an increase in default loans and capital adequacy ratios brings about a decrease in ROE. However, the levels vary differently in banks. This inverse relationship amongst productivity, presentation, and credit risk was also established in other empirical studies (Achou & Tenguh, 2008). Tomak (2013) did a study to determine factors affecting Bank's Loaning Performance in Turkey. The findings revealed that the larger or the smaller the bank was, its ability to acquire loans increased. Therefore an increase in interest rates on loans has an essential effect on the bank`s loaning behavior though the impact of interest rates and the gross domestic product was signed. However, in a study done by Mwangi (2012) to determine the influence of default risk management on the performance of banks in Kenya, he found that a

decrease in default loans ratio would result in a decrease in capital adequacy ratio and performance. Results of this research are divergent, and this necessitated the current research to examine the impact of default risk on shareholders' wealth. These studies focused on the effect of credit risk on profitability, whereas the present study will focus on shareholders' wealth. These studies focused on the effect of credit risk on profitability and performance, while the current study focused on shareholders' wealth.

According to Drehmann and Nikolaaou (2013), liquidity risk refers to the risk of firms' inability to meet their liabilities as they arise. Banks should manage their failure to meet short-term responsibilities to prevent them from becoming insolvent (CPA Australia, 2010). Saleh (2014) established that nearly every transaction in the banking business bears liquidity risk implications, which makes liquidity the heart of the banking system. Therefore, banks need to ensure that they hold adequate liquidity provision to act as a remedy against the shortfall of liquidity, which could trigger a systemic repercussion to the financial system (Saleh, 2014). Liquidity risk occurs when the management fails to plan for future uncertainties whereby the value of cash flows is affected by changing rates in the economy. When firms face liquidity issues, they can sell off some assets to cater to their liabilities to prevent bankruptcy. Liquidity is vital to every organization since it affects the day-to-day running of the business; hence, banks must strive to hold more assets to the value of liabilities.

According to a study done by Maaka (2013), which pursued to determine how performance is affected by liquidity risk in commercial banks in Kenya, the results were that leverage and liquidity gap negatively affected profitability. Additionally, Akram (2014) did a study to determine how liquidity affects stock returns in Pakistan. The results of the study were that liquidity negatively affected share prices. However, Wambu (2013) investigated how liquidity risk affected the profitability of commercial banks in Kenya. The research findings were that liquidity risk positively affected profitability, implying that increased liquidity risk improves performance.

Bordereau (2009) carried out research to determine the influence of liquidity risk on banks' profitability. The research findings were that liquidity risk and profitability had

a non-linear association. Profitability is enhanced for banks holding resources that can quickly turn to cash, even though holding assets beyond optimal points may minimize a firm's profitability. The findings also showed that banks' profitability was influenced by banks' structure and the provision for uncertainties of the dynamic market. The research investigated the influence of liquidity risk on profitability which necessitated the current researcher to establish how liquidity risk affects returns to shareholders.

Foreign exchange risk can be referred to as the uncertainty that the local currency price of net income may vary due to fluctuations in conversion rate (Bartram et al., 2005). It can also be referred to as the changeability of a business's cash flows due to changes and conversion rate. Gachua (2011) researched how foreign exchange exposure affects the performance of companies listed at the Nairobi Stock Exchange. The findings were that unrealized overseas conversion rate increases and decreases affected cash flows as depicted by their financial statements.

Similarly, Mbubi (2013) established how the foreign exchange rate affects companies' monetary performance listed at the Nairobi Stock Exchange. The findings were that an increase in unrealized foreign exchange rates decreases cash flows, as depicted by their financial statements. The researcher therefore established that foreign exchange affected goods from outside countries and cash flows of multinational companies. These studies mainly focused on financial performance, while the current study focused on shareholders' wealth to establish whether the results differed.

Interest rate risk is brought about by variation in the rate charged on loans, which may change the value of money and asset returns. The Kenyan government tried to manage the interest rates by capping it with the expectation that businesses and individuals would borrow more from banks and this is according to the Banking Amendment Act 2016, which was put in place in September 2016. However, banks have strict credit controls by profiling clients regarding their riskiness, realigning portfolios away from risky segments, and carefully analyzing their deposits and lines of credit to properly match the asset profile in the new dispensation (Maingi, 2017). However, according to Sheli (2019), MPs agreed to remove the cap and this has

inflicted harm to potential shareholders who have been receiving good earnings on funds deposited by savers in banks since the introduction of the cap in 2016.

In their study, Fapetu and Kolapo (2015) researched the influence of interest rate risk management on the Banks' performance in Nigeria for ten years and established that interest rate risk management has an insignificant effect on the performance of DMBs in Nigeria. In their study, Ngetich and Wanjau (2011) analyzed how interest rate risk extends on the level of defaulting Properties of banks in Kenya. The research concluded that interest rate spread affected performing properties of banks because it brings about the increased value of credits set on the debtors. These studies used performance as the main aim, while this study focused on shareholders' wealth. Similarly, these studies had divergent opinions and this necessitated the researcher investigating the effect of foreign conversion risk on shareholders' wealth.

Operational efficiency refers to the capability of a business to reduce waste in time, energy, and resources while manufacturing goods and services of high quality (Mannino *et al.,* 2008). Operationally efficient banks employ the best strategies to curb default on loans, inability to meet short-term obligations, foreign exchange risk, and interest rate risk, increasing profits, leading to high dividend payment and capital appreciation. However, in an inefficient firm, the default rate will be increased. The organization will not be able to pay its responsibilities for less than one year, resulting in a reduction in dividend payment. In addition, net income will decrease because of fluctuations in the foreign exchange rate and interest rate, resulting in shareholders withdrawing their shares from the firm; therefore, operational efficiency alters the relationship between financial risk and shareholders' wealth.

Shareholders' wealth refers to maximizing the return to shareholders mainly through financing projects that contribute to a positive NET Present Value (NPV) (Rao & Gutierrez, 2010). Shareholders' wealth is mainly reflected when the shareholders earn a return in dividends and capital appreciation. The more time it takes to collect a return, the lesser the worth shareholders put on that project. Additionally, investors place a lower value on projects that carry significant risk in getting returns, such as dividends. Previous studies focused on profitability and financial performance and

this necessitated this study to determine the effect of financial risk on shareholders' wealth.

Njuguna *et al.* (2013) studied if managing financial risk will influence the microfinance sector's growth in Kenya. This research found that financial risk managing strategies affected the development of Microfinance institutions. Similarly, Ayuma *et al.* (2015) undertook a study on elements influencing the financial risks of firms listed with NSE. They concluded that financial risk was positively affected by the level of loans more than by financial information, cost of financing, a mixture of debt and equity, prudent regulation, besides observation by supervisors.

A study by Aruwa and Musa (2014) established how risk components like credit risk, interest rate risk and operational risk affect the performance of Banks in Nigeria and found that risk components strongly involved the financial performance of Nigerian Banks, as showed by R^2 of 91%, indicating that the risk components strongly influenced financial performance in the model and 9% were influenced by factors not present in the model. However, default risk and constructs that characterize default risk and the level of investment to total risk asset positively affected performance. Working and rates on loans negatively affected the profitability of the Nigerian banks.

Amin *et al*. (2014) carried out a study to establish the influence of financial risk on commercial banks' performance in Tanzania. The study found that financial risk inversely affected financial performance. These studies have divergent opinions and necessitated the current research to establish the influence of financial risk on shareholders' wealth. Similarly, former investigations concentrated on profitability and performance with little or no focus on how financial risk can affect shareholders' wealth and this necessitated the current research project to determine the impact of financial risk on shareholders' wealth. Some of these studies used bank size as a moderating variable. In contrast, some studies did not use a moderating variable and this necessitated the current research to determine if operational efficiency altered the association between financial risk and shareholders’ wealth.

According to Beck *et al.* (2009), the financial system in Kenya comprises banks that act as a connection between the surplus financial elements and the deficit financial elements. A Commercial bank is a corporate entity that offers services of deposit, loans and safeguarding customers' essential documents (Rose, 2002). Commercial banks are licensed and regulated by the Central Bank of Kenya (CBK). CBK was formed in 1966, following the dissolution of the East African Currency Board. In Kenya, the lending sector is one of the pillars of vision 2030 that can be enhanced through increased investments, the inspiration of Distant Direct savings, protection of the economy from outside shock, and driving Kenya to develop a central monetary focus in Southand Eastern Africa. Banks accept deposits, give out loans, offer assurance services, and create job opportunities (Woods *et al.,* 2008). There are forty-two commercial banks in Kenya (Mwega, 2016).

According to Lin *et al*. (2011), Shareholders' wealth can be valued by book value to market value ratio, stock prices and economic value-added. This study measured shareholders' wealth using the book value to market value ratio. Tobin's Q ratio helps investors know whether a firm is undervalued so that they can purchase shares or if the firm is overvalued to sell shares (Lin *et al.,* 2011). When the ratio of book value to market value results in a value lesser than one, it implies that the market value is less than the additional cost. Thus, the organization's shares can be bought because of the low value. In contrast, if the ratio is greater than one, it implies that the organizations' earning is larger than the additional cost of the organization.

NSE report 2018 indicated that eleven commercial banks were listed in the NSE. Banks with government participation are Kenya Commercial Bank, Stanbic Bank Kenya Ltd NIC Bank, National Bank of Kenya and Housing Finance Ltd. Banks locally owned are Co-operative Bank of Kenya Ltd and Equity Bank (CBK, 2017). Therefore, it is vital to establish the influence of financial risk on shareholders' wealth listed at NSE.

According to Mwangi *et al.* (2018), listed banks benefit from economies of scale attributed to diversification due to their larger size and scale. These banks have been ranked according to their asset size. Equity Bank has the largest asset size of 158.3

billion and Housing Finance Group has the smallest asset size of 11 million. Cytonn report (2018) indicated that the number of people who can access financial institutions has increased from 59% in 2013 to 77% in 2018 due to financial awareness made by the banks. Kenya's banking sector has been undergoing consolidation, acquisitions and diversification. Banks listed at the NSE have been experiencing challenges such as asset quality deterioration, competition from SACCO'S and other microfinance institutions and consolidation due to some banks underperforming. .Commercial banks are considered because listed banks have larger asset size and benefit from economies of scale attributed to diversification (Banking Survey, 2018). These listed banks are ranked according to their asset size. Equity bank has the largest asset size of sh.158.3 billion and Housing Finance Group has the lowest asset size of sh.11 million. In Kenya, 11 commercial banks listed at the Nairobi Securities Exchange (NSE) for a period ending December 2019 were identified by the Central Bank of Kenya as important banks accounting for over two-thirds of the total banking sector in asset base and profitability.

1.2 Statement of the Problem

Shareholders' wealth is among critical decisions in a firm because it bears the overall investor perception and firm value. There has been concern about the declining value of shareholders' wealth among commercial banks listed at the Nairobi Security Exchange (NSE). Some shareholders have been withdrawing their shares since they have not been paid dividends and have no capital appreciation. In situations where financial risk is not well managed, it could lead to bankruptcy resulting in a reduction in shareholders'' wealth. Previous studies have linked financial risk to shareholders' wealth. The researchers, however, disagree on the magnitude and direction of the effect. It is not established how financial risk would affect shareholders' wealth of commercial banks listed at the NSE.

Banks are undergoing consolidation, evidenced by NIC Group and Commercial Bank of Africa, which announced a potential merger. Asset quality has also been decreasing, evidenced by an upsurge in credit risk and the rate of non-performing loans rising from 7.8% in 2017 to 9.9% in 2018. Banks have also been registering compressed Net interest margins, which increase concerns in the minds of investors.

Banks have not fully implemented financial risk management, which has an overall implication on shareholders' wealth and profitability.

The empirical studies have yielded different results and were conducted in different contexts and not on listed banks at NSE. While some empirical studies established that financial risk on shareholders' wealth has positively affected the growth of listed companies at the NSE, others found that when financial risks increases, the performance of financial institutions decreases. Previous research has yielded conflicting outcomes about how performance is likely to be affected by a financial risk, which necessitated further examination of how financial risk affects shareholders' wealth. Other researchers adopted different conceptualizations and used bank size as a moderating variable, while this study used operational efficiency as a moderating variable to establish whether the results would be different. To bridge the identified gaps the current research aimed to establish the influence of financial risk on shareholders' wealth of banks listed at NSE and the moderating effect of operational efficiency on this relationship.

1.3 Objectives of the Study

1.3.1 General Objective

To determine the effect of financial risk on shareholders' wealth of commercial banks listed at Nairobi Securities Exchange.

1.3.2 Specific Objectives

i. To determine the effect of credit risk on shareholders' wealth of commercial banks listed at NSE.
ii. To establish the effect of liquidity risk on shareholders' wealth of commercial banks listed at NSE.
iii. To investigate the effect of foreign exchange risk on shareholders' wealth of commercial banks listed at NSE.
iv. To evaluate the effect of interest rate risk on shareholders' wealth of commercial banks listed at NSE.

v. To assess the moderating effect of operational efficiency on the relationship between financial risk and shareholders' wealth of commercial banks listed at NSE.

1.4 Research Hypotheses

The following research hypothesis was tested;

$H0_1$: There is no statistically significant relationship between credit risk and shareholders' wealth of commercial banks listed in NSE.

