

**FACTORS INFLUENCING FOREIGN EXCHANGE RISK HEDGING IN
MANUFACTURING FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE
IN KENYA**

BY

MICHAEL KYULI KIILU

D61/73971/2014

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION IN
FINANCE, SCHOOL OF BUSINESS, THE UNIVERSITY OF NAIROBI**

NOVEMBER 2018

DECLARATION

This research project is my original work and has not been presented for a degree in any other institution.

Signature: Date:

MICHAEL KYULI KIILU

D61/73971/2014

This research project has been submitted for examination with my approval as the University Supervisor.

Signature: Date:

DR. JOSEPHAT LISHENGA

Lecturer, Department of Finance and Accounting

School of Business, University of Nairobi

DEDICATION

I dedicate this research project to my family members, Purity, Samuel and Ryan for their love, support, patience, encouragement and understanding during my study.

ACKNOWLEDGMENT

Special thanks go to my supervisor Dr. Josephat Lishenga for his support, advice, guidance and his continuous evaluation and supervision of my work. I would also like to extend my gratitude to the administration of the University of Nairobi through the university's library and the library staff that enabled me to access the various materials used in compiling this work. Special attribute goes to my class members and friends who through their persistence assistance and hard work saw the achievement of this study. Last but not least, I would like to give my most special tributes to our almighty Lord for all His blessings.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGMENT	iv
LIST OF TABLES.....	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS.....	x
ABSTACT.....	xii
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the study	1
1.1.1 Foreign exchange risk.....	1
1.1.2 Hedging	3
1.1.3 Manufacturing firms in Kenya	3
1.2 Statement of the Problem	5
1.3 Objectives of the study.....	7
1.4 Value of the study	7
CHAPTER TWO: LITERATURE REVIEW.....	8
2.1 Introduction	8
2.2 Theoretical Review.	8
2.2.1 Value maximization theory	8
2.2.2 Prospect Theory	8
2.2.3 Interest Rate parity.....	9

2.2.4 International Fisher effect.....	11
2.3 Factors influencing Foreign exchange risk Hedging.....	12
2.4 Hedging methods and instruments	16
2.5 Empirical review	22
2.6 Conceptual Framework	26
CHAPTER THREE: RESEARCH METHODOLOGY	28
3.1 Introduction	28
3.2 Research Design.....	28
3.3 Target Population	29
3.4 Data collection procedure.....	29
3.5 Data Analysis	29
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION	31
4.1 Introduction	32
4.2 Descriptive Statistics	32
4.3 Logit Regression	32
4.4 Discussion	36
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	39
5.1 Introduction	39
5.2 Summary	39
5.3 Conclusion.....	40
5.4 Recommendations	41

5.2.1 Recommendations for Policy Development	41
5.2.2 Limitations of the study	42
5.2.3 Recommendations for Further Studies	42
REFERENCES.....	43
APPENDICES	48
Appendix I: Listed Firms in the Manufacturing and Allied Sector in Kenya as at 31st December 2017	48
Appendix II: Research Data	49

LIST OF TABLES

Table 4.1: Descriptive Statistics	32
Table 4.2: Classification Table	33
Table 4.3: Variables in the Equation.....	33
Table 4.4: Omnibus Tests of Model Coefficients	34
Table 4.5: Model Summary	34
Table 4.6: Hosmer and Lemeshow Test	34
Table 4.7: Classification Table	36
Table 4.8: Variables in the Equation.....	36

LIST OF FIGURES

Figure 1: Conceptual Framework	27
--------------------------------------	----

ABBREVIATIONS AND ACRONYMS

ATM	Automated Teller Machine
CIRP	Covered Interest Rate Parity
CMA	Capital Market Authority
CR	Current Ratio
DP	Dividend Pay-out
FEC	Forward exchange contract
GBP	Great British Pound
IAS	International Accounting Standard
IBM	International Business Machines
IFE	International Fisher Effect Theory
IFRS	International Financial Reporting Standards
INR	Indian rupee
ITM	Information Technology Management
KNBS	Kenya National Bureau of Statistics
KQ	Kenya Airways Limited
MNCs	Multinational Corporation
NSE	Nairobi Securities Exchange
OTC	Over the Counter
OTM	Out of The Money
SEZ	Special Economic Zones
SPSS	Statistical Packages for Social sciences
UK	United Kingdom

US	United States
USD	United States Dollar
VAR	Value at risk

ABSTRACT

The foreign exchange market experiences dynamic volatility which affects the performance of firms and there is need for the firms to manage such exposures related to foreign exchange rate movements. Firms with exports and imports are significantly affected by currency risks and this study sought to establish the factors that influence foreign exchange risk hedging among manufacturing firms listed at the Nairobi Securities Exchange in Kenya. Specifically, the study sought to establish the influence of foreign exposure, financial distress, firm size and liquidity on foreign exchange risk hedging. The study employed descriptive research design and targeted the listed manufacturing firms at NSE. Secondary data was collected from 10 listed manufacturing firms using the NSE and CMA websites. Statistical package for social sciences (SPSS Version 23.0) was used to analyse the data. From the analysis of the findings, it was concluded that foreign exchange risk hedging in the manufacturing firms in Kenya listed at the Nairobi securities exchange was influenced by financial exposure, financial distress and liquidity. Hence, it was recommended that manufacturing firms should develop and document hedging policies. The research revealed that derivatives usage in emerging markets was low compared to developed world; the research recommends that regulatory authorities review market completeness, regulations and investor knowledge. Moreover, it was recommended that manufacturing firms establish a robust and tested framework for risk management specifically on foreign exchange risk hedging and that market regulators should enact legislation and guidelines to enable Kenyan firms to hedge foreign exchange risk through prudent management of financial exposure, financial distress and liquidity.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The creation of general agreement on trade and tariffs in 1947 and the establishment of the world trade organization in 1994 led to economic liberalization which made it possible for firms to expand in the global markets as part of their growth strategy and as a way of diversifying country specific risks. Firms involved in international trade have revenues and expenses denominated in different currencies other than the domestic currency which exposes them to currency risk. Currency risk exposure is classified as transaction, translation and economic exposures.

Skapof (2011), states that expansion in to international markets exposes entities to currency risk. Foreign exchange risk affects the firm's assets and liabilities denominated in foreign currency and many firms have set in place risk management departments to manage these exposures using various risk management technics including financial derivatives. Financial derivatives are hedging instruments whose value changes in response to the spot price of the hedged item called the underlying. Derivative financial instruments track market variables such as stock indices and weather indices. Data from the bank for international settlements shows that the use of derivatives in managing foreign exchange risk has grown exponentially (Brown and Fehle, 2009). Notes that there is greater use of derivatives by both financial and non-financial firms. Derivatives can solve capital markets imperfection issues relating to information asymmetry, taxes, and financial distress (Brigham and Ehrhardt, 2005) or management incentives (Stulz, 2001). Currency risk hedging is meant to eliminate or reduce the risk and requires understanding of how the risk

affects the firm and the techniques to deal with the risk implications (Barton, Shenkir, and Walker, 2002).