$H0_2$: There is no statistically significant relationship between liquidity risk and shareholders' wealth of commercial banks listed in NSE.

$H0_3$: There is no statistically significant relationship between foreign exchange risk and shareholders' wealth of commercial banks listed at NSE.

$H0_4$: There is no statistically significant relationship between interest rate risk and shareholders' wealth of commercial banks listed at NSE.

$H0_5$: There is no statistically significant moderating effect of operational efficiency on the relationship between financial risk and shareholders' wealth of commercial banks listed at NSE.

1.5 Significance of the Study

Investors can employ findings from the current research because they will understand the impact of financial risk on shareholders' wealth and, therefore, evaluate their investment decisions on which banks to invest in. Investors' Safety of deposits and investments can be ensured through proper financial risk management. Similarly, this research can benefit managers as they will apply the recommendations from this study and involve the appropriate stakeholders in shaping how to reduce financial risk to increase returns. Managers will also benefit since the current research will guide them in forecasting, alerting and monitoring financial risks that affect shareholders' wealth. The Central bank can develop more stringent rules of advancing loans and demand collateral before issuing loans; financial institutions can benefit since they can offer better methods and schemes to provide improved reflectiveness on the effect of financial risk on the future presentation of their cash flows. Research outcomes from the current research can assist in adding to the existing information gap in works regarding the effect of financial risk on the performance of financial banks in Kenya.

1.6 Scope of the Study

This research determined the effect of financial risk on shareholders' wealth of commercial banks listed at NSE. NSE was considered the context of the study since firms listed there are required by International Financial Reporting Standards No. 7 to disclose all their financial statements published in the NSE handbook. The Nairobi Securities Exchange is located in Nairobi. This study aimed at commercial banks listed at the NSE because they contribute to the Kenyan economy regarding taxes, job creation, wealth creation and credit access. Similarly, commercial banks listed at the NSE are grouped according to asset size. Equity bank has the largest asset size of 158.3 billion and Housing Finance Group has the lowest asset size of 11 million (NSE report, 2019). The elements of financial risk that were covered in this study are credit risk, liquidity risk, foreign exchange risk, interest rate risks and operational efficiency was used as a moderating variable. Secondary data from NSE'S periodic reports and commercial statements of the eleven commercial banks registered with Nairobi Securities Exchange for seven years ranging from 2013 to 2019 was used because these banks have consistently filled the required reports that provided data for the seven years. Commercial banks listed at the NSE were chosen since they are required to publish their data and therefore, they provided reliable and accurate data.

1.7 Limitation of the Study

The outcomes of the current research mainly depended upon the analyses of secondary data. Thus, research findings were subject to shortcomings of the bank's financial ratios computed from the financial statements as conveyed to the users of accounting information under the custody of the Central Bank of Kenya Regulation Section. Research data were collected for seven years, from 2013 to 2019. The research relied on financial statements that might have been manipulated and overcome using only the audited financial statements.

1.8 Operational Definition of Terms

Commercial Bank : Refers to a financial institution with the main objective of financial intermediation; lending money to deficits units inform of secured and unsecured loans and provide savings, term deposit, transaction, and money market accounts to surplus units.

Credit Risk : The risk of a debtor's inability to pay interest or principal appropriately. It is the probable cost due to the default of a financial contract or financial aspects due to non-performance in any agreement.

Financial Risk : It arises from a business's exposure to financial markets, its dealings with others, and its dependence on methods, schemes, and persons. Financial risks are triggered by charges and rates, comprising interest rates, exchange rates, and commodities prices.

Foreign Exchange Risk : this is the risk that conversion rates fluctuations may change the values of financial institutions' properties and liabilities located overseas.

Interest Rate Risk : This is the risk that results from the fluctuations in rates on loans which affect the cost of funds and returns on assets.

Liquidity Risk : this is the risk that an organization will have inadequate resources to counter its financial obligations appropriately.

Operational Efficiency : Refers to the capability of a business to decrease waste in time, effort and materials as much as possible while still generating a high-quality service.

Shareholders Wealth : Refers to the attempt by organization managers to exploit the capital of the firm they run, which causes stock prices to increase investors' wealth

CHAPTER TWO
LITERATURE REVIEW

2.1 Overview of Concepts

Oosterhof (2001) found that risk control can improve worth of the business while market failures like advanced taxing of the business can result to bankruptcy. Thus, risk control is an obligation of every investor. Financial risks are similarly mitigated to evade bankruptcy and expenses associated by it (Drogt, 2008). Financial risk administration encompasses management of steady incomes and observation of persistent tax rates (Dhanini, 2007). Risk control is an emphasis that financial risk management reducs unpredictability of returns to shareholders.

2.1.1 Credit Risk

According to Chen and Pan (2012), credit risk arises as a result of non-payment of loan. The risk of nonpayment in banks has been connected with a great desire for loaning, extreme loan postponement, and poor ways of managing loans. Banks with advanced ranks of default risk are exposed to non-diversifiable risk. However, Greuning and Bratanovic (2009) found that banks with reliable default risk managing tools such as securitized plans do not have their share prices negatively influenced by advancement in loan assets. Macro-economic factors such as an increase in prices of goods, rates on loans, exchange rates and growth in domestic product impact credit valuation and capability to pay off the debtors. Interior elements such as well-organized loan managing techniques and a stable desire for loan risk define the property value held by banks (Mwaurah, 2013).

Credit risk is a loss resulting from borrowers inability to pay their total amount of loans on time. The fundamental bases of risk on loans comprise, restricted organizational size, unsuitable loans guidelines, unstable rates on loans, lack of administration, inappropriate rules and little investment. The basis of risk also encompasses ability to convert assets into cash, fixed loaning, huge authorizing of financial institutions, reduced credit endorsement, careless loaning, unfortunate loan valuation, negligence in loan valuation, reduced loaning activities, management meddling and insufficient regulation through the central bank (Coyle, 2000). The economic environment affects risk on loans depending on the opinion debtors have of

their changes in the economic forecasts will affect the quantity they wish to take and put in investments. In the same way, as the economic environment changes, so will creditors fluctuate their loaning principles and, likewise, their rules on how fast and inflexibly they begin foreclosure measures after the first indicators of settlement problems. The most significant outcome that business circumstances apply to the danger of loan gathering problems emanates around variations to the risk-related features in the remaining loan.

Credit risk can be remote. That is, the charge which the bank must retain once the debtor fails to honor the loan agreement plus the payment to the debtor. To the creditor, this cost can be more and signify the total sum of the credit plus the costs of the ineffective effort to accumulate it. In other cases, it can be no extra than the costs of tracing and carrying recent short-term misconduct. Creditors can safeguard themselves against these isolated expenses over the loans they charge and the funds they preserve. In the case of some business loans, the vendor can cover his financial records against default in loan repayment. Creditors who give loans on more lenient standards to riskier debtors experiences more damages which makes them to charge higher rates on loans. These ideas are supported by Muriithi *et al.,* (2016) in their study to establish the influence of Credit Risk on the Financial Performance of Commercial Banks in Kenya. They concluded that Credit Risk had an inverse impact on performance. The current study measured credit risk using non-performing loans to gross loans ratio, where a high non-performing loan to gross loan ratio indicates the high rate of default by the customers and it could be a sign of bankruptcy. Since an increase in credit risk resulted to a decrease in performance this necessitated the researcher to investigate the extent to which shareholllders' wealth was affected by credit risk. The current study measured credit risk using non-performing loans to gross loans. This ratio indicates the level of default in loans whereby a high credit ratio indicates more customers have defaulted in paying loans and this reduces banks cashflows which results to low dividend payment and less capital appreciation.

2.1.2 Liquidity Risk

This can be grouped into Backing liquidity risk and property liquidity risk. Property liquidity risk describes the exposure to loss resulting upon being incapable to affect a business at present market charges due to both in relation to size or a short-term

drying up of markets. Devising to sell in such situations can have an outcome of important damages. Backing liquidity risk describes the exposure to loss if an organization is incapable to settle its money desires. This can generate different difficulties, such as inability to reach boundary calls or capital removal requirements, observe the guarantee necessities or accomplish roll-over of liability (Manish & Ghanshyam, 2013).

Allen and Gale (2000) defined liquidity risk as the insufficiency of obligation side of a bank. Inadequate liquidity in a financial system triggers fragility and bank runs in a financial system. Kiyotaki and Moore (2008) described liquidity risk as the uncertainty that arises when a share cannot be changed to cash in a market to prevent a monetary cost. It is the chances of a bank to experience financial losses due to lack of liquidity. IMF (2011) established that liquidity risk contributed major part in past lending disaster, and that failure of financial institutions through the worldwide monetary disaster was as a result of reduced liquidity management by financial institutions and inadequate regulatory policies.

Inability to meet short-term obligations has constantly haunted the monitors of financial institutions and depositors in Kenya. Since the lending predicament in the year 1993 to 1994, developing countries remain to practice liquidity deficiency. There are three banks in Kenya which were found to be bankrupt and put under receivership due to their inability to meet its short-term obligations which show there is need of banks to observe liquidity monitoring requirements. This situation is putting worries to controllers, scholars, loaning organizations, and depositors on whether Kenya monetary organization is sufficient to prevent lending disaster in future. To prevent bank withdrawal, CBK through its arm of bank regulation necessitates banks to advance strong plans and guidelines to prevent liquidity predicaments. Banks are obligated to establish a clear business arrangement that will outline tasks and capabilities on liquidity risk administration; to enhance interior controls on liquidity risk administration on their overall interior risk administration; to offer facts on liquidity valuation and checking; to conduct well-timed pressure checking and offer suitable liquidity emergency strategies (CBK, 2013). Therefore, the current study sought to investigate how banks capability to settle their liabilities would affect return

to shareholders' interms of dividends and capital gain. Liquidity risk was measured using total loan to total deposit ratio. This ratio indicate the ability of the banks to settle their obligations as they arise.

2.1.3 Foreign Exchange Risk

The risk on foreign conversion rates evaluates the probability of a business's productivity, earnings and the worth of a market to vary due to fluctuations in conversion rate. Variations in conversion rates also make the size of a business's net income unsafe and thus execute a risk of disparity between interior source and claim of resources for savings. Companies can select hedging of their conversion rate coverage by; operating hedging with overseas resources and processes and financial hedging with overseas exchange liability and derivatives (Bartram *et al.,* 2009).

The suggestion of weakening of conversion rate on reward on banks' speculation is extremely forecast by whether it takes goods from overseas or sells goods abroad. For banks that take goods from overseas for resale, a high conversion rate unfavorably upsets returns to shares. It increases the cost of goods, decreasing demand for shares and decreasing banks' income predictions. For banks that sell their shares and stocks to foreign countries the association of conversion rate to rewards to shares is progressive as properties becomes inexpensive overseas appealing extra sales therefore growing overseas conversion investments (Alam & Uddin, 2009).

According to Central Bank Supervision Prudential guidelines (2013) banks are essential to assess their level of exposure with regards to market risk and deliver for capital charge commensurate to associated risks. Banks are expected to reveal their market risk exposure on regular basis, assume stress testing and advocate faultless systemic risk evading policies to measure up bank flexibility against unanticipated economic dynamism. Businesses face several difficulties in sustaining healthy tasks due to doubt in incomes, net income and upcoming charges. Monetary derivatives, overseas exchange, rates on loans and product derivatives have arose to handling risks affecting businesses in some parts of world. If overseas conversion markets are well-organized such that buying power equality, rates on loans parity, and the international Fisher effect hold true, a business or saver does not need to safeguard beside overseas conversion risk due to insignificance toward international speculation results. These

factors affects all businesses as long as they anticipate to make profits without omission of transport businesses. Therefore, the study sought to establish the effect of fluctuations of exchange rates on dividend payment to shareholders' and capital gain. The current research evaluated foreign echange risk using net foreign cureency to toatal assets ratio. This ratio indicates the level of change in exchange rate which could affect cashflows of the banks resulting to a decrease in dividend payment and reduction in capital appreciation.

2.1.4 Interest Rate Risk

As rates on loans rises, depositor's convert their speculation concentration from markets that do not employ debt to those that employ debt and connected secure income savings. This changeability causes a drive that results to movement of investment from capital market to money market. This movement describes the adverse association of rates on loans to rewards of stock. High government bonds rates control high loaning charges. This raises the charge of credits in financial system resulting to high non-performing loans. The rate of finance increases as investors pursue advanced rates for their savings. Therefore the researcher sought to investigate the effect of interest rates on shareholders' wealth of commercial banks listed at the NSE. The current study investigated whether changes in interest rates would affect payment of dividends and capital appreciation. The current research measured interest rate risk using net interest margin which indicates the level of interests acquired from loans compared to amount of interest paid out to creditors.