1.1.1 Foreign exchange risk

According to Brucaite and yan (2000), foreign exchange risk is the quantity and probability of losses due to volatility of exchange rates. It is the effect of unexpected exchange rate volatility on the value of the firm (Madura, 2009). Foreign exchange risk is classified into three categories; transaction, translation and economic exposure (Shapiro, 2006). Financial derivatives are hedging instruments whose value changes in response to the spot price of the hedged item called the underlying. Derivative financial instruments track market variables such as stock indices and weather indices (Brown and Fehle, 2009).

Transaction risk arises as a result of changes in exchange rates between the time the liabilities and asset contracts are entered into and the date on which settlement is done and affects the statement of income and the balance sheet. Translation risk affects the values reported in financial statements. Economic risk affects the present does not influence foreign exchange risk hedging in the manufacturing firms in Kenya. Many studies have been done to determine the effects of changes in exchange rates on returns and cash flows of corporations (Aggarwal and Harper 2010).

1.1.2 Hedging

Kenya is a net importer and therefore has more foreign Liabilities than assets as the value of imports exceeds exports. Importers are faced with the risk of weak domestic currency while exporters face the risk of a strong domestic currency and thus a great market for hedging exists where banks acting as market makers in foreign exchange derivatives provide and offer solutions to corporate and institutional clients. Firms involved in international trade are therefore faced with foreign exchange rate risk and need to identify the risks to which they are exposed and measure the exposure in order to make a decision on whether to hedge or not.

Measuring currency risk requires use of sophisticated mathematical and econometric models (Van Deventer, Imai, and Mesler, 2004; Holton, 2003). Value at risk (VAR) model for measuring risk is widely used by firms. Hedging the identified and measured exchange rate exposures is important for stabilising firms earnings, reducing corporate risk and helps secure minimum operating margin and targeted internal rate of return. Crabb (2003) indicates that a wide range of financial derivatives have been developed in the past 20 years to manage financial risk. Asaf (2004) notes a wide range of market risks can be hedged using financial derivatives. Firms use cash-flow and fair value hedges to hedge transaction, translation and economic exposures.

1.1.3 Manufacturing firms in Kenya

Kenya has a vibrant manufacturing sector serving local, regional and international markets. The manufacturing sector in Kenya deals with production of agricultural products, edible oil refining, Motor vehicles, Tobacco products, basic and fabricated metal products,

cement, furniture, textiles, soap, beverages, Chemicals and chemical products, pharmaceuticals, sugar, Dairy products, Leather, and flour among other things (World Bank, 2010).

Manufacturing sector has been given much emphasis as part of the government's big four agenda to create wealth. The manufacturing sector in Kenya deals with production of agricultural products, edible oil refining, Motor vehicles, Tobacco products, basic and fabricated metal products, cement, furniture, textiles, soap, beverages, Chemicals and chemical products, pharmaceuticals, sugar, Dairy products, Leather, and flour among other things the manufacturing firms are actively involved in importing large quantities of raw material for manufacture for local and export markets. The high volatility of the four major currencies, the USD, GBP EUR and INR has affected their cash flows and income both positively and negatively.

These firms face large exposures to currency risk which should be eliminated through hedging using financial derivatives. A key observation is that not all currency risk exposures are hedged and the study seeks to find out from a purposive sample of these companies the factors that pharmaceuticals, sugar, Dairy products, Leather, and flour among other things, Manufacturing sector has been given much emphasis as part of the government's big four agenda to create wealth and employment (KNBS, 2018).

The sector faces various challenges which include: competition from cheaper imports, shorter product life cycle, low investment in capital and high cost of production. Some of

the manufacturing firms are actively involved in importing large quantities of raw material for manufacture for local and export markets. These firms face large exposures to currency risk which should be eliminated through hedging using financial derivatives.

A key observation is that not all currency risk exposures are hedged and the study seeks to find out from a purposive sample of these companies the factors that influence managerial behavior to hedge. Specifically, the study will establish the marginal effect on hedging resulting from the change in foreign exchange exposure, marginal effect on hedging from the change in financial distress, the marginal effect on hedging from the change in firm size, and the marginal effect on hedging from the change in liquidity.

1.2 Statement of the Problem

The foreign exchange market is quite dynamic and volatile. Data from the Central bank of Kenya website shows that the shilling opened trade at 80.7961 in January 2011 and weakened to lows of 105.9610 in October 2011 depreciating by 31% against the USD which accounts for over 70% of all foreign exchange payments. Inflation rate rose from a low of 5.4 % to a high of 16.5% impacting negatively on the performance of manufacturing firms in Kenya.

Athi River mining which is in allied and manufacturing sector reported realised foreign exchange losses worth 685 million in 2011. Many other firms reported significant foreign exchange losses including oil distributor Kenol Kobil which made a loss of 1.2 Billion. The central bank of Kenya actively uses monetary policies to ensure a stable currency but

despite interventions, the shilling continues to experience volatility against the major currencies, the USD, EUR, GBP and INR.

The government has tried to influence the exchange rates through fiscal policies by giving incentives to exporters through zero rating exports. Hedging foreign currency risk exposure enables a firm to offset the adverse effects of foreign exchange risks on income statement (Jensen, 2001). Predicting forward spot exchange rates is dependent on many macroeconomic factors and is difficult to measure.

Firms dealing with imports of raw materials and finished goods remain highly exposed to exchange rate risk yet empirical studies show that some firms do not hedge their risk exposures and others tactically (selectively) hedge their exposure.

Many studies have been conducted to determine the effect of hedging foreign exchange risk exposure on firm value (Njuguna et al., 2013, Mugenda et. al. 2014, Mburugu 2014 and Hagelin & Pramborg, 2004). However, these studies have either covered the banking industry or the insurance firms but none have been done to determine the factors influencing foreign exchange risk hedging in manufacturing firms listed at the NSE which justifies the current study. Therefore, the research question was, what are the factors influencing foreign exchange risk hedging in Manufacturing Firms in Kenya?

1.3 Objectives of the study

The purpose of this study is to determine the factors that influence foreign exchange risk hedging in the Manufacturing Firms listed at the Nairobi securities exchange in Kenya.

1.4 Value of the study

The study will help corporate treasurers and finance managers in managing foreign exchange risks with clear understanding of factors which affect the hedging decisions and enable them to make effective hedges through appropriate hedging strategies and products. Regulatory authorities will use the findings of this study to align the markets with investor expectations. The study will help in maximization of shareholders/ investors value by the use sound risk management solutions. The findings of this research will benefit researchers, academicians, consultants and students in conducting more studies in in topic.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Foreign exchange risk affects the earnings and cash flows of firms engaged in international trade which impacts the gross national income of the countries in which they are based. Due to the importance attached by Governments and firms in import and export business, many theoretical and empirical research studies have been conducted in this field. This chapter discusses the theories that support this study and empirical research on foreign exchange risk management.

2.2 Theoretical Review

2.2.1 Value maximization theory

Firms pursue different objectives depending on whether they are for profit or not for profit. Profit maximization and shareholder value maximization are fundamental measures of the economic success of the firm. Currency risk has adverse and positive impact on the earnings of entities depending on the direction of exchange rates. Hedging can reduce the risk and maximize the value of the firm. Managers compensation schemes are tied to the performance of the firm and they actively manage risks through hedging. Managerial risk aversion has been identified as one of the key drivers for hedging to reduce income volatility (Smith and stulz, 1985). Where there are capital market imperfections, hedging can increase the value of the firm by reducing the cost of financial distress, reduction in expected taxes and increasing a firm's debt capacity (Smith and Stutz, 1985).

Firms faced with high leverage and costly external sources of funds are likely to face the underinvestment problem and therefore fail to maximize firm value. Froot et al (1993)

argues that hedging can increase firm value by enabling the firm to make optimal investments. Firms with high debt to equity ratio can reduce the earnings volatility by hedging and resolve the shareholder-debtor conflict of underinvestment (Bartram, Fehle and Brown (2009) optimizing debt level through risk management increases the value of the firm as it obtains the benefit of lower tax outflows due to high tax shields (Graham and Rogers,2000: Leland ,1998).

2.2.2 Prospect Theory

This theory describes the decision-making process between different risky alternatives when the probability of the outcomes are known. The theory was developed by Daniel Kahneman and Amos Tversky in 1979 and emphasizes that people make decisions based on the value placed on gains and losses and not the expected utility model of Neumann and Morgenstern (1953). The value function is normally concave for gains and convex for losses and decision weights are generally lower than the corresponding probabilities except in the range of low probabilities meaning that high probabilities are viewed as overestimation of outcomes (Kahneman and Tversky, 1979).

Managers have incentives to hedge as losses are given greater weights than gains. Prospect theory asserts that people evaluate gains and loses using a heuristic in contrast to the expected utility model of Neumann and Morgenstern (1953). This is evident in hedging decisions where forward prices are considered to be biased predictors of the spot price. Decision making under prospect theory involves editing and evaluation where prospects are ordered according to a heuristic and greater outcome are considered gains whereas

lesser outcomes are considered as losses. Prospect theory postulates that people are risk averse in the domain of gains and risk seeking when faced with losses which is a possible reason why more risk is hedged in periods of high volatility.

2.2.3 Interest Rate parity

This theory provides a basis for valuation and determination of forward rates from market spot rates. Interest rates form the cost of carry and the forward rates reflect the interest rate differential in the currencies. This theory links the spot and forward exchange rates of a currency pair by the interest rate in each of the respective countries. It asserts that the expected real rate of return on interest bearing assets must be the same in all countries and if this relationship does not hold, there would be possibility for arbitrage.

This theory shows that currencies can either sell forward at a discount or at premium depending on the interest rates. Differences in interest rates between a pair of currencies are purely reflected in the forward rates and any deviation from this parity condition leads to speculation and arbitrage. Interest rate parity theory further stipulates that the forward markets adjust the exchange rates such that any arbitrage gains made in investing in higher interest (yield) are wiped out by depreciation in the local currency. Forward rates differ from spot rates in the market and this theory can only be applicable in the strong form efficient market theory (Fama, 1965). Empirical evidence shows that the interest rate parity theory does not always hold and the foreign exchange market is characterised by both arbitrageurs and speculators.

Studies in market efficiency have indicated that markets are not strongly efficient and forward rates differ from spot rates giving incentives to speculators and arbitrageurs to make profits. speculators make profit by taking a position in the foreign exchange market and covering the same using forward exchange contracts. The latter action of taking a position and covering the same with forward exchange contract is referred to as covered interest rate parity (CIRP). Riskless profits can be made through entering into a long position in a high yielding currency and purchasing a forward exchange contract (Shapiro and Rutenberg, 1976).

2.2.4 International Fisher effect

The international Fisher effect is one of the parity theories developed by US economist Irving Fisher in 1930. This theory asserts that real returns should be the same in all countries. A real return is defined as the nominal rate minus the inflation rate. According to this theory higher expected inflation in a country should lead to higher nominal interest rates. The theory is used to predict present and future spot rates of exchange. The International Fisher effect states that exchange rate changes are balanced out by interest rate changes.

Cum and Obstfeld, (1981) argue that International Fisher effect is good at determining short-run changes in spot exchange rates. Parity theories are very important for international investors as they are not only faced with the analysis of risk and return trade-offs on actual investments but also with exchange rate volatility which requires a clear understanding of the determination and interaction of interest rates and exchange rates. IFE is an exchange rate model which links differences in nominal rates between countries to

the spot exchange rates. This theory asserts that currencies with high nominal interest rates will depreciate against those with low nominal interest rates as the difference is the expected inflation.

2.3 Factors influencing Foreign exchange risk Hedging

2.3.1 Foreign Exchange exposure

Firms involved in international trade have exposure related to exchange rate volatility which affects the value of the firm. The exposure is measured as the difference between foreign asset and liabilities denominated in a currency other than the domestic currency. This exposure can be managed in using different methods. (Pantzalis, Simkins and Laux, 2001). Studies show that large firms are more likely to use operational hedges to offset their exposures to currency risk through establishing operations in different countries. The degree to which firms hedge their foreign exchange exposure is determined by many factors and foreign exchange exposure is a determinant (Allayannis and Ofek, 2001). Khun (2007) state that the larger the economic exposure a company is facing the more likely it is that the company will commit to corporate risk management activities.

Foreign exchange exposure results in unexpected changes on the firms input costs and output price, (Pantzalis *et al.*, 2001). Exporters incur losses when the domestic currency appreciates and importers report realized foreign exchange losses when the domestic currency weakens against the foreign currency in which the liabilities are denominated. Exchange exposure is managed through hedging to offset their exposures to currency risk through establishing operations in different countries. The degree to which firms hedge

their foreign exchange exposure is determined by many (Clark *et al.*, 2006). LeI (2006) argues that firms with foreign exposure have greater incentives to hedge using derivative financial instruments.

Firm's foreign exchange exposure is both short and long term. Operating exposure is of future operating cash flows due to exchange rate volatility. Allayannis and Ofek (2001) did a survey study of 500 Companies to ascertain whether hedging is correlated to foreign exchange exposure and their findings indicate a positive correlation.

2.3.2 Financial Distress

Financial distress is a situation where the firm faces cash shortage which is characterized by high leverage ratio, low liquidity and declining profitability. The causes of financial distress are classified into endogenous and exogenous. Exogenous variables are macroeconomic and include overcapacity and market structural changes, political and legal disruptions, economic recessions and natural disasters while endogenous factors include high leverage, fraud, mismanagement and weak corporate governance. Financially distressed firms face bankruptcy costs, high cost of equity and higher taxes (Stulz, 1996). Unhedged foreign currency cash flows expose a firm to financial distress due to market volatility. Highly distressed companies engage in restructuring processes which have negative effect on value. The high costs of distress can result in filing for bankruptcy and subsequent liquidation of the firm with the detrimental effect that equity holders only have claims on residual income.

Stulz (2002) argues that firms with cash flow variability should devote resources to reduce foreign exchange and price volatility if such volatility has a cost to the firm. (Stutz, 2002) stated that hedging reduces the possibility of financial distress. Graham and Rogers (2002) assert that reducing financial distress increases a firm's debt capacity and available tax shields. Asquith et al. (1994) classifies firms as distressed if earnings before interest, taxes, depreciation and amortization are lower than 80% of interest the firm's interest expense.