2.1.5 Operational Efficiency

When a bank does not deal with operational efficiency it can have an outcome of varying profit and income shocks for the shareholders'. Therefore, operational inefficiency can have an effect on incomes and net value. Operational efficiency, therefore, creates operating losses and the damages created are an expense to the financial institutions. The assessing and the resulting valuing of the working efficiency investment cost has to be suitable to cater for these damages. According to Santomero (1997) operational efficiency conveys to matters of making payments and delivering the goods and services on trades for the conversion of money. It also comprises of recording of information, dispensation system letdowns and

satisfaction of the varied principles. According to Goldmann (2009) interior deception is done by both workers and administration and results to 50 to 80% of embezzlements done in businesses. Workers have entrée to data, procedures, schemes and properties consequently making it easier for them to come up with methods of compelling embezzlement without being spotted. Operational inefficiency is as a result of unpredictability in returns which reduces cashflows of a business decreasing dividend payment and capital gain. The current study aimed at establishing whether operational efficiency moderates the relationship between financial risk and shareholders' wealth. The current study measured operational efficiency using return on total assets to establish the valuability of investments.

2.1.6 Shareholders' Wealth

Shareholders' wealth being one of the main goals of a firm aims at maximizing shareholders' value by increasing dividend payment and capital gain. Maximization by increasing company stock prices since an increase in stock prices increases capital gain. Managers often invest in projects that yield positive net present value in order to get returns that can be issued to shareholders' as dividends. Shareholders' wealth can be measured using Tobin's Q, economic value added and stock prices. The current study used Tobin's Q to measure shareholders' wealth which is given by book value of equity to market value of equity in order to evaluate overvalued shares and undervalued shares.

Agency problem can arise when the management pursue their own interest at the expense of shareholders' interest. Managers can invest in risky projects and this could result to losses if the project fails and it could lead to decrease in dividend payment and reduced capital gain. Similarly, managers can make wrong decisions such as employing too much debt and this could reduce the liquidity position of the firm resulting to reduced dividend payment. The current study aimed at establishing the extent to which shareholders' wealth is affected by financial risk.

2.2 Empirical Literature

Many researchers have done studies to establish if financial risk components have an effect on shareholders' wealth. Aruwa and Musa (2014) evaluated the influence of

several risk components such as credit risk,interest rate and operational risk on banks' performance in Nigeria. The study found that credit risk positively affected cost of capital whereas interest risk and operational risk negatively affected banks performance. However, Lelgo and Obwogi (2018) conducted a research on the effect of financial risk on microfinance financial performance. The research results were that credit risk and interest rate risk had a negative influence on financial performance while liquidity risk positively affected performance. The studies used financial performance as the dependent variable and had divergent opinions. This necessitated the current study to establish the effect of financial risk on shareholders' wealth to investigate whether there will be different results.

2.2.1 Credit Risk and Shareholders' Wealth

In a study by Wanjohi *et al.* (2017) to establish the influence of credit risk management on profitability of commercial banks in Sweden and found that credit risk management affected profitability. The investigation extra showed that the influence of credit risk management on profitability for the 4 commercial banks tested did not give the same outcome. This research was restricted to ascertaining relationship between credit risk management and profitability of banks whereas the current study focused on the effect of credit risk on shareholders' wealth.

Similarly, Poudel (2012) discovered several restrictions related to credit risk management because it affected performance of banks in Napel. Factors investigated in this research were evasion rate, charge per credit assets and capital adequacy ratio. Data collected from balance sheet and income statement of 31 banks was from 2001 to 2011. Data was evaluated by descriptive statistics such as mean, standard deviation, minimum and maximum. The study used pairwise Correlation and regression models to examine the relationship between the variables. The findings were that evasion rate, charge per credit assets and capital adequacy ratio inversely affected performance of banks. The researcher found that using t-test the independent variables negatively affected profitability. Nevertheless, the evasion rate is the greatest forecaster of performance of banks. The study suggested that banks ought to strategize and express plans that will reduce coverage of banks to loan risk and will improve viability of the banks. These studies focused on profitability and

performance and this necessitated the current study to scrutinize the influence of credit risk on shareholders' wealth.

Similarly, Hosna (2009) examined the relationship between credit risk, capital adequacy ratios and profitability of banks in Sweden ranging from 2000 to 2008 where the study established that An increase in proportion of default in loans results to reduction in ROE. The results were that when profitability and performance increases, it results to a reduction in loan risk measures which were also established in other researches. In his study Tomak (2013) did a research on Factors affecting Bank's Loaning Performance of commercial banks in Turkey. The study used 18 banks out of 25 banks. The most significant aim of this research was to ascertain factors of bank`s loaning behavior. Data collected was from 2002 to 2012. Specific objectives of the research included establishing the effect of bank size, contact to extended capitals, rates on loans, gross domestic product growth rate and inflation. The conclusion revealed that bank size, contact to extended loan and inflation positively affects bank`s loaning behavior but, inflation and GDP did not have any influence. These studies used bank size, inflation rate as moderating variables while the current study used operational efficiency as a moderating variable. In addition these studies focused on profitability and lending behavior while this study focused on shareholders wealth.

In their study Kolapo *et al.* (2012) conducted a research on the influence of credit risk on commercial banks performance in Nigeria. The study employed empirical investigation using quantitative aspect of credit risk. He used 5 commercial banks as a sample size using cross sectional basis and collected data over a period of 11 years. Their study was anchored using traditional profit theory and they used panel model to analyze the relationship between variables. They found that a rise in credit risk results to a reduction in performance of banks. This study focused on performance and used a population of 5 commercial banks whereas the current study focused on shareholders' wealth and 11 commercial banks to assess whether the results would differ.

However, Afriyie and Akotey (2011) observed the impact of credit risk on profitability of banks in Ghana. Their research used balance sheet and income statement of 10 rural banks for a period five years for examination. They used panel regression to estimate the relationship between variables. They used ROE and ROA as indicators of profitability of banks while credit risk managing was measured using Non-performing Loans Ratio and Capital Adequacy Ratio. They concluded that default loans positively affected profitability of rural banks indicating that, there is advanced credit losses but banks still earn returns. The research established that there is an association concerning the credit risk managing and profitability of particular banks in Ghana.

In their study, banks with advanced capital adequacy ratio may be improved by advancing extra loans and absorb loan losses when they arise and thus result to enhanced profitability. They found that there is a relationship between the credit risk management and profitability. Nevertheless, there are other elements that can influence performance of banks specifically in countryside areas. Banks that accomplish their goals properly devise their main office in urban areas. This study might give enhanced outcomes if every bank was represented. This research concentrated on profitability whereas the current research focused on shareholders wealth and operational efficiency as the moderating variable.

In addition, Ogboi and Unuafe (2013) conducted a study about the degree of associations between credit risk and profitability of banks in Nigeria. Cross sectional data and time series were collected ranging from 2004 to 2009 and were gotten from financial statements of banks. Data was collected from income statement and balance sheet of 6 banks. The 6 banks were selected from the 21 banks in Nigeria using purposive sampling. The research investigated the effect of credit risk on capital adequacy on performance of banks in Nigeria. Panel data model was used to establish association present amongst credit loss provisions, credits and advances, default loans and capital adequacy that were predictor constructs and the dependent variable was return on assets to value profitability of banks.This study used Nigerian banks and focused mainly on profitability whereas the current study used Kenyan banks and

focused on shareholders' wealth to establish whether there would be a difference in results.

They concluded, an increase in loan risk managing and capital adequacy increases performance of the banks with the exclusion of credits and advances negatively affected profitability of banks throughout that period. They employed panel data as it was probable to embrace period effects which was also used to device specific heterogeneity, which is undertaken by business precise fixed or random effects components, which indicated prejudiced outcomes when abandoned in cross segment or period series approximations. Nevertheless this research caught the other financial risk constituents such as rates on loans, net steady backing and liquidity exposure among others constructs and consequently a gap for more examination. These studies investigated influence of credit risk on performance and profitability whereas current study examined effect of credit risk on shareholders wealth.

In a research by Masinde (2017) to determine the influence of default risk on performance of Banks in Kenya, the research established that a rise in the loss on loans brings about to a reduction in financial performance and a rise in bank size causes a rise on financial performance. The research embraced descriptive research design and used a population of 42 banks in Kenya. He collected information gotten from income statement and balance sheet of commercial banks for a period ranging 2012 to 2016. The study used SPSS version 25 to aid in analyzing data and correlation was done to determine the association present concerning the two constructs under research. Bank size besides total bank deposits was used as a moderating variable. The research used bank size besides total deposits as moderating variables while this study will use operational efficiency. The research established that a rise in the loss on loans brings about to a reduction in financial performance and a rise in bank size causes a rise on financial performance. Therefore the research focused on performance of the banks in Kenya whereas current research focused on shareholders' wealth of commercial banks listed at the NSE.

In a study by Mwangi (2012) to determine the influence of credit risk administration on monetary performance of viable banks in Kenya, the study used descriptive

research design and collected second hand data from commercial financial statements. The study used 26 banks as a sample size out of the 43 banks in Kenya and used ordinary list squares to analyze the association amongst variables with help of SPSS. The findings were that non-performing loan ratio and capital adequacy ratio negatively affected banks performance. The research mainly focused on how default risk affects monetary performance while current research focused on effect of credit risk on banks shareholders' wealth that are listed at the NSE.

In their study Gakure *et al.* (2012) to establish the impact of credit risk controlling techniques on the performance of unsecured bank loans employed by commercial banks in Kenya. Their study employed Risk adjusted Return on Capital Model, portfolio theory, information theory and arbitrage pricing theory. They used descriptive exploration plan and applied a section of the population of 39 staffs of banks. They collected data applying a set of questions and examined data employing mean, minimum, maximum and variances with the help of SPSS. They found that credit risk identification affected banks performance. This study mainly focused on performance whereas the current study focused on shareholders' wealth.

In a study by Tafri (2009) to determine the influence of financial risk on the profitability of banks of Muslim in Malaysia, the research used credit risk, liquidity risk and interest rate risk as key financial risk components and collected information ranging from 1996 to 2005. The study established that credit risk weakly affected the profitability of the Islamic banks and rates on loans as evaluated using ROE. Inability to meet short-term obligations had an insignificant effect on Return on equity. According to a study done by Haque and Wani (2015) to establish the effect of financial risk on the performance of banks in India, they found that bankruptcy risk, capital risk and credit risk affected performance while interest rate risk and inability to meet short-term obligations risk did not affect performance.

Ruziqa (2013) conducted a study to establish the influence of credit risk and liquidity risk on financial performance of Indonesian banks, the study evaluated financial performance using ROA and ROE. The research also measured credit risk using default loan ratio and current ratio. The study found that credit risk and liquidity risk

did not affect financial performance. This study used Indonesian banks whereas the current study used Kenya Commercial banks listed at the Nairobi Securities Exchange to investigate whether the results would be different.

In a study by Kurawa and Garba (2014) to investigate the erelationship between credit risk management and profitability of banks in Nigeria, the study used data from financial statements such as statement of financial position and statement of comprehensive income. Data was analysed using regression methods and data was presented using tables and figures. The finding of the study was that an increase in credit risk management results to a decrease in banks profitability. This study used profitability as the dependent variable and its context was Nigerian banks whereas the current study sought to assess the effect of credit risk on shareholders' wealth of commercial banks in Kenya to investigate whether using a different context would yied different results.

2.2.2 Liquidity Risk and Shareholders Wealth

With several empirical studies, regulatory framework has proven the importance of liquidity risk on shareholders wealth where much still need to be enumerated on how liquidity risk affects shareholders. Yasser and Anna (2018) established that bank liquidity affects bank stock returns. Their study measured liquidity risk based on balance sheet ratio of liquidity gap which was defined by the amount of liabilities less liquid assets normalized by total liabilities. This measure was established to be correlated with banks' ability to immediately service sudden outflows. They established that funding liquidity risk affects bank stock returns. The study focused on stock returns which is one method of measuring shareholders wealth whereas the current study focused on both the book value and market value of equity to determine dividend payment and capital gain.

Additionally, Wambu (2013) conducted a research to establish the influence of liquidity risk on profitability of commercial banks in Kenya, the study used all forty four banks in Kenya and collected data for 5 years from 2008 to 2012. The research adopted descriptive research plan and collected secondary data. This study used regression analysis to examine the association between inability to meet short-term

obligations risk and profitability. The study measured profitability using ROA and liquidity risk using current assets to current liabilities ratio. The study established that a rise in liquidity risk resulted to an increase in profitability. This study focused on profitability and used all the 44 Kenyan banks while the current study mainly focused on shareholders' wealth and used 11 commercial banks listed at the NSE to establish whether by using a small population the results would be different.

Musembi (2018) conducted a research to establish the influence of liquidity risk factors on financial performance of listed commercial banks at Nairobi Securities Exchange in Kenya. The study used descriptive research plan and a target population of 11 listed commercial banks at the NSE. This research used both first-hand information and information collected from secondary sources. Primary data was collected using questionnaire. Stratified random selection was employed to choose a section of the population and found that liquidity risk positively affects performance. This study adopted a dependent variable which was performance whereas this current research employed shareholders' wealth as dependent variable. Similarly, this study did not use moderating variable while this study used operational efficiency as a moderating variable on the association between financial risk and shareholders' wealth of listed commercial banks at NSE.