The inability of financially distressed firms to raise capital at lower rates due to the premium required by shareholders increases the cost of operation and has a negative effect on earnings cash flows. The debt holders put restrictions on the operations of the firm and this impacts on the value of the firm as managers may be forced to forgo projects with positive net present values. Distressed firms with profitable investment opportunities cannot therefore maximize the firm value and need to hedge cash flow volatility using financial derivatives.

2.3.3 Firm size

Large firms enjoy the benefits associated with economies of scale and scope as they achieve low cost per unit due to high production volumes. They have high degree of operating leverage compared to medium and smaller firms. In times of high demand and rising prices and production at full capacity, these firms realize greater profitability due to low production cost per unit. Sullivan and Sheffrin, (2003) articulate does not influence foreign exchange risk hedging in the manufacturing firms in Kenya scope. Part of these benefits are low cost of debt due to better credit rating, better inventory management as they are

able to purchase goods based on economic order quantities and therefore obtaining quantity discounts and lower production cost enabling them to achieve low unit cost. Risk Management for the firm can be centralized and thus lower costs are achieved.

Khun (2007) established in his study that large firms enjoy economies of scale and this puts them in a better position to carry out risk management activities and are not exposed to information asymmetry. The findings of this study can be attested to the fact that these firms at times operate in different geographical areas and are able to get information which smaller firms operating in one region do not get. A clear example can be a manufacturing firm involved in international trade which has forward and backward integration in the markets. Such a firm is able to get clear information about impending monetary and fiscal policies in the locations in which it is operating thus enabling it to make informed hedging decisions.

Larger firms can utilize economies of scale; on the other hand, small firms face proportionally higher costs of financial distress than larger firms and are therefore more inclined to manage their risks and use derivatives or foreign debt to lower their exposure (Khun, 2007). Sullivan and Sheffrin's (2003) argue that larger firms have better credit ratings and are able borrow at low rates compared to small firms thus improving their cash flows. Block and Gallagher (1986) argues that larger firms show more tendencies towards the use of derivatives to hedge risk exposures and these findings are supported by Nance (2003), Judge (2003) and Ameer (2010).

2.3.4 Liquidity

Liquidity has different meanings in terms of market and the balance sheet and here we use the balance sheet does not influence foreign exchange risk hedging in the manufacturing firms in Kenya current ratio and the quick ratio are the most widely used measure of liquidity. Liquidity enables a firm to increase its value as highly liquid firms obtain better credit rating and are therefore able to borrow more cheaply from the capital and money markets. Less liquid firms should manage their risks more actively as failure to do so can lead to insolvency. Firms with low liquidity have incentives to hedge (Mayers and Smith, 1987).

Gay and Nam (1999) found out in their study that liquidity is correlated to hedging as large firms with low liquidity hedged more exposures when they had growth opportunities. Bergstrand et al. (2009) suggest that maintaining high liquidity and stable cash flows could have important influences on negotiating with suppliers and improving trading costs related to hedging activities. Optimal hedges maximize a firms liquidity which enables the firm to avoid the costs of distress and maximize does not influence foreign exchange risk hedging in the manufacturing firms in Kenya the factors that affects hedging and they assert that firms with high liquidity hedge less while those with low liquidity hedge more of their exposures.

2.4 Hedging methods and instruments

Firms have many alternatives of hedging foreign exchange risks and a wide variety of hedging instruments.

2.4.1 Currency matching

When selling abroad, firms can stipulate terms in the invoice contract to match the home currency in which they have their expenses (Kenyon, 1999). Companies which import materials for use in manufacture can invoice the finished product in the currency used in the purchase of raw materials. This is a common way of conducting business by two companies from countries with very volatile currencies, where the possibility of adverse effects is large (Goldberg and Tille, 2008).

2.4.2 Money market Hedges

These hedges are also commonly referred to as synthetic hedges. The firm hedges the exposure on imports denominated in foreign currency through borrowing the local currency and converting into the foreign currency at the ruling spot exchange rate in order to lead a liability where the local currency is expected to weaken.

Receivables in foreign exchange are synthetically hedged by borrowing the equivalent amount of export sales and converting the currency at the spot rate immediately where the local currency is expected to appreciate against the foreign currency receivable. On maturity the amount received is used to repay the loan with no exchange of currencies.

2.4.3 Leading and lagging

Leading involves the acceleration of payments of foreign denominated liabilities. The firm alters the credit terms or pays before the stipulated credit terms to decrease the overall exposure where the foreign currency is expected to strengthen against the local currency.

Lagging is the delay of payments to decrease the currency exposures on both liabilities and

receivables in foreign currency. A lagging strategy is appropriate for liabilities where the local currency is expected to strengthen and good for receivables where the domestic currency is expected to weaken (Shapiro, 2010).

One of the most obvious advantages of leading and lagging is that it is easy to perform. Simply by making managerial decisions of when transactions are to be executed (Mathur, 1985). By alternating the time frame of intra-company payments, the group can generate a sort of internal borrowing, without the necessary cost associated with a regular loan (Shapiro, 2010), The cost of performing the method could easily outweigh the benefits (Hill, 2001). In some countries governments have restrictions on the length of the intra-company payments, so there is a possibility that the law is breached (Shapiro, 2010).

2.4.4 Netting

Multinational firms with payments that flow back and forth between affiliates can postpone the actual transfer of money until a predetermined date when the affiliate's flows are netted and they pay or receive only one amount. Thereby they reduce both transaction costs and the impact of currency risks by fixing the exchange rates (Shapiro, 2010). Netting arrangements only apply to foreign exchange transactions in the same currency pairings dealt for the same value date and the terms of all such netting are agreed between the counterparties. Netting arrangements can be bilateral or multilateral. Netting reduces the exchange risk exposure, credit risk exposure and transaction costs.

2.4.5 Currency derivatives

Currency derivatives are used for hedging, speculation and arbitrage by market participants. The growth of these instruments has been phenomenal (Crab, 2003). There is a wide range of currency derivatives and this study will focus on Currency forwards, swaps, futures and options.

Forward exchange contract is a contractual agreement between a bank and counterparty for currencies on forward dates. The contracts are flexible instruments which enable counter parties to hedge specific exposure limits as opposed to futures markets which have contract specifications. These contracts have credit and market risk and the counterparty purchasing them losses when the prices of the hedged underlying decline. Forward contracts are zero sum games for the loss to one counterparty is the gain for the corresponding counterparty and thus no forward premium is paid. Transaction cost on these products is incurred as the spread between the bid and offer prices by market makers.

Currency swaps are recent financial derivatives having been used first in the 1980s. The swap market has experienced exponential growth. Statistics from the bank for international settlements (BIS) triennial survey show that daily turnover of outstanding contracts in currency swaps rose from 4 Billion in 1995 to 54 billion in 2013. A Currency swap is an over-the-counter agreement between two counterparties which has the features of borrowing and lending. The amounts to be borrowed and lend are exchanged at the beginning, and periodic interest is exchanged during the term of the contract and the exchange of principals at the end of the contract.