Alsyahrin *et al.* (2018) carried out a study to establish the influence of operational risk, inability to meet short-term obligations risk, and financing risk towards Indonesian Sharia Bank's. This research used banks size as a moderating variable. They used purposive sampling method and determined 12 Indonesian banks as the sample size. They used panel data and collected this information from income statement and balance sheet of commercial banks in Sharia. They established that operational risk, liquidity risk and financing risk had a major influence on banks financing and they also found that bank size positively affected the relationship between the independent variables and bank's financing. This study adopted purposive sampling method and used Indonesian banks as the population whereas the current study employed census technique and used Kenyan banks to assess whether the results would differ.

According to Adolphus (2008) who carried out a research to establish the influence of liquidity managing forms of particular Nigerian banks by assessing the importance of funds purposes in bank selection administration, sources of property obligation discrepancy in banks, reasons for inability to convert assets to cash disaster, occurrence of treasury risk, adequacy or suitability of liquidity risk controlling systems, liquidity forecasting practices of Nigerian banks, and level of liquidity coverage in banks. The widespread described circumstances of inability to convert to cash disaster and bankruptcy in Nigerian banking industry required. This research established that businesses with great ability to convert assets to cash have bulk level of their savings in temporary resources that have worse reward than permanent resources. By way of an outcome, high ability to convert to cash is probably related to small profitability and low liquidity is probable to result to high profitability. Thus, businesses should always strive to retain an equilibrium amongst contradicting purposes of liquidity and profitability.

In a study by Bordeleau (2009) to examine the influence of liquidity on profitability of banks in US and banks in Canada for a period ranging 1997 to 2009. This research used numerical procedures to evaluate the influence of inability to meet short-term obligations on bank profitability. The outcomes of the research recommended, a non-linear association occurs, whereby viability is enhanced for financial institutions that embrace properties that can be converted into cash easily, though, there is a fact beyond which carrying additional assets that can be converted cash reduces profitability on banks, all also identical. Theoretically, the examination conclusions concurred with the view that markets rewards a bank. To some degree for retaining assets that can be converted to cash, thus decreasing its ability to meet short-term debts as they arise. Nevertheless, this value can ultimately be compensated by the alternative cost of retaining such relatively few resilient easily converted assets to cash on the statement of financial position. At the same time, approximation outcomes delivered some indication that the association between assets that can be converted to cash easily and profitability influenced by the bank's commercial model and the risk of backing market problems.

Akram (2014) who carried out a research to examine the effect of liquidity on rewards of shares. The research defined inability to meet short term liabilities from market perspective as the ability of stocks to be traded in the stock market with minimum bid-ask spread. The study established that the wider the spread the higher existence of liquidity risk in the market thus affecting tradability of the stocks and consequently reduced trading implied fewer stock returns due to investors. This definition of liquidity based on the flow of funds to the stock market was first articulated by Amihud and Mendelson (1986), who established a relationship between market liquidity and stock returns. Therefore, the current research aimed to examine the impact of liquidity risk on shareholders' wealth of listed banks at the Nairobi Securities Exchange regarding returns that shareholders' will get from the investment.

In addition, Mwangi (2014) carried out research to determine the influence of liquidity risk management on the financial performance of banks in Kenya and used descriptive research design and used 43 banks in Kenya as the population. Data was collected ranging from 2010-2013 and concluded that liquidity risk management negatively affects financial performance. According to Chen *et al.* (2018) carried out a research to assess the influence of liquidity risk management on performance of 12 distinct economies for a period ranging from 1994-2006. They found out that liquidity risk inversely affects performance of banks. Previous researches investigated influence of liquidity risk on performance which necessitated the current research to establish the influence of liquidity risk on shareholders' wealth of listed commercial banks at the NSE.

2.2.3 Foreign Exchange Rate Risk and Shareholders' Wealth

In a study by Mbubi (2013) to investigate the impact of overseas conversion rate on performance of listed companies at the NSE ranging from 2002-2012. This research adopted descriptive examination to evaluate both theoretical and numerical information of 41 organizations. This research concluded that unrealized overseas conversion advances and losses influenced cash flow of international corporations since it was dispatched to their financial statements. The research also found that there had been major percentage change in buying goods from abroad for businesses listed in the NSE; the research therefore established that use of overseas conversion

has an influence on costs of goods bought from abroad and liabilities with the result affecting the earnings of international corporations. However, Ahmed (2015) assessed the influence of overseas conversion exposure on the performance of certain listed banks in Kenya. This research embraced descriptive research plan. The study employed both data collected firsthand and data collected from financial statements. This research concluded that overseas conversion coverage negatively affects performance of listed banks at the Nairobi Securities Exchange in Kenya.

In addition, Wong (2009) examined the association concerning overseas conversion exposure and size of a bank. This research used the panel data of share worth of Chinese banks listed ranging from 2005 to 2008 to banks. From the observed findings, it suggested that an increase of the foreign exchange rates negatively affects performance, and therefore share prices of banks in China, which affects bigger banks having extra definite. This conclusions specified on reduction in share prices which indicated advanced non-payment risk. This study used Chinese banks whereas the current study used Kenyan banks to investigate whether by using a different context the results will change.

According to Gachua (2011) in his research to determine influence of overseas conversion coverage on performance of listed companies at the Nairobi Securities Exchange. Data was collected ranging from 2001 to 2010. This research adopted descriptive research plan that entailed both theoretical and numerical data. This research used 38 listed companies at Nairobi Securities Exchange but data of 32 companies was analyzed after removing ruined and uneven questionnaires. This research concluded that companies that were listed used financial statements and share prices account to keep overseas conversion changes. This research found out that unrealized overseas conversion benefits or losses had an influence on the cash flows of firms that were listed as it was displayed to both their statement of comprehensive income and shareholders' equity. Therefore the current study aimed at evaluating how foreign exchange rate affected the shareholders' value in terms of returns to shareholders as many of the preceding empirical researches concentrated on financial performance.

In a research by Ahmed (2015) to establish the influence of foreign exchange exposure on the performance of banks in Kenya, the researcher used data from financial statements and data from questionnaires and also used descriptive research design. The study found that foreign exchange risk and inflation rate negatively affects performance and interest rates did not affect performance. This research used financial performance as dependent variable whereas the current research used shareholders wealth. However in a study by Odoyo *et al.* (2014), in their study to establish the effect of foreign exchange rates per share, they used economic theory to anchor their study. They collected data for a period of 2 years from 2012 to 2013. They used coefficient of determination to examine the extent of relationship between variables. This study also used mean, standard deviation, variance, minimum and maximum to examine information. They discovered that foreign exchange rates positively affects prices per share. Due to the divergent results the current research scrutinized the influence of foreign exchange risk on Shareholders' wealth to establish the results.

In a research by Irine (2011) to assess the relationship between foreign exchange risk and financial performance of Kenyan Airlines, the study adopted a case study design and found that currency deviations affected prices and negatively affected revenues and expenses in foreign denomination. Therefore, the study concluded that an increase in foreign exchange risk results to a decrease in financial performance.This study mainly focused on performance of Kenya Airlines while the current study used Kenyan Commercial banks to investigate whether by using a different sector the results would change.

2.2.4 Interest Rate Risk and Shareholders' Wealth

In a study by Fapetu and Kolapo (2015) to establish the effect of interest rate risk on the performance of Banks in Nigeria ranging from 2002 to 2011,return on asset, deposit to loans ratio, mean of the loaning ratio and risk of interest diversitywas employed to measure performance of banks. Their research used stable effect regression method where they established that interest rate risk on loans had no influence on performance of banks. This study used Nigeran banks whereas the

current study used Kenyan banks to establish whether by using different context the results would be different.

However, Ngetich and Wanjau (2011) analyzed the effects of interest rate range on the level of non performing assets of banks in Kenya. This research employed descriptive design to explain the variables as they were without manipulating them. They used a sample of 43 banks that were in operation by 2008. This research used first hand data and data collected from banks statement of comprehensive income and statement of financial position. This research employed both theoretical and numerical data. This research established that rates on loans range influence assets that are performing in banks as it rises the cost of loans charged on the debtors. Similarly, Odeke and Odongo (2014) examined the association between rate on loans risk coverage and performance of banks in Uganda. This research used first-hand data and data from financial statements ranging from 2009 to 2011. This research mostly adopted numerical analysis of data. They analyzed data for a long period using descriptive statistics and inferential statistics. The general examination of rates on loans risk coverage positively affected performance of banks. These studies mostly focused on performance while this is not the only goal of a firm whereas this study focused on shareholders wealth.

In a study by Ngalawa (2013) it revealed that bank's coverage on rates on loans risk or revenue gap defines the arrangement of the statement of financial position. This research investigated rates of loans sensitivity gaps gotten from statement of financial position and statement of comprehensive income for 10 banks listed in the NSE ranging from 2008 to 2012. In precise, the study found that in Kenya, banks characteristically preserve a great coverage to rates on loans that can be projected through the revenue gap. This study also discovered that sensitivity of revenue gaps to market rates on loans as established by the Central Bank of Kenya through capital tools.

In a study by Khan and Sattar (2014) to establish the relationship between interest rate risk and profitability of Pakistan banks, this study used correlation analysis to evaluate the relationship between variables. The sample size of the study was 4

commercial banks in Pakistan.The finding of the study was that interest rate risk affects profitability of banks. This study used profitability and Pakistan banks whereas the existing study used shareholders' wealth of commercial banks in Kenya to investigate whether the results would be different.

The banking sector is a serious region in the growth of Kenyan economic development. Banks are affected by certain types of financial risks while performing their function of offering money services to its customers some of them are credit risk, operational risk, technological risk, foreign exchange rate risk and interest rate risk. Rates on loans risks can result to significant losses very fast in unpredictable market. Since the results are divergent it necessitated the current research to establish the effect of interest rate risk and shareholders' wealth of commercial banks listed at Nairobi Securities Exchange.

2.2.5 Moderating Effect of Operational Efficiency on the Realationship Between Financial Risk and Shareholders' Wealth

A study by Fu *et al.* (2014) examined the association between shareholders' worth and operational efficiency for 274 banks in 14 Asia-Pacific markets for a period ranging 2003 to 2010. The outcome showed stock returns positively affects earnings of the banks. However, the effect of operational efficiency on shareholders' worth consumes a lot of time to be detected. Similarly, Kijambi (2014) undertook a study on the aspects responsible for performance of domestic profit-making banks in Uganda. The research used all licensed banks in Uganda and collected data from income statement and balance sheet. They used linear regression to examine the association among the factors affecting commercial banks performance. This research concluded that capital adequacy, interest income, inflation and operational efficiency were the aspects influencing performance of commercial banks. These studies reveal that few studies have considered operational efficiency as independent variable and this necessitated this study to consider operational efficiency as a moderating variable.

Ndolo (2015) did a study to establish the effect of operational efficiency on financial performance of firms listed at the Nairobi Securities Exchange, where the study found that operational efficiency affected the financial performance. The study used descriptive research design and data was collected from World Banks' financial

reports. The research used a target population of 67 listed firms at the NSE.This study used operational efficiency as an independent variable which necessitated the current research to establish the moderating effect of operational efficiency on the relationship between financial risk and shareholders' wealth.

Omondi and Muturi (2013) carried out a research to find out the aspects influencing listed companies' financial performance at Nairobi Securities Exchange in Kenya. This research assumed a descriptive research design and sampled 29 listed organizations using purposive sampling technique. They collected secondary data from financial statements. They analyzed data using Inferential and descriptive statistics and this study concluded that operational efficiency, leverage, company size, liquidity and company age significantly affect company's performance. These studies reveal that operational efficiency has not been used to moderate the relationship of variables and necessitated the current research to investigate how operational efficiency moderates the association of financial risk and shareholders wealth of commercial banks listed at the NSE.

2.3 Theoretical Framework

In their proposition, Gay and Weaver (2011) stated a theory to be a collection of structured relationships or laws that entail a logical description of a discipline. Theoretical framework is a lens that enables the researcher to view a phenomenon in the broader scope (Blumberg *et al*., 2011). Theoretical literature review refers to a detailed and systematic analysis of theory to establish what concepts, construct and phenomena exist, the relationship between them, ascertain to what extent the theory has been tested, and therefore come up with a new hypothesis (Shannon & Kennedy, 2007). This sector show theory relevant to the association between financial risk and shareholders' wealth. These theories include Modigliani and miller, Capital Asset Pricing Model(CAPM), financial distress theory and Modern Portfolio Theory(MPT).

2.3.1 Modigliani and Miller (Irrelevance of Risk)

As cited by Horne and Wachowicz (2009), Modigliani and Miller (1958) denotes that the net operating income approach explains association between debt and cost of capital. They put a terrible attack on the outdated position by proposing interactive

account for devising the business's total capitalization amount, staying persistent through the whole collection of monetary debt prospects. The study argued that the overall risk for all business shareholders does not vary despite the variations in the business's composition of debt and equity.

Modigliani and Miller's theory also known as modern theory of optimal mix of debt and equity was applied by Professor Franco Modigliani and Professor Merton Miller (MM) during their study of economic analysis in corporate finance.Through published articles on American Economic Review, the scholars argued their findings on capital financial decision in two propositions (Modigliani & Miller, 1958). In the first proposition, MM demonstrated the irrelevance of capital structure. They contended that under perfect market conditions, firms cannot benefit from changes in capital financial decisions. The proposition assumed a market with only debt and equity as the only source of capital, perpetuity profits which cannot be re-invested, Symmetric information and costless market without transactional cost, taxes and agency cost. Since these assumptions are characteristics of a non-existing market and are naturally violated in the real world, MM turned to be a pivot on the modern way of thinking in proving that capital structure is indeed relevant in influencing firms worth.

Since MM (1958) theory is anchored on violation of the real world, MM undertook to develop the theory further in what was later referred to as proposition two of the relevance of the theory of debt and equity. MM introduced tax advantage towards the theorem. They argued that interest cannot be charged tax and therefore, a firm that employs debt will have a higher value than the one that does not employ debt. Therefore, firms should maximize debt towards gaining maximum advantage on tax shield to maximize market value. This proposition was a fallacy in real world as it implied that a firm can achieve an optimal capital structure of 100% which does not exist under normal market condition. The criticism of unrealistic 100% debt prompted the review of proposition two noting that although debt financing is beneficial through tax shield, it does not imply that a firm must maintain maximum leverage in their capital structures. Maximum debt increases the probability of liquidity risk and bankruptcy which is risky to bondholders (Modigliani & Miller, 1963). Due to

omissions of MM theory, trade-off theory of capital structure was unveiled to address these shortcomings (Kraus & Litzenberger, 1973).

Static trade-off theory is a modification of Modigiliani and Miller theory that established that organizations need to obtain an ideal level of equity and bond to maximize tax advantage and minimize the cost of bankruptcy. It was established by Modigiliani and Miller (1958) to develop the capital structure irrelevance proposition. An ideal level can be acheieved by evaluating the costs and benefits of the cost of finance and selecting on the basis of the most advantegous option. Static trade off theory explains that businesses usually are financed partly with debt and equity. It states that debt financing is more advantageous since interest on debt is tax deductible and there is also costs on debt such as costs of financial distress. The marginal benefit of further increases in debt reduces as debt increases whereas the marginal cost increases, so that a firm that is optimizing its overall value will focus onthis trade-off when choosing how much debt and equity to use for financing. They found that each firm needs to have a unique optimal debt to equity ratio (Kraus & Litzenberger, 1973).

Disposition of capital structure theories grounded by the foundation laid by MM theory shows the relevance of capital in maximizing firm value. Demirguc *et al*. (2010) established that to maximize stock returns, banks need to hold sufficient capital to cushion themselves against adverse effects of financial risk. It is also evident that banks cannot avoid debt and this comes with the risk of default in loan payment which exposes the bank to liquidity problems which can result to bankruptcy hence reducing dividend payment and capital appreciation. Therefore, banks need to obtain an optimal debt-to-equity ratio to minimize bankruptcy.

2.3.2 Capital Asset Pricing Model

Capital Asset Pricing Model(CAPM) was developed by Sharpe (1964). CAPM postulates that not all asset prices are affected by all risks. It states that risk that can be diversified is not all that risk since some projects return will compensate for the risky projects(Sharpe,1964). CAPM uses beta of a portfolio to determine overvalued portfolio for selling, undervalued portfolio for buying and correctly priced portfolio.

Market beta is the extent of risk input. Tasks generating additional risk need an advanced projected reward whereas a less risk necessitates a lesser anticipated reward. The CAPM depicts savers as only worried by the level and insecurity of their future prosperity. The primary guideline in the Capital Asset Pricing Model is that business or trade precise actions have very minimum influence on properties essential reward. The appropriate risk is the market risk, which denotes to the reaction of properties rewards to the rewards of the market as a whole, which is revealed in beta (Brealey *et al*., 2011).

Brealey *et al.* (2011) emphasized that a well-organized portfolio is a market itself. Sharpe (1964) argued that savers cannot attain beyond market rewards in a constant way, since the market performs in a way favorable to its symmetry, supposing that all savers are focused to similar risk-free rate. Capital Asset Pricing Model presented the idea of beta that values the covariance concerning the reward of properties and the market and signifies the impact of non-diversifiable risk to the risk of a portfolio containing unsystematic risk.The Capital Asset Pricing Model indicates the concept of non-diversifiable risk which shows a high number of assets are not perfectly correlated when the diversifiable component of risk weakens. CAPM is grounded on the following assumptions; portfolio selection on assets,investors always combine a risky free asset with market portfolio assets, investors are always compensated only for the risk that cannot be diversified and investors are given a return according to the risk of the investment (Jagannathan & Wang,1993). Despite its assumptions, CAPM has shortcomings such as the capital market being so unpredictable that investors can't beat it using the CAPM and Betas do not remain stable over time.

Both systematic and unsystematic risks face banking Industry. The Industry related risks include credit risk, foreign exchange risk and Liquidity risk. Therefore banks cannot avoid risks in every managerial decision made and thus investors can be rewarded for holding undiversifiable risk as unsystematic risk can be eliminated through diversification. It implies that investors should carry out portfolio selection to ensure they invest in projects that minimize risk and maximize return in order to attract capital gain and increased dividend payments.

2.3.3 Financial Distress Theory

Altman and Hotchkiss (1993) presented the financial distress theory with the effort to evaluate the effect of bankruptcy to a firm. According to them, the main indicators of bankruptcy are default in liability settlement and lack or decline of bonuses disbursements. They further proposed that once an organization's operations weakens to the fact where it cannot settle its liabilities, the business is said to have reached the state of bankruptcy. Altman and Hotchkiss (1993) developed Z-score model which is based upon financial ratios in a multiple analysis to determine the financial state of a business. The Z-score model helped to eliminate statistical biases when comparing firms.Additionally Whitaker (1999) described access to bankruptcy being main period that net income are fewer than existing maturities' continuing liability. A Business is in a position to pay its accounts payables as long as the net income surpasses the existing liability obligations. The main aspect of recognizing businesses in bankruptcy is their incapability to settle promised liability requirements.

However, considerable bankruptcy effects are experienced when there is non-payment of debts. Wruck (1990) specified that businesses experience bankruptcy as an outcome of economic suffering, reduction in their performance and deprived control specifically on risks. Boritz (1991) portrays a procedure of monetary suffering which starts with a development time categorized by regular bad monetary circumstances and deprived management which requires expensive costs to curb the loss. In the situation of commercial banks, in capability to offer money to savers and credits to debtors as the need arises may create inability to meet short-term obligations. Other lenders also want to be considered when businesses are placing risk controlling processes. Credit risk in banks also must be taken care of as it can result to bankruptcy. Credit selection management is a significant factor of the business's liquidity position. Therefore, banks ought to handle credit and liquidity risk so as to evade bankruptcy.

Proposition of bankruptcy originates from liquidity and credit risk experiencing a business. The philosophy of bankruptcy delivered a non-prejudiced perception of the association between credit risk,liquidity risk and Shareholders' wealth used by the current study.

2.3.4 Modern Portfolio Theory

Modern Portfolio Theory(MPT) is a proposition used in finance and was established in 1950 by Harry Markowitz. This theory defines an ideal speculation choice as one that exploits estimated reward over a range of a specified level of peril or that speculation results diminishes collection of risks for a set sum of range probable reward. According to Markowitz (1952) earnings of properties of shares and debentures change in conflicting sides, but a mixture of a share and a debt produces a collection with complete reduced threat of losing the investment for agreed reward. MPT presume a well-organized market with shareholders who avoid risky investments at all costs, suggesting that individuals will only assume uncertain speculation if the rewards were proportionate and based on specific risk liking. Modern Portfolio Theory explained that risk is the unpredictability of properties values and the probable reward as a group of subjective property reward. Additionally, Harry Markowitz theory (1952) established an average deviation construction that associates properties selections to produce a well-organized border arch that recognizes the best selection for speculation.

According to Markowitz (1952) and Sharpe (1964) investment portfolio bears undiversifiable risk and diversifiable risk. Non-diversifiable risk is associated with the market while diversifiable risk is associated with individual asset. MPT is grounded on the following assumptions: investors strive to maximize their returns,investors are rational and risk averse, Investord have information on risk and return of each investment, every investor has access to the same information and there is no tax and transaction costs on investments. These assumptions imply that investors are not compensated for unsystematic risk since the risks can be diversied by selecting uncorrelated assets. This unrealistic assumptions of MPT has been criticized by behavioral economists. Behaviorist argue that financial returns are log normal and correlations between assets are changes as the environment changes (Hodnett & Hsieh, 2012). Mpt has a limitation since there is no country without taxes, all investments should have transaction costs and investors have different risk attitudes not necessarily risk averse. This theory was useful in this study since investors and bank managers seek to diversify investment in varied uncorrelated sectors to

maximize shareholders' wealth. This aligns with analogy of not putting all your investments in one place.

2.4 Summary of Literature and Gap Analysis

Past literature indicate that most researches have scrutinized the influence of financial risk on profitability and financial performance (Aruwa & Musa, 2014, Gachua, 2011, Bordeleau *et al*., 2009, Fapetu & Kolapo, 2015 and Ogboi & Unuafe, 2013) and therefore most studies did not investigate the effect of financial risk on shareholders' wealth. Several empirical studies have been carried out yielding different results. Tafri (2009), Njuguna *et al.* (2013) and Ayuma *et al*. (2015) established that financial risk positively affected growth of listed companies in NSE.

However, Amin *et al.* (2014) and Aruwa and Musa (2014) concluded that when financial risks increases financial performance decreases. These studies have yielded conflicting results of possible association of financial risk on performance and this necessitated further investigation on effect of financial risk on shareholders' wealth. Kolapo *et al*. (2012) used 5 banks whereas the current study examined 11 commercial banks listed at the NSE to establish whether the results would be different. Alsyahrin *et al.* (2018) and Ogboi and Unuafe (2013) adopted purposive sampling method whearas the current research used census to examine all the listed commercial banks listed at the NSE. Researchers such as Muriithi (2016) and Mwaurah (2019) used bank size as a moderating variable while this study used operational efficiency as a moderating variable to investigate whether the results would change. Alsyahrin et al. (2018) used Indonesian banks, Wanjohi et al.(2017) and Hosna(2009) used Sweden banks whereas the current study used Kenyan banks to investigate whether there would be a difference in the results.

2.5 Conceptual Framework

It is a logical visual layout depicting a link among research constructs (Cooper & Schindler, 2014). The visual layout for the current study according to conceptualization is presented in Figure 1.

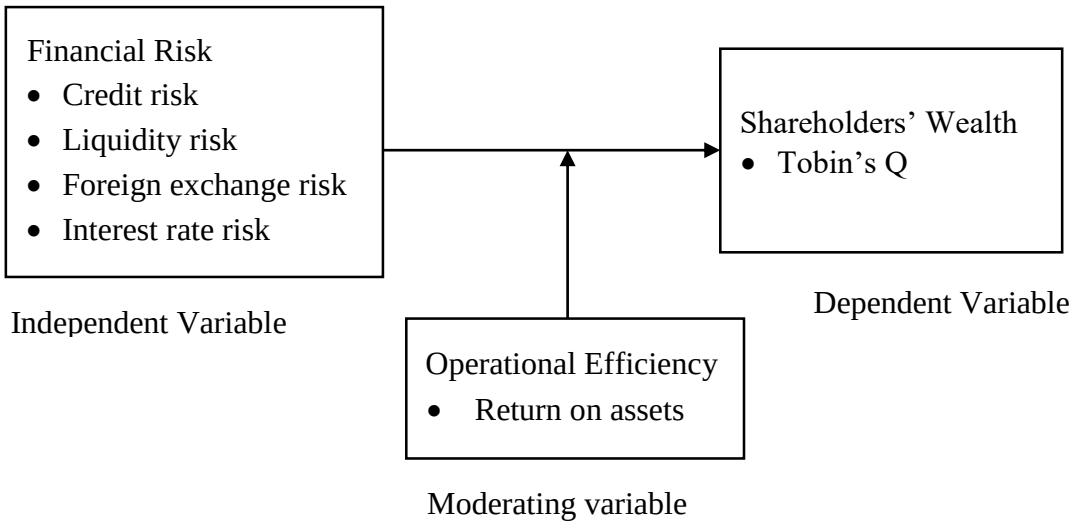


Figure 1. Conceptual Framework

Source: Author (2021)

The conceptual framework depicted in figure 1 visualized the relationship between financial risks and shareholders' wealth. Financial risk indicators included credit risk, liquidity risk, foreign exchange risk and interest rate risk that affected return to shareholders and operational efficiency altered the relationship between financial risk and shareholders wealth. If a bank considered the risk of default on loans, inability to settle liabilities as they fall due, risk on overseas conversion, and risk of changes in the rates charged on loans, shareholders' wealth can be affected in terms of dividends and capital appreciation.

2.6 Operationalization of Variables

Table 1
Operationalization of Variables

Variable	Measurement
Shareholders Wealth	$\text{Tobin's Q} = \frac{\text{Book value of equity}}{\text{Market value of equity}}$
Credit Risk	$\text{Credit ratio} = \frac{\text{non} - \text{performing loans}}{\text{Gross loans}}$
Liquidity Risk	$\frac{\text{Total loan}}{\text{Total deposit}}$
Foreign Exchange Risk	$\frac{\text{net foreign currency}}{\text{total assets}}$
Interest Rate Risk	$\text{NIM} = \frac{\text{Investment income} - \text{interst expenses}}{\text{Average earning assets}}$
Operational Efficiency	$\text{Return on total assets} = \frac{\text{Net income}}{\text{Average total assets}}$

Source: Author (2021)

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Location of the Study

The location of this current research was 11 commercial banks registered with the Nairobi Security Exchange from 2013-2019. Data on Commercial banks was collected from published financial statements from Nairobi Securities Exchange website.