Currency swaps are motivated by the principle of comparative advantage. Swaps can be used to transform assets and liabilities to take advantage of favourable borrowing or lending rates. The swap offers the possibility to trade a perceived risk in one market or currency for liability in another. The idea of swaps was originated in the United Kingdom (UK) as a way of circumventing foreign exchange controls in the 1970s which were intended to prevent capital outflow. During this period, companies used back to back loans to avoid taxes. This simple arrangement later developed into more sophisticated cross currency and interest rate swaps with banks as market makers. The first currency swap was written in London in 1979 between the World Bank and IBM.

Currency futures were first developed in the United States of America by the chairman of the Chicago mercantile exchange Leo together with Milton Friedman. Currency futures are traded over an exchange such the Chicago Mercantile exchange and intercontinental exchanges in the United States of America. Currency futures are used for Hedging, speculation and arbitrage.

Hedgers use the instruments to mitigate the foreign exchange risk volatility. Currency futures have no credit risk as it is assumed by the exchange. An initial margin or faith deposit is deposited with the exchange and thereafter there is a daily mark to market by the exchange clearing house. A party with a loss position on the contract pays the daily loss on the contract. Maintenance margins are set by the exchange and the exchange makes a margin call for any losses above the maintenance margin. Futures markets are not well developed in emerging markets in comparison with the developed world.

Currency option contracts are derivative financial instruments between a buyer and seller which specify the exercise (Strike) price, the amount of currency to be exchanged, the term of the contract and the time the option can be exercised. Currency options are used by firms to reduce costs and increase benefits from having increasing certainty in financial transactions that increase currency conversions (Chance, 2008).

Options are classified into call options and put options based on the nature of transactions and European, American and Bermudan style based on the time they can be exercised.

It is worth noting that buyers of call options are purchasing a ceiling on the maximum price they can pay whereas purchasers of put options are purchasing a floor on the maximum price they can receive from the sale of long positions in assets. Option writers receive a premium from the purchaser of the option. It is worth noting that buyers of call options are purchasing a ceiling on the maximum price they can pay whereas purchasers of put options are purchasing a floor on the maximum price they can receive from the sale of long positions in assets.

At the time of purchase when the premium is paid, an option can be in three states: in the money, out of the money and at the money. Purchasers of options are effectively setting a cap to the price to be paid whereas sellers of puts are purchasing a floor to the price to be received.

2.4.6 Risks faced by manufacturing firms in Kenya

Manufacturing firms in Kenya are faced with many types of risks. These range from operational risk, liquidity risk, credit risk, unfair competition from counterfeit goods and those smuggled across the borders, market risk, compliance risk, country risk, and currency risks for the firms involved in imports and exports. This study will focus on the currency risks and the risks involved when using financial derivatives.

Market risk also called systematic risk is caused by changes in macroeconomic variables and is not diversifiable. Market risk can be managed through hedging and insurance. Hedging market risk involves purchase or sale of contracts whose payoff is negatively correlated to the underlying. Credit risk also referred to as default risk occurs when one party to the contract fails to make settlement. Basis risk is yet another type of risks which faces manufacturing firms. Basis risk is the variation between the spot price and the futures price of the hedged item.

2.5 Empirical review

Warner (1997) argues that the direct costs of financial distress are not proportionate to the firm size and that large firms undertake less hedging using derivatives than small firms. The findings by Warner are contradicted by studies done by Froot et al (1993), Gezcy et al (1997) Alyannis and Ofek (2001), Hagelin (2001) which show a positive correlation between hedging and the size of the firm. The findings of these studies can be supported by the high cost of setting up risk management departments and transaction costs of purchasing derivatives such as option premiums.

Alyannis and Ofek (2001) studied 500 firms in the United States and found a strong correlation between the use of derivatives and Foreign exchange exposure. Firms with high foreign exchange exposure are highly impacted by volatility of exchange rates and are therefore more motivated to hedge than firms with minimal exposures. Haushalter (2000) studied the risk management practices of 100 gas and oil firms and found a strong positive correlation between leverage and hedging, his study also shows that firms that hedged their exposures had high debt ratios, no debt ratings and no dividend payouts which leads to the argument that firms hedge in order to reduce the risk of financial distress. Geczy et al. (1997) studied a sample of 372 firms out of a population of 500 large US firms and found that firms with high quick ratios hedge less. This suggests that liquidity is a determinant of the firm's level of hedging. Moraa (2010) established that Kenya Airways Limited (KQ) hedging practices had maximized on profits and minimized on losses to the company through effective management of fuel price risks.

Cui and Vajsa (2008) studied the hedging incentives of 180 Norwegian firms using five variables to measure financial distress which included interest coverage ratio, leverage, Dividend payout, current ratio and the expected costs of distress and their findings are confirmed by earlier studies by (Nance et al. 1993; Geczy et al. 1997, Judge 2006) who assert that firms with high interest coverage ratio are less likely to go bankrupt and that high interest coverage ratios are negatively correlated with financial distress and that firms with high gearing level are more likely to hedge.

Dividend payout was used as a measure of liquidity that causes financial distress. Geczy et al. (1997) and Lel, (2006) conclude that firms that have regular dividend payments are more exposed to bankruptcy and there is a positive correlation between dividend payout ratio and the level of hedging. Nance et al (1993) Asserts that the costs of financial distress have significantly affected smaller firms more than the larger firms and that hedging is negatively related to the size of the firm. Going by the findings of this study, small firms are more likely to hedge than larger firms.

A study conducted by Carter et. al., (2006) on effect of commodity price hedging by American airline companies showed that hedging with relation to oil prices in the airlines industry is positively related to firm value and the hedging premium reaches over 5%. The authors showed evidence that the greatest benefit of hedging in this sector would be the reduction in underinvestment costs because the fuel price is highly correlated to the investment opportunities in the sector. The study also showed that firms can survive from following appropriate hedging strategies where the “intensity” of hedging is positively associated with the firm value.

Otsyula (2014) investigated challenges facing the use of financial derivatives in hedging interest rate risk by commercial banks in Kenya. The study investigated five commercial banks, two big banks, one medium and two small banks as per Central Bank of Kenya commercial banks classification. According to the results from the effort by commercial banks in Kenya to employ the use of derivatives for purposes of hedging against interest rate risk, are mainly hampered by the financial institution policy and market trading

platform technology. Though the Central Bank of Kenya has adequate structures at hand to hedge interest rate risk using derivatives among commercial banks in Kenya, the banks' financial institution policies and trading platforms hampered the hedging of interest rate risk using financial derivatives.

Brodsky (2010) noted that participants in the stock market utilized stock futures and options in respect to their portfolio strategies. The researcher however found out that the use of futures stock market compared to that of other financial derivatives such as interest rate also, stock index futures and options led to positive growth and liquidity of underlying stock market. Though the study focused on two financial derivatives, it does show a relationship between equity hedging practises and firm performance. Pwc (2012).in their survey found out equity prices was one of the areas that managers considered to be part of market risk.