3.2 Research Design

Kothari (2012) defined research design as the organization of settings for collecting data plus analyzing information in a way that intends to bring together importance to the study's objectives with the economy in the process. The researcher embraced descriptive research design as it enabled choosing and grouping the components and features of the object. Similarly, Cooper and Schindler (2003) explained that a descriptive design tries to refer to or define an item repeatedly by generating an outline of a set of difficulties, persons, or actions by gathering facts and presenting the occurrences on study variables or their collaboration. They further observe that descriptive design is similarly suitable when the researcher is fascinated with the condition of matters previously present in the ground and no construct would be influenced. Similarly, Kothari (2004) explains descriptive survey design as precisely depicting characteristics of an individual, group or situation. To gain perception on the influence of financial risk on shareholders' wealth of listed commercial banks for seven years descriptive plan was suitable.

3.3 Population

Mugenda and Mugenda (2003) stated that a population under observation should have some noticeable features, which the scholar aims to take a broad view of the outcomes of research. The current study used a target population of 11 listed commercial banks at NSE that had consistently filled their statements from 2013 to 2019. Commercial banks were chosen because they are required by Capital Market Authority to disclose all their financial information. The Banking Industry Shared Value Report (2019) indicated that the banking sector contributed to national development agenda through job creation, taxes, wealth creation, and credit access.

3.4 Research Instruments

This study undertook a census of all listed banks at NSE since the banks are few; therefore, no sampling procedure was carried out. According to Kothari (2004), census refers to the study of the entire population. The objective of the census is to arrive at information that best symbolizes the banks. The researcher used a checklist to collect data on non-performing loans, gross loans, total deposits, total loans, net foreign currency, average earning assets, net income, investment income, interest rates and average total assets. Secondary data was collected for the 11 listed commercial banks at the Nairobi Securities Exchange on 31 December 2019 because they had published financial statements. The purpose of the checklist was to guide the researcher to ensure the completeness of the information obtained (Berry,1999).

3.5 Data Collection Procedures

Financial information on commercial banks was obtained from the statement of financial position and income statement. Cooper and Schildler (2014) described secondary data as past information obtained by the researcher from books, articles, or reports. Annual pooled statistics for seven years from 2013 to 2019 were obtained from Nairobi Securities Exchange and Banking survey manuals. Pooled data were used because data was collected across banks within the considered time (Stukel *et al*., 2001).

3.6 Data Analysis

Data analysis denotes the calculation of definite procedures and looking for association arrangements amongst the facts (Saunders *et al.,* 2009). The current research used descriptive statistics to describe key features of data and inferential statistics to analyze data. Information was coded, put in Microsoft Excel and then analyzed using Statistical Package for Social Sciences (SPSS 25.0). A multiple regression model was employed to establish the association among constructs.

The regression model treated shareholders' wealth as the dependent variable while financial risk as to the independent variable. The researcher carried out simple regression for each specific objective and then carried out a combined effect of independent variables on shareholders' wealth.

The following simple regression was developed for each objective.

Without moderation

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$Y = \beta_0 + \beta_2 X_2 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

$$Y = \beta_0 + \beta_3 X_3 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

$$Y = \beta_0 + \beta_4 X_4 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

A Combined effect of the following simple regression models gave the multivariate regression model.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

With moderation $Y = \beta_0 + \beta_1 X + \beta_2 M + \beta_3 X.M + e \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$ (6)

Where Y represents shareholders' wealth as evaluated by book value to the market value of shares. β_0- A constant that represents the predicted value of shareholders' wealth when all the predictors in the model are zero. β_1, β_2, β_3, β_4, β_5 -coefficients of credit risk, liquidity risk, foreign exchange risk and interest rate risk, respectively which shows the percentage of dependent variable Y (shareholders wealth) that is explained by credit risk, liquidity risk, foreign exchange risk and interest rate risk. X represents financial risk as evaluated by the debt to equity ratio.

X_1 represents credit risk as measured by credit ratio.

X_2 represents liquidity risk as measured by the liquidity ratio.

X_3 represents foreign exchange risk as measured by the foreign exchange ratio

X_4 represents Interest rate risk as measured by net interest margin.

M represents operational efficiency as the moderating variable

The implication of the moderation was determined by calculating the change in the adjusted R^2 before and after moderation. Then if the change in adjusted R^2 increased it shows that the moderation effect was significant.

3.6.1 Diagnostic Tests

The diagnostic tests are measures that help identify or detect any econometric problems in the analyzed data. Such tests are helpful since they assist the researcher in taking the corrective measures hence avoiding the possibility of coming up with false results (Aczel & Sounderpadian, 2002). Some of the problems that were checked include Normality, Multicollinearity, Autocorrelation and Heteroscedasticity.

3.6.1.1 Normality Test

Multiple Linear regression assumptions are that the model's error term should be normally spread out with a zero mean and constant difference for all values. The current research employed Shapiro Wilk to check if residuals are normal. The application of the linear regression model is validated on the grounds of normally distributed residuals and this enhances the increased reliability of the findings. For normality of residuals, the skewness value should be within the acceptable range of positive, negative or zero (Aczel & Sounderpadian, 2002) and the Shapiro-Wilk values should be ± 3.

3.6.1.2 Multicollinearity Test

Neeleman (1973) explains that multicollinearity arises when there is a general interrelation among the explanatory variables. The existence of multicollinearity brings about difficulties in isolating the influence of each independent construct on the dependent construct. The greater the multicollinearity between two variables, the less precise the estimate of individuals' regression parameters (Aczel & Sounderpadian, 2002). The study tested the presence of multicollinearity using the variance inflation factor. If the variance inflation factor is less than 10 then there is no multicollinearity between presumed-caused variables.

3.6.1.3 Heteroskedasticity Test

Cragg (1983) explains that heteroskedasticity arises when the error terms do not have persistent differences. Heteroskedasticity can be affected by measurement errors and the existence of sub-population variances or other collaboration effects. Heteroskedasticity ensures there are no prejudiced constraint approximations. Nevertheless, the standard errors are unfair if heteroskedasticity is current, resulting in a bias in assessment data and confidence intervals. Heteroskedasticity violates the postulation that there must be a constant difference. In this study, the researcher tested heteroskedasticity by the use of P-P plots. P-P plots were used because they are the best in presenting the spread of data. When the widths of the residuals rise or decrease as the observed constructs rise then heteroskedasticity is present.

3.6.1.4 Autocorrelation Test

Griffith (1992) explains that autocorrelation arises in a situation that the error terms are correlated across observation. This econometric problem is caused by specification bias or manipulation of data. The presence of autocorrelation does not have any effect on the linearity of Ordinary Least Squares (OLS) estimators, but it leads to bias in estimated standard errors which in turn makes the OLS estimates inefficient. The current study employed Durbin-Watson statistics to detect the existence of autocorrelation. Generally, Durbin-Watson ranges from 0 to 4. Durbin - Watson's(DW) value between 2 and 2.5 implied that autocorrelation does not exist, during a DW value between 2.5 and 4 implied the presence of a weak negative autocorrelation. The existence of autocorrelation can be reduced by using an accurate description of the practical form of the model. The null hypothesis in the Autocorrelation test states that no consecutive association exists. If the p-value is greater than 0.05, the study does not reject the null hypothesis and concludes that the errors in different observations are not correlated.

3.7 Data Analysis Matrix

Table 2
Data Analysis Matrix

Hypothesis	Test-Statistics
$H0_1$: There is no statistically significant relationship between credit risk and shareholders' wealth of banks listed at the NSE	t-statistic
$H0_2$: There is no statistically significant relationship between liquidity risk and shareholders' wealth of banks listed at the NSE.	t-statistic
$H0_3$: A change in interest rate has no statistically significant effect on shareholders' wealth of banks listed at the NSE.	t-statistic
$H0_4$: There is no statistically significant relationship between foreign exchange rate and shareholders' wealth of banks listed at the NSE.	t-statistic
$H0_5$: There is no statistically significant moderating effect of operational efficiency on the relationship between financial risk and Shareholders' wealth of commercial banks listed at the NSE.	t-statistic

*F-test was used to test the overall significance of the model
Source: Author (2020)

3.8 Ethical Consideration

This current researcher sought a clearance document from the Chuka University Ethics review committee and thereafter from NACOSTI. Confidentiality of information obtained from financial statements remained preserved by not revealing the specific bank names in data collection, scrutiny, and reporting the research findings. The researcher avoided plagiarism by ensuring every borrowed work was cited (Rogers,1987).

CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1 Descriptive Statistics

These statistics were employed to define key elements of statistics. Mean which measures central tendency was used in the generality of resulsts whereas standard deviation was used to evaluate variation from the mean. The summary of descriptive statistics is shown in Table 3.

Table 3
Descriptive Statistics

	CR	LR	FER	NIM	OE	SHW
Mean	0.0024	0.3183	0.0384	0.0342	0.0293	0.5389
Range	0.0009	0.4350	0.0630	0.0740	0.2781	0.8800
Minimum	0.0020	0.1150	0.0110	0.0032	0.0019.	0.1100
Maximum	0.0029	0.5500	0.0740	0.0772	0.2800	0.9900
Std deviation	0.0002	0.1037	0.0141	0.0145	0.0338	0.2286

Where :

CR- Credit risk

LR-Liquidity risk

FER-Foreign Exchange Risk

OE-Operational Efficiency

SHW-Shareholders Wealth.

As shown in Table 3, the mean for shareholders' wealth as measured by Tobin's Q was 0.5389 for all the listed commercial banks, representing the average commercial banks' shareholders' wealth. Liquidity risk had the highest minimum of 0.1150 and the highest maximum of 0.5500 while credit risk had the lowest minimum of 0.0020 and the lowest maximum of 0.0029. It implies that commercial banks have advanced a lot of loans compared to their customers' deposits, resulting in banks being unable to meet their short-term obligations as they arise.

Shareholders' wealth had the highest mean of 0.5389 and a range of 0.8800. The maximum value for Shareholders' wealth was 0.2800, while the minimum value was 0.1100. Liquidity risk had the highest mean and range of 0.3183 and 0.4350 respectively. Credit risk had a mean of 0.0024 and had a minimum of 0.0020 and a

maximum of 0.0029 which means that for every sh.1 lent out by a commercial bank 0.0024 cents ended up being declared non-performing.

Foreign exchange risk had a mean of 0.0384, a maximum of 0.0740 and a minimum of 0.0110 which implies that banks benefit from foreign income. Interest rate risk had a mean of 0.0342, a maximum of 0.0772 and a minimum of 0.0032 implying that on average 0.0342 of commercial banks' total earnings were related to financial exposure to changes in interest. The standard deviation for credit risk was 0.0002, liquidity risk had 0.1037, and foreign exchange risk had 0.0141 while interest rate risk had 0.0145. The standard deviations for the variables are closer to zero implying that the values are concentrated towards the mean. Liquidity risk had the highest dispersion from the mean and this could imply that it would have a higher effect on shareholders' wealth.

4.2 Diagnostic Test

Diagnostics tests were done to ensure that the model was applicable and that all the basic assumptions of linear regression were met. These tests included test for normality, multicollinearity, Heteroskedasticity and autocorrelation. Diagnostic tests were done with the help of SPSS version 25.0.

4.2.1 Test for Normality

A normally distributed residual aids a researcher in being accurate and making reliable conclusions. Shapiro-Wilk Test and coefficient of skewness were used to test for normality (Aczel & Sounderpadian, 2002). According to Shapiro-Wilk test, residual is normal when the p-values of the test are insignificant. Similarly residuals are normal when the skewness statistics are in the range of ±3. The results of the test were as presented in Table 4.

Table 4
Normality Test for Regression Variables

	SHW	CR	LR	FER	IR
Shapiro Wilk Value	0.976	0.957	0.972	0.988	0.983
Sig Value	0.164	0.080	0.089	0.673	0.409
Skewness	0.115	0.280	0.289	0.085	0.271

From Table 4, all the p-values of Shapiro-Wilk Test were greater than 0.05 (insignificant) hence a conclusion that the residuals were normally distributed. The Skewness values were also between -3 and +3 indicating that the residuals of the variables were normal and unbiased.

4.2.2 Multicollinearity Test

Multicollinearity test was carried out to test if there was any correlation between the independent variables. The presence of multicollinearity makes it difficult to isolate the impact of each independent variable on the dependent variables and also standard errors for each independent variable become inflated (Landau & Everitt, 2004). Presence of multicollinearity can be corrected by excluding one or more of the correlated independent variable from the regression model (Lind, Marshal &Wathen, 2008) Incidence and degree of multicollinearity was tested using Variance Inflation Factor (VIF). When the VIF is greater than 10 then, there is presence of multicollinearity (Kothari, 2003). The results are shown in Table 5.

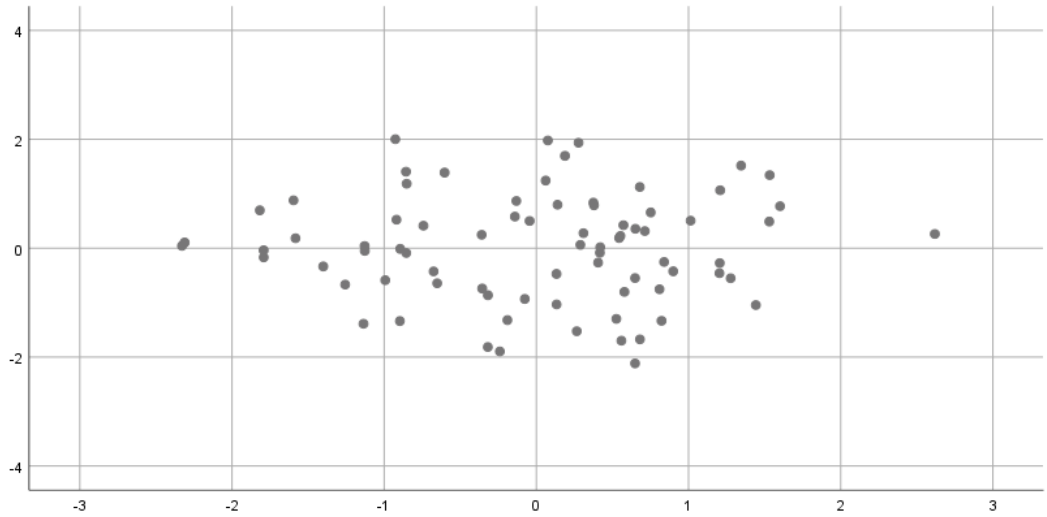
Table 5
Variance Inflation Factor Estimates

	CR	LR	FER	IR	Status
Model	1.011	1.025	1.02	1.006	No Multicollinearity

Based on the results in Table 5, the VIF values are less than 10 therefore, multicollinearity was absent. Multicollinearity may lead to wrong results due to its effect of inflating the predictor variables (Cooper & Schindler 2003).

4.2.3 Heteroskedasticity Test

Heteroskedasticity arises when the variance of the error term is not constant in each period and for all values of the predictor variables (Cragg, 1983). Violation of homoscedasticity makes standard errors of estimators biased and inconsistent. This study used P-P plot to determine if the residuals had constant variance because they are best in the presentation of spread of residuals. When the widths of the residuals rise or decrease as the observed constructs rise then heteroskedasticity is present. The results obtained are presented in Figure 2.



Key: Y Axis (Regression Standardized Residual) , X Axis (Predicted value), Dependent Variable: Shareholders' Wealth

Figure 2. P-P Plot of Heteroskedasticity

The results in Figure 2 indicate no specific pattern and the widths are neither increasing nor decreasing as the values of variables rise. Therefore, heteroskedasticity was absent.

4.2.4 Autocorrelation Test

Autocorrelation exists when the error term variances are sequentially interdependent and results in biasness and inconsistency of parameter estimates (Griffith, 1992). Autocorrelation was tested by use of Durbin-Watson (DW) statistic using SPSS version 25.0 software. A Durbin-Watson value of zero implies high positive autocorrelation, while 4 infers high negative autocorrelation levels. A DW score between 2 and 2.5 means the non-existence of autocorrelation. The results of the test are presented in Table 6.

Table 6
Durbin-Watson Statistic Value

Model	Durbin Watson Value	Status
Model	2.136	Absence of autocorrelation

Table 6 shows that the Durbin-Watson value for the model was 2.136. Since the value is between 2 and 2.5, it implies an absence of autocorrelation. This implies that the variance of the error term in a certain bank was not related to that of another bank or

period. Hence the model could be relied upon in estimating and forecasting of outcome.

4.3 Pair Wise Correlation Between the Study Variables

Correlation determines the direction of a relationship between any two variables. A correlation value of zero indicates absence of any association while a coefficient of -1 implies a perfect negative relationship between variables. On the other hand a coefficient of +1 implies a perfect positive relationship between variables under study. The study used Pearson Product Moment Correlation coefficient (r) in determining the presence and the strength of the relationship between individual variables at 5% significance level.

Table 7
Pearson Correlation Between Study Variables

	SHW	CR	LR	FER	IR
SHW	1	-0.207	-0.26	0.266	-0.012
CR	-0.207	1	-0.091	-0.014	0.045
LR	-0.260	-0.091	1	-0.123	-0.012
FER	0.266	-0.014	-0.123	1	-0.063
IR	-0.012	0.045	-0.012	0.063	1

The correlation coefficient between shareholders wealth and credit risk was -0.207 and a p-value of 0.039<0.05 indicating existence of a negative and statistically significant relationship between shareholders wealth and credit risk. This implies that an increase in credit risk would result to a significant decrease in shareholders wealth and this results to banks rationing advancing loans. Liquidity risk and shareholders wealth had a correlation coefficient of 0.266 with a p-value of 0.019<0.05 hence there was a statistically significant positive relationship between shareholders wealth and Liquidity risk of Commercial banks listed at the NSE. This implies that an increase in liquidity risk would result to a statistically significant increase in commercial bank's shareholders wealth as measured by Tobin's Q. This may be attributed to banks advancing more loans which are compensated with higher deposit and thus in case of short term obligations banks can be able to settle them.

The results also show that foreign exchange ratio had a Pearson correlation of -0.26 and a p-value of 0.022<0.05 implying a negative and statistically significant relationship between shareholders wealth and foreign exchange ratio. This is because foreign investments are faced with fluctuations in foreign exchange rates and different rules and regulations of different countries. This suggests that an increase in foreign exchange ratio would lead to statistically significant decrease in shareholders wealth. On the relationship between Net interest margin and shareholders wealth there was a correlation coefficient of -0.012 and a p-value of 0.918>0.05 meaning an increase in interest rate risk would result to a statistically insignificant decrease in shareholders wealth. This implies that no matter the variations in interest rates shareholders' wealth will not be affected directly.

4.4 Analysis of the Regression Model

The study adopted Multiple Linear Regression model to determine effect of financial risk on shareholders' value. The explanatory variables were credit risk, liquidity risk, foreign exchange risk and interest rate risk whose effect on the shareholders' wealth was measured by Tobin's Q.

4.4.1 Hypotheses Testing for the Study Variables

The model illustrates the effect of credit risk, liquidity risk, foreign exchange risk and Interest rate risk on shareholders' wealth as measured by Tobin's Q. The coefficients of each independent variable and their respective p-values are presented in Table 8, 9, 10 and 11 whereas the combined model is presented in table 12.

4.4.1.1 Relationship Between Credit Risk and Shareholders' Wealth

To establish the effect of credit risk on shareholders' wealth of listed commercial banks at NSE,the following hypothesis was tested. In this regard this study sought to test the hypothesis that credit risk has no statistically significant relationship with shareholders' wealth of listed commercial banks at NSE. The coefficients of credit risk and its respective p-value are presented in Table 8.

Table 8
Coefficients Estimates of Credit risk and Shareholders' Wealth

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.027	0.270		3.803	0.000
Credit risk	-205.532	113.161	-0.205	-1.816	0.031

R^2=0.042

From Table 8, the regression coefficient of credit risk was -205.945 and a p-value of 0.031<0.05 hence credit risk had a negative and statistically significant effect on shareholders' wealth. Therefore, the null hypothesis that there is no statistically significant effect of credit risk on shareholders' wealth was rejected. The R^2 was 0.042 which implies that 4.2% of changes in shareholders' wealth are caused by credit risk while 95.8% of the changes in shareholders' wealth are caused by other factors not represented in the model such as the amount of cash flows to be generated and the timing of these cash flows.

This finding on credit risk implies that most loans advanced by banks are non-performing. The more the risk of default in payment of loans, shareholders wealth reduces since profitability decreases and thus, there is little or no dividends that will be paid to shareholders. The share prices of the banks listed will also decrease due to low profitability. This findings are consistent with studies by Masinde (2017) and Hosna (2009) however deviates from Wanjohi *et al*. (2017) and Afriyie (2011) who found out that credit risk had positive effect on profitability. Therefore managers should come up with stringent policies of regulating loans and they can also demand collateral before issuing loans. This finding concur with financial distress theory whereby if customers default in loan payment it may result to bankruptcy.

A linear regression constructed to relate the variable was as follows.

$$Shareholders'\ Wealth = 1.027 - 205.532CR \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

4.4.1.2 Relationship Between Liquidity Risk and Shareholders' Wealth

To establish the effect of liquidity risk on shareholders' wealth of listed commercial banks at NSE, the following hypothesis was tested. In this regard this study sought to test the hypothesis that liquidity risk has no statistically significant relationship with shareholders' wealth of listed commercial banks at NSE. The coefficients of liquidity risk and its respective p-value are presented in Table 9.

Table 9
Coefficients Estimates of Liquidity risk and Shareholders' Wealth

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.721	0.082		8.777	0.000
Liquidity risk	-0.574	0.246	-0.26	-2.335	0.022

R^2=0.068

From Table 9, the regression coefficient of liquidity risk was -0.574 and a p-value of 0.022<0.05 hence liquidity risk had a negative and statistically significant effect on shareholders' wealth. Therefore, the null hypothesis that there is no statistically significant effect of liquidity risk on shareholders' wealth was rejected. The R^2 was 0.068 which implies that 6.8% of changes in shareholders' wealth are caused by liquidity risk while 93.2% of the changes in shareholders' wealth are caused by other factors not represented in the model such as the amount of cash flows to be generated and the timing of these cash flows.

This finding implies that a bank that holds more deposit is likely to meet its short term obligations as they fall due. When the banks hold more short term assets, shareholders wealth will decrease since most of the assets will be used to settle liabilities. This findings concur with those of Akram (2014) on effect of liquidity risk on stock returns. Therefore banks should come up with a strategy of holding more liquid assets than liabilities. This result is consistent with financial distress theory and Capital asset pricing theory. That is if banks are unable to meet their obligations they can become

bankrupt and if banks hold more of risky assets there is a possibility of getting low returns which will reduce shareholders' wealth.

A linear regression constructed to relate the variable was as follows.

$$Shareholders' Wealth = 0.721 - 0.574LR \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

4.4.1.3 Relationship Between Foreign Exchange Risk and Shareholders' Wealth

To establish the effect of Foreign Exchange risk on shareholders' wealth of listed commercial banks at NSE,the following hypothesis was tested. In this regard this study sought to test the hypothesis that Foreign Exchange risk has no statistically significant relationship with shareholders' wealth of listed commercial banks at NSE. The coefficients of Foreign Exchange risk and its respective p-value are presented in Table 10.

Table 10
Coefficients Estimates of Foreign Exchange Risk and Shareholders' Wealth

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.373	0.074		5.063	0.000
Foreign Exchange risk	4.308	1.799	0.266	2.394	0.019

R^2=0.071

From Table 10, the regression coefficient of foreign exchange risk was 4.308 and a p-value of 0.019<0.05 hence foreign exchange risk had a positive and statistically significant effect on shareholders' wealth. Therefore, the null hypothesis that there is no statistically significant effect of foreign exchange risk on shareholders' wealth was rejected. The R^2 was 0.071 which implies that 7.1% of changes in shareholders' wealth are caused by foreign exchange risk while 92.9% of the changes in shareholders' wealth are caused by other factors not represented in the model such as the amount of cash flows to be generated and the timing of these cash flows.

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The study findings suggest that a bank that invests in foreign investments yields high foreign income which will increase banks profitability resulting to increase in investors' returns in terms of capital gain and dividends. These findings are similar to

those of Gachua (2011) and Mbubi (2013) whereas it differed with the study of Ahmed (2015) who found out that an increase in foreign exchange risk has a negative impact on performance. These findings show that investing in foreign market is a way of diversifying banks resources and this can lead to increase in banks cash flow thereby increasing shareholders wealth. Banks should come up with ways of diversifying their resources in order to minimize risk and maximize returns. These findings concur with modern portfolio theory which suggests that all resources should not be put in one place. A linear regression constructed to relate the variable was as follows.

$$Shareholders' Wealth = 0.373 + 4.308FER \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

4.4.1.4 Relationship Between Interest Rate Risk and Shareholders' Wealth

To establish the effect of Interest Rate risk on shareholders' wealth of listed commercial banks at NSE, the following hypothesis was tested. In this regard this study sought to test the hypothesis that Interest Rate risk has no statistically significant relationship with shareholders' wealth of listed commercial banks at NSE. The coefficients of Interest Rate risk and its respective p-value are presented in Table 11.

Table 11
Coefficients Estimates of Interest Rate Risk and Shareholders' Wealth

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.545	0.067		8.090	0.000
Interest rate risk	-0.188	1.815	-0.012	-0.104	0.918

R^2=0.000

From Table 11, the regression coefficient of interest rate risk was -0.188 and a p-value of 0.918>0.05 hence interest rate risk had a negative and statistically not significant effect on shareholders' wealth. Therefore, the null hypothesis that there is no statistically significant effect of interest rate on shareholders' wealth was not rejected. The R^2 was 0.000 which implies that 0% of changes in shareholders' wealth are caused by interest rate risk while 100% of the changes in shareholders' wealth are caused by other factors not represented in the model such as the amount of cash flows to be generated and the timing of these cash flows.