Gutierrez (2003) in his study identifies that the central bank plays an intervening role in the economy of a country due to its autonomy i.e. political and economic independence. The researcher points out that the political independence of the central bank enables it to resist governmental pressures which would otherwise increase fiscal effects such as the "burden of debt" or even economic slowdown because of lower tax receipts. The economic independence of central bank enables it foresee reduction of deficits arising from supply and demand of money in a country by forcing the government to reduce the deficit without necessarily printing more money, which may have an endogenous effect on the country's economy.

2.6 Conceptual Framework

Many factors influence the decision to hedge foreign exchange risk. This study evaluates the effects of firm size, financial distress, liquidity and foreign exchange exposure on currency risk hedging. Liquidity is measured by the current asset ratio, retention ratio and free cash flows to the firm. Bartram, Brown and Fehle (2005) argue that financial distress is a measure three variables: Leverage (Debt to Equity ratio), profitability and liquidity position. Interest coverage ratio is also used as a measure of financial distress. Size of the firm is measured by the total assets and annual turnover (Khun, 2007). Foreign exchange exposure is measured by the level of foreign revenues and purchases as well as debt denominated in foreign currency (Khun, 2007). Figure 2.1 below shows the conceptual framework to explain independent and dependent variables.

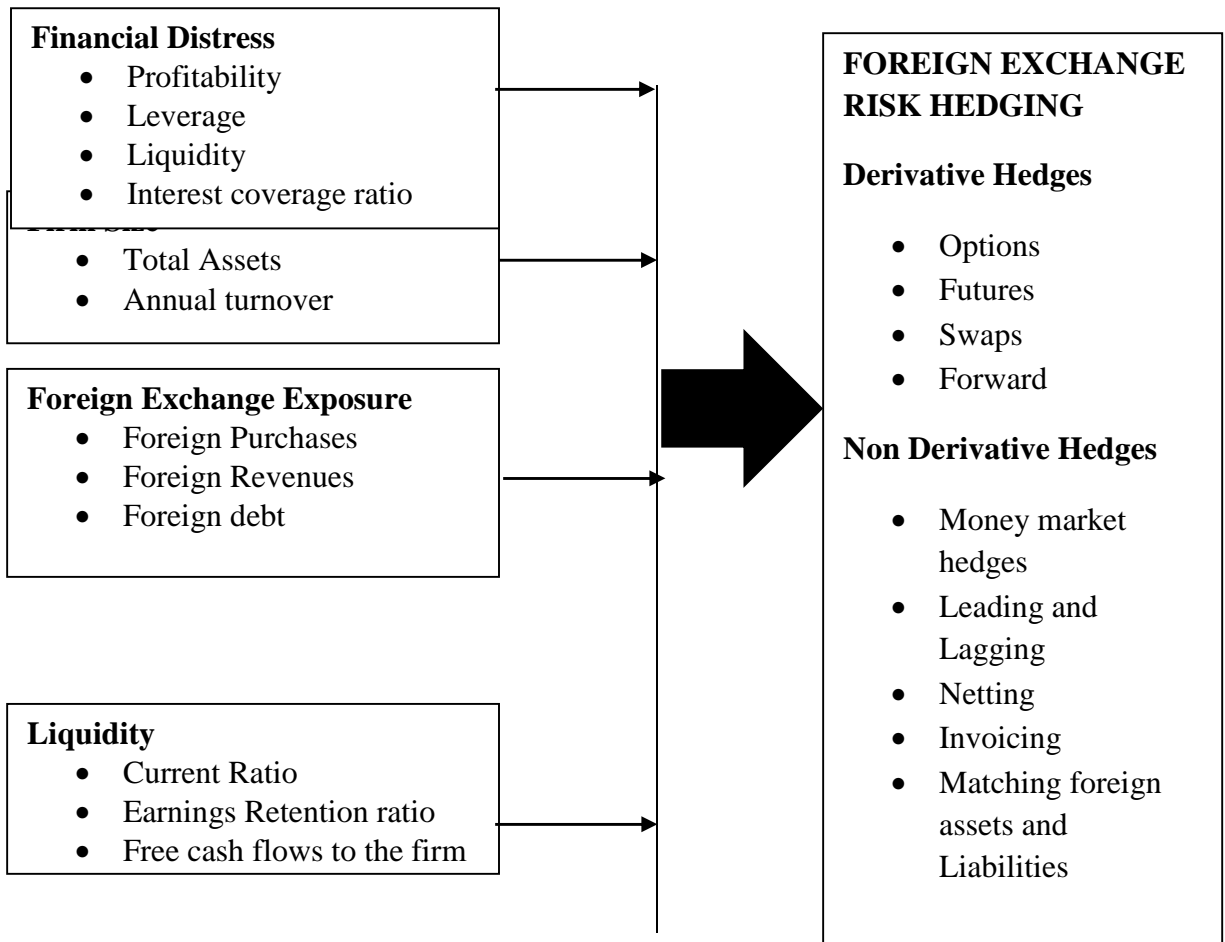


Figure 1: Conceptual Framework

Source: Author, 2018

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes and presents the methods and processes used in conducting the research. This section outlines the study's research design, population, sampling, data collection methods and data analysis procedures, definition and measurement of variables, testing for validity and reliability, and presentation of results.

3.2 Research Design

The research design describes the methods and processes used in collecting and analyzing data on the variables under study. The research used descriptive research design. This design is a method used in research to describe events in order to discover inferences or causal relationships.

It describes the state of affairs as they exist and involves gathering the respondent's opinions and attitudes on the topic of interest, using questionnaires and interviews. Descriptive research design also attempts to describe behaviour, attitudes, values and characteristics of a situation or population thus enabling the researcher to generate knowledge and come up with solutions to problems using this design.

Descriptive research answers research questions; who, what, where, when and how (Saunders, Lewis and Thornhill, 2009). The descriptive approach was able to describe the data and characteristics about the population under study; hedging of financial risks. It was

used to find out the current state of the hedging practices of manufacturing firms in Kenya, their level of involvement in financial risk hedging and what influenced such decisions.

3.3 Target Population

The study population was ten firms listed under the manufacturing and allied sector of the main investment market segment at the NSE (Appendix II) selected using purposive sampling. The research considered a five-year period from 2011 to 2017. Listed companies were preferred because financial statements are readily available at NSE handbook and CMA website.

3.4 Data collection procedure

Secondary data was collected from 10 listed manufacturing firms. The data was obtained from the published financial statements from the NSE handbook and CMA website. The research covered the financial period between 2011 and 2017.

3.5 Data Analysis

Data was analyzed using a multiple regression model. Statistical package for social sciences (SPSS Version 23.0) was used to generate results for the multiple regressions. The study employed both descriptive and inferential statistics to find out the relationship between independent and dependent variable. In this case, the dependent variable was hedging while the independent variables were foreign exchange exposure, financial distress, firm size and liquidity.

The dependent variable (hedging) is binary which had values from 0-1. In this case, OLS regression was not employed (Stock and Watson, 2012). Thus, logit regression was employed to handle the binary variable that is hedging resulting to logit other than linear curve. This model has been used by Afza and Alam (2011) between independent and dependent variable. Independent variables were foreign exchange exposure, financial distress, firm size and liquidity. Also, this model was employed by Fauver and Naranjo (2010) who considered logit regression where 0 represented non-hedging firms, and 1 represented hedging firms. This method is preferred because of the available and comparable method of measuring derivatives.