This implies that a change in the interest rate in the economy does not directly affect shareholders wealth since it will affect customers mostly. This finding concur with Fapetu and Kolapo (2015) findings but differ with Ngetich and Wanjau (2011) and Odeke and Odongo (2014) who established that interest rate risk affect banks' performance. These findings show that increase in interest rate affect customers' ability to borrow loans and this does not affect shareholders' wealth directly. This concurs with Modigiliani and Miller proposition 1 which states that level of debt does not affect the value of the firm.

4.4.1.5 Combined Effect Model of the Relationship between Financial Risk and Shareholders' Wealth

To establish the combined effect of financial risk variables on shareholders' wealth of listed commercial banks at NSE the following hypothesis was tested. In this regard this study sought to test the hypothesis that financial risk variables have no statistically significant combined effect on shareholders' wealth of listed commercial banks at NSE. The coefficients of financial variables and their respective p-value are presented in Table 12.

Table 12
Coefficients Estimates of Variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.08	0.281		3.85	0.000
Credit risk	-215.945	102.434	-0.227	-2.108	0.039
Liquidity risk	-0.556	0.239	-0.252	-2.328	0.023
Foreign Exchange risk	3.764	1.749	0.233	2.152	0.035
Interest rate risk	0.157	1.688	0.01	0.093	0.926

R^2=0.174
Dependent Variable: Shareholders' Wealth

From Table 12, the combined effect of financial risk variables on shareholders' wealth of listed commercial banks at NSE had a regression constant of 1.08 and a p-value of 0.000<0.005 which implies that credit risk, liquidity risk and foreign exchange risk affect shareholders' wealth. However, interest rate risk does not affect shareholders' wealth. Therefore, the null hypothesis that there is no statistically significant combined effect of financial risk variables on shareholders' wealth was rejected. The regression coefficient of credit risk was -215.945 and a p-value of

0.039<0.05 hence credit risk had a negative and statistically significant effect on shareholders' wealth.

The regression coefficients of Liquidity risk and foreign exchange risk were -0.556 and 3.764 respectively and with a p-value of 0.023<0.05 and 0.035<0.05 hence Liquidity risk had a negative and statistically significant effect on shareholders' wealth while foreign exchange risk had a positive and statistically significant effect on shareholders' wealth. On the other hand Interest rate risk had a regression coefficient of 0.157 with a p-value of 0.926>0.05 indicating a positive and statistically not significant effect on shareholders' wealth. The constant of the model was 1.08 depicting the proportion of shareholders' wealth that is independent of the explanatory variables included in the model. An increase in credit risk and liquidity risk causes profitability to decrease and this reduces dividends paid to shareholders and capital gain. However an increase in foreign exchange rate may lead to an increase in foreign income resulting to increase in profitability of banks hence increasing dividend payment.

A stochastic multiple linear regression constructed to relate the variables was as follows.

$$SHW = 1.08 - 215.945CR - 0.556LR + 3.764FER$$

The R^2 of the model was 0.174 indicating a model where 17.4 % of the changes in Shareholders' wealth could be accounted for by the predictor variables, while 83.6% of the changes being attributed to other factors not included in the model and the error term such as the amount of cash flows to be generated and the timing of these cash flows.

4.4.1.6 Test of the Moderating Effect

Operational efficiency was hypothesized as moderating variable. Moderation implied an interaction effect, where introducing a moderating variable changes the direction or magnitude of the relationship between two variables. The test of significance of the moderating variable is presented in Table 13.

Table 13
Model Summary of the Moderating Effect of Operational Efficiency

Model	Coefficients	Std error	t-statistic	p-value
Model 1				
(Constant)	0.31	0.082	3.765	0.000
OE	1.26	0.764	1.649	0.103
FR	0.499	0.183	2.731	0.008
Model 2				
(Constant)	0.201	0.086	2.348	0.022
OE	4.657	1.326	3.513	0.001
FR	0.994	0.237	4.194	0.000
OE.FR	-17.772	5.810	-3.059	0.003

R^2 for model 1=0.104
R^2 for model 2=0.206

The results in Table 13 show that model 1 is significant at 5% significance level without the interaction effect that is it had a t-statistic of 2.731 and a p-value of 0.008<0.005. Model 2 had a t-statistic of -3.059 and a p-value of 0.003<0.05 also significant at 5% significance level. Model 2 accounts for more variance change in the interaction between operational efficiency and shareholders' wealth. The R squared change has a p-value of 0.003<0.005 indicating that there is potentially significant moderation between operational efficiency and shareholders' wealth as shown in Table 14. The effect of the interaction between financial risk and operational efficiency is negative. This implies that for a high level of financial risk the shareholders' wealth will decline.

Therefore, the effect of operational efficiency on shareholders' wealth depends on financial risk. Similarly the effect of financial risk on shareholders' wealth depends on operational efficiency.

Table 14
Anova of the Moderating Effect of Operational Efficiency

Model	R	R^2	Adjusted R^2	F change	Sig F change
1	0.322	0.104	0.08	4.290	0.017
2	0.454	0.206	0.173	9.358	0.003

The results in table 14 indicate that operational efficiency alters the relationship between financial risk and shareholders' wealth.

The regression model for the two models are:

Model 1 $Shareholders'\ wealth = 0.310 + 1.26OE + 0.499FR \ldots\ldots\ldots(2)$

Model 2 $Shareholders'\ wealth = 0.201 + 4.657OE + 0.994FR - 17.772OE.FR \ldots\ldots\ldots(3)$

The adjusted R^2 of the model without moderation was 0.08, whereas the adjusted R^2 of the model with interaction effect between financial risk and operational efficiency was 0.173, signifying an increase in the adjusted R^2 which was above zero. This implies that operational efficiency adds a predictive value to the model.

This phenomenon could be attributed to the fact that low operational efficiency implies high financial risk resulting in a decrease in shareholders' wealth in terms of capital gain and dividends. This study concurs with Omondi and Muturi (2013) in that operational efficiency affects shareholders' wealth though it differs since they used operational efficiency as an independent variable while the current study used operational efficiency as moderating variable. Therefore banks should consider evaluating their operational efficiency since it alters the relationship between financial risk and shareholders' wealth.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

This research aimed to determine the influence of financial risk on shareholders' wealth of listed commercial banks at the NSE. It was achieved by analyzing the influence of credit risk, liquidity risk, foreign exchange risk and interest rate risk on shareholders' wealth of listed commercial banks at NSE, whereby shareholders' wealth was analyzed in the form of Tobin's Q. Operational efficiency was also analyzed to establish if it alters the relationship between financial risk and shareholders' wealth.

The first objective was to determine the effect of credit risk on shareholders' wealth of commercial banks listed at the NSE. The results of the study indicated that credit risk negatively affects shareholders' wealth. This implies that an increase in non-performing loans reduces banks cashflows resulting to a reduction in dividend payment and share prices. Credit risk in banks must be taken care of as it can result to bankruptcy.

The second objective was to establish the effect of liquidity risk on shareholders' wealth of commercial banks listed at the NSE. The researcher established that liquidity risk had an adverse and statistically significant influence on shareholders' wealth of listed commercial banks at the Nairobi Securities Exchange. This implied that when banks hold more risky assets it would be difficult for it to settle short-term obligations as they arise. Therefore, banks should hold assets that can easily be converted into cash in order to cater for any debt that may arise.

The third objective was to investigate the effect of foreign exchange risk on shareholders' wealth of commercial banks listed at the NSE. The finding of the study established that foreign exchange risk had a positive effect on shareholders' wealth. This implies that banks should invest in international markets since it generates more cash flows that can cater for foreign exchange rates fluctuations. Consequently it yields higher profits and this results to increase in return to shareholders'.

The fourth objective was to evaluate the effect of interest rate risk on shareholders' wealth of commercial banks listed at the NSE. It was established that interest rate risk does not affect shareholders' wealth. This implies that as interest rates of the economy increases shareholders' wealth of the banks is not affected directly.

The fifth objective was to assess the moderating effect of operational efficiency on the relationship between financial risk and shareholders wealth. The finding of the study established that operational efficiency had a negative effect on the relationship between financial risk and shareholders' wealth. This implies that a bank that operates efficiently has effective financial risk management techniques and it will have enough cash flows to pay for dividends.

5.2 Conclusions

From the summary of findings reported, the researcher mades five conclusions. First, the study established that an increase in credit risk results to a decrease in shareholders' wealth. Therefore there is need for banks to develop stringent credit policies to minimize the rate of non-performing loans to improve on shareholders' wealth.

Second, the study established that an increase in liquidity risk leads to a decrease in shareholders' wealth. Hence banks should ensure they hold more liquid assets to cater for customer demands and also debts when they arise. Third, results conclude that an increase in foreign exchange risk leads to an increase in shareholders' wealth. Therefore banks should develop strategies to diversify their resources and invest in international markets because as much as foreign market is exposed to foreign exchange rates fluctuations it generates more cashflows .

Fourth, the study established that interest rate risk did not affect shareholders' wealth. Therefore, the study concludes that interest rates can only be controlled by the Central Bank of Kenya hence it does not affect shareholders' wealth of banks directly. Lastly, the study concludes that an increase in operational efficiency moderates the relationship between financial risk and shareholders' wealth. Therefore, banks should

develop strategies of ensuring they operate efficiently in order to minimize financial risk thus improving shareholders' wealth .

5.3 Recommendations

Based on the results of the current study, the researcher made the following recommendations:

i) Managers should come up with stringent policies of regulating loans and they can also demand collateral before issuing loans.

ii) Banks should come up with a strategy of holding more liquid assets than liabilities. Similarly, managers should do a banking sector analysis on the ratios that affect shareholders' wealth and maintain optimal levels of liquidity.

iii) Banks should come up with ways of diversifying their resources to minimize risk and maximize returns. Banks should diversify their resources into uncorrelated sectors to expand their cash flow sources to increase dividend payment and capital gain.

iv) Commercial banks should emphasize refining their operational efficiency to minimize financial risk to improve shareholders' wealth.

5.4 Suggestions for Further Research

The researcher suggests the following areas for further research resulting from the implications, limitations, and recommendations made:

i. The current research established the influence of credit risk, liquidity risk and foreign exchange risk. It is necessary to examine the influence of operational, political, and technological risk since the current study did not focus on all risks affecting banks.

ii. It is necessary to evaluate how financial risks affect shareholders' wealth of all the 43 commercial banks in Kenya. The current research concentrates only on listed commercial banks at the NSE.

iii. It is necessary to analyze the effect of interest rate capping on shareholders' wealth of all commercial banks in Kenya.

iv. There is a need to investigate the effectiveness of fluctuations of rates on foreign income in determining shareholders' wealth of commercial banks in Kenya.

v. There is a need to investigate the moderating influence of operating efficiency on the relationship between financial risk and shareholders' wealth of all commercial banks in Kenya since this study only focused on listed commercial banks at the NSE.

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APPENDICES

APPENDIX I

DATA COLLECTION CHECKLIST

Commercial banks	Non-performing loans	Gross Loans	Total Loans	Total Deposit	Net foreign currency	Total assets	Total liabilities	Investment income	Interest expenses	Average earning assets	Current stock price	Total no. of shares
ABSA BANK												
CFC Stanbic Holdings Ltd												
I&M Holdings Ltd												
Diamond Trust Bank Kenya Ltd												
HF Group Ltd												
KCB Group Ltd												
National Bank of Kenya Ltd												
NIC Bank Ltd												
Standard Chartered Bank Ltd												
Equity Group Holdings												
The Cooperative Bank Ltd												

APPENDIX II

CHUKA UNIVERSITY ETHICS REVIEW COMMITTEE CLEARANCE

CHUKA  **UNIVERSITY**

Knowledge is Wealth *(Sapientia divitia est)* Akili ni Mali

CHUKA UNIVERSITY INSTITUTIONAL ETHICS REVIEW COMMITTEE

Telephones: 020-2310512/18 **P. O. Box 109-60400, Chuka**

Direct Line: 0772894438 **Email: info@chuka.ac.ke,**

Website: www.chuka.ac.ke

REF: CUIERC/ NACOSTI/113 **23/ DECEMBER/2020**

TO: **Margaret Wanjiru Mogusu**

RE:. **Effects of Financial Risk on Shareholders' Wealth of Commercial Banks Listed at Nairobi Securities Exchange.**

This is to inform you that *Chuka University IERC* has reviewed and approved your above research proposal. Your application approval number is *NACOSTI/NBC/AC-0812.* The approval period is 23/December 2020 -23/December 2021.

This approval is subject to compliance with the following requirements;

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

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

Yours sincerely

PROF. ADIEL MAGANA
CHAIRMAN CHUKA UNIVERSITY

APPENDIX III
NACOSTI PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 102028

Date of Issue: 01/February/2021

RESEARCH LICENSE

This is to Certify that Ms.. MARGARET WANJIRU MAGUTA of Chuka University, has been licensed to conduct research in Nairobi on the topic: EFFECT OF FINANCIAL RISK ON SHAREHOLDER'S WEALTH OF COMMERCIAL BANKS LISTED AT THE NAIROBI SECURITY EXCHANGE for the period ending : 01/February/2022.

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Applicant Identification Number

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