Therefore, the following model was employed:

$$\text{Equation (i): } Y_i = \frac{1}{1 + e^{(-REG)}} + u_i$$

$$\text{Equation (ii): } REG = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 +$$

X_1 = Foreign Exposure was measured by exchange rate

X_2 = Financial distress was does not influence foreign exchange risk hedging in the manufacturing firms in Kenya

X_3 = Firm size measured by Natural logarithm of firm's assets

X_4 = Liquidity measured by current assets/current liabilities

REG = Regression Where REG = $\beta_0 + \beta_1$ Foreign Exchange exposure

Where REG = $\beta_0 + \beta_1$ Foreign Exchange exposure + β_2 Financial Distress + β_3 Firm size + β_4 Liquidity

Y_i represents the hedging dummy, which can produce a predicted value between 0 and 1.

The betas represent the increase or decrease in likelihood that $Y = 1$ for each variable. In other words, an increase in the variable Y of 1 is more (or less) likely for each does not influence foreign exchange risk hedging in the manufacturing firms in Kenya in question. Since this is a logit regression, the calculation of the betas in the equation represents the following:

1 = The marginal effect on hedging dummy resulting from change in foreign exchange exposure, keeping all other factors constant.

2 = The marginal effect on hedging dummy resulting from change financial distress, keeping all other factors constant.

3 = The marginal effect on hedging dummy resulting from change in firm size, keeping all other factors constant.

4 = The marginal effect on hedging dummy resulting from change in liquidity, keeping all other factors constant.

= Error term

3.5.1 Test of Significance

The Hosmer-Lemeshow statistic - an inferential goodness-of-fit test was used to assess and validate the logit regression model (Thanh, Cuong, Dung and Chieu, 2010).

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings on the factors influencing foreign exchange risk in Manufacturing firms Listed in Nairobi Securities Exchange in Kenya. The chapter was presented based on the research objectives.

4.2 Descriptive Statistics

Table shows the mean and standard deviation for the variables used in the study.

Table 4.1: Descriptive Statistics

	N	Mean	Std. Deviation	Min	Max
Foreign exchange Exposure	37	-1.61957	3.784641	-8.663	6.306
Financial Distress	37	0.41167	0.37117	0.05943	1.15275
Firm Size	37	6.297207	0.046077	6.205341	6.378426
Liquidity	37	2.194305	0.28304	1.759479	2.64053

From the study findings in Table 4.1, the mean of financial exposure was -1.61957 and standard deviation of 3.784641. The minimum and the maximum values of financial does not influence foreign exchange risk hedging in the manufacturing firms in Kenya e independent variables were financial distress ($m=0.41167$, $SD=0.37117$), firm size ($m=6.297207$, $SD=0.046077$) and liquidity ($m=2.194305$, $SD=0.28304$).

4.3 Logit Regression

This section presents the results of logit regression

Block 0: Beginning Block

Table 4.2: Classification Table

	Observed		Predicted		
			Hedging		Percentage Correct
			Non-hedging	Hedging	
Step 0	Non-hedging	0	9	.0	
	Hedging	0	28	100.0	
	Overall Percentage			75.7	

a. Constant is included in the model.

b. The cut value is .500

The study findings in Table 4.2 shows that as 75.7% of the data on hedging entered into the SPSS were correctly classified, classification from the null model is 75.7% accurate. The addition of explanatory variables (financial exposure, financial distress, firm size and liquidity) should increase the percentage of correct classification significantly if the model is good.

Table 4.3: Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	1.135	.383	8.774	1	.003	3.111

Under Variables in the Equation you see that the intercept-only model is $\ln(\text{odds}) = 1.135$. If we exponentiate both sides of this expression we find that our predicted odds $[\text{Exp}(B)] = 3.111$. That is, the predicted odd of hedging is 3.111.

Block 1: Method = Enter

Block 1 shows the results after the addition of the explanatory variables selected.

Table 4.4: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	298.303	4	.006
	Block	298.303	4	.006
	Model	298.303	4	.006

The omnibus Tests of Model Coefficients table gives the result of the Likelihood Ratio (LR) test which indicates whether the inclusion of this block of variables contributes significantly to model fit. A p-value (sig) of less than 0.05 for block means that the block 1 model is a significant improvement to the block 0 model. From the study findings in Table 4.4, the Chi-square statistics 298.303 was significant $p=0.006$. Therefore, the block 1 model is a significant improvement to the block 0 models in the study.

Table 4.5: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	38.071 ^a	.677	.716

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

The model summary in Table 4.5 gives the values for two pseudo R² values which try to measure how much variation in the dependent variable (foreign exposure) is explained by

the model. From the table above, we can conclude that between 67.7% and 71.6% of the variation in survival can be explained by the model in block 1.

Table 4.6: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6.181	7	.519

Contingency Table for Hosmer and Lemeshow Test

	Hedging = Non-hedging		Hedging = Hedging		Total
	Observed	Expected	Observed	Expected	
1	2	2.056	2	1.944	4
2	2	1.315	2	2.685	4
3	0	1.150	4	2.850	4
4	2	1.015	2	2.985	4
Step 1 5	0	.858	4	3.142	4
6	0	.721	4	3.279	4
7	1	.653	3	3.347	4
8	1	.612	3	3.388	4
9	1	.620	4	4.380	5

The Hosmer-Lemeshow tests in Table 4.6 tests the null hypothesis that predictions made by the model fit perfectly with observed group memberships. A chi-square statistic (Chi-square =6.181) compared the observed frequencies with those expected under the linear model. A nonsignificant chi-square ($p=0.519$) indicates that the data fit the model well.

Table 4.7: Classification Table

	Observed	Predicted		
		Hedging		Percentage
		Non-hedging	Hedging	Correct
Step 1	Non-hedging	1	8	11.1
	Hedging	0	28	100.0
	Overall Percentage			78.4

a. The cut value is .500

The results in the in the classification Table 4.7, indicate that the overall success rate of the model was 78.4%.

Table 4.8: Variables in the Equation

	B	S.E.	Wald (X^2)	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
							Financial Exposure	2.345
Financial Distress	2.000	.001	20.038	1	.036	1.000	.999	1.001
Step 1 ^a Firm Size	-.003	.223	.001	1	.989	.997	.643	1.545
Liquidity	-1.146	2.901	19.156	1	.046	.318	.001	93.748
Constant	2.165	1.530	20.002	1	.017	8.713		

a. Variable(s) entered on step 1: Financial Exposure, Financial Distress, Firm Size, Liquidity.

The Wald Chi-Square statistic in Table 4.8 tests the unique contribution of each predictor. Therefore, foreign exchange risk hedging in the manufacturing firms in Kenya was statistically

significantly predicted by financial exposure ($x^2 = 21.901$, $p=0.016$), financial distress ($x^2 = 20.038$, $p=0.036$) and liquidity ($x^2 = 19.156$, $p=0.046$). However, foreign exchange risk hedging in the manufacturing firms in Kenya was statistically significantly predicted by firm size ($x^2 = 0.001$, $p=0.989$).

4.4 Discussion

The study established that foreign exchange risk hedging in the manufacturing firms in Kenya was significantly predicted by financial exposure, financial distress and liquidity. Nevertheless, firm size does not significantly influence foreign exchange risk hedging in the manufacturing firms in Kenya.

The unexpected changes on the firms input costs and output price at the manufacturing firms in Kenya emanate from foreign exchange exposure. The manufacturing firms in Kenya that import some of their raw material incur foreign exchange losses when the domestic currency weakens against the foreign currency in which the liabilities are denominated. Hedging enables manufacturing firms in Kenya to mitigate foreign exchange exposure by entering into an offsetting currency position so that losses on the original currency exposure is offset by a corresponding currency gain on the currency hedge. The study findings are in agreement with Lel (2006) who stated that firms with foreign exposure have greater incentives to hedge using derivative financial instruments.

The study established that foreign exchange risk hedging in the manufacturing firms in Kenya was statistically significantly predicted by financial distress. Financial distress occurs when the manufacturing firms in Kenya fall short of cash accompanied by high

leverage ratio and low levels of liquidity. The manufacturing firms in Kenya in financial distress also encounter challenges such as bankruptcy costs, high cost of equity and higher taxes. Failure to hedge foreign currency cash flows exposes a firm to financial distress due to market volatility. The study findings are in tandem with Stulz (2002) who argues that firms with cash flow variability should devote resources to reduce foreign exchange and price volatility if such volatility has a cost to the firm.

The study further established that foreign exchange risk hedging in the manufacturing firms in Kenya was statistically significantly predicted by liquidity. The manufacturing firms in Kenya in high liquid position are able to increase their value because they can as obtain better credit rating and are therefore able to borrow more cheaply from the capital and money markets. The manufacturing firms with low levels of liquidity should manage their risks more actively as failure to do so can lead to insolvency. The study findings are in agreement with Bergstrand *et al.* (2009) who stated that optimal hedges maximize a firm's liquidity which enables the firm to avoid the costs of distress and maximize value by investing more in positive net present value investments.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the key findings of the study on the the factors that influence foreign exchange risk hedging in the Manufacturing Firms in Kenya. Conclusions drawn from the study findings are also presented in the chapter as well as recommendations for policy development and for further research.

5.2 Summary

The descriptive statistics revealed that the mean of the variable was financial exposure ($m=-1.61957$), financial distress ($m=0.41167$), firm size ($m=6.297207$) and liquidity ($m=2.194305$). The study established that foreign exchange risk hedging in the manufacturing firms in Kenya was statistically significantly predicted by financial exposure ($p=0.016$), financial distress ($p=0.036$) and liquidity ($p=0.046$). Nevertheless, firm size did not significantly influence foreign exchange risk hedging in the manufacturing firms in Kenya ($p=0.989$).

The unexpected changes on the firms input costs and output price at the manufacturing firms in Kenya emanate from fforeign exchange exposure. The manufacturing firms in Kenya that import some of their raw material incur foreign exchange losses when the domestic currency weakens against the foreign currency in which the liabilities are denominated. Hedging enables manufacturing firms in Kenya to mitigate foreign exchange exposure firms in Kenya emanate from fforeign exchange exposure by entering into an

offsetting currency position so that losses on the original currency exposure is offset by a corresponding currency gain on the currency hedge.

The study established that foreign exchange risk hedging in the manufacturing firms in Kenya was statistically significantly predicted by financial distress. Financial distress occurs when the manufacturing firms in Kenya fall short of cash accompanied by high leverage ratio and low levels of liquidity. The manufacturing firms in Kenya in financial distress also encounter challenges such as bankruptcy costs, high cost of equity and higher taxes. Failure to hedge foreign currency cash flows exposes a firm to financial distress due to market volatility.

The study further established that foreign exchange risk hedging in the manufacturing firms in Kenya was statistically significantly predicted by liquidity. The manufacturing firms in Kenya in high liquid position are able to increase their value because they can as obtain better credit rating and are therefore able to borrow more cheaply from the capital and money markets.

5.3 Conclusion

The study concludes that foreign exchange risk hedging in the manufacturing firms in Kenya is influenced by financial exposure, financial distress and liquidity. Nevertheless, firm size does not influence foreign exchange risk hedging in the manufacturing firms in Kenya.

Hedging enables manufacturing firms in Kenya to mitigate foreign exchange exposure by Kenya in high liquid position are able to increase their value because they can as obtain better credit rating and are therefore able to borrow more cheaply from the capital and. The manufacturing firms in Kenya in financial distress encounter challenges such as bankruptcy costs, high cost of equity and higher taxes. Failure to hedge foreign currency cash flows exposes a firm to financial distress due to market volatility. The manufacturing firms in Kenya in high liquid position are able to increase their value because they can as obtain better credit rating and are therefore able to borrow more cheaply from the capital and money markets.

5.4 Recommendations

5.2.1 Recommendations for Policy Development

From the analysis of the findings, it was revealed that most manufacturing firms listed in NSE did not have clear documented hedging policies. Finance and risk managers are left to make decisions which may lead to sub-optimal hedging as a consequence of managerial risk aversion and the impact on managerial compensation in case the hedges are ineffective. In order to achieve the benefits of optimal hedging, manufacturing firms should develop and document hedging policies. In addition, the study reveals that derivatives usage in emerging markets is low compared to developed world, hence there is need to review market completeness, regulations and investor knowledge.

This study recommends that manufacturing firms in Kenya need to put in place clear guide lines for hedging foreign exchange risk hedging.

The study recommends that the government should enact legislations and guidelines to enable Kenyan firms to hedge foreign exchange risk through prudent management of financial exposure, financial distress and liquidity.

5.2.2 Limitations of the study

Some of the respondents were not willing to take part in the study due confidentiality policies of the organizations. The published financial statements did not report the foreign sales and purchases as a single figure but this was aggregated with domestic sales and therefore figures used were the calculated exposures by the companies making it hard to verify the numbers. A few companies did not disclose the risk exposures they face.

5.2.3 Recommendations for Further Studies

More studies empirical studies should be carried out with respect to more variables that influence foreign exchange risk hedging such as managerial risk aversion, market completeness, investor product knowledge and the four control variables analyzed in this study. The Government and regulatory agencies should deepen the markets for hedging risks. Firms should disclose their foreign exposures in their financial statements.

REFERENCES

- Afza, T., & Alam, A. (2011). Determinants of extent of financial derivative usage. *African Journal of Business Management*, 5(20), 8331-8336.
- Aggarwal, R., & Harper, J. T. (2010). Foreign exchange exposure of "domestic" corporations. *Journal of International Money and Finance*.
- Allayannis, G., & Ofek, E. (2001). Exchange rate exposure, hedging and the use of foreign currency derivatives. *Journal of International Money and Finance* 20, 273-296.
- Ameer, R. (2010). Determinants of corporate hedging practices in Malaysia, *The International Business Research*, 3(2), 120-130.
- Asaf, S. (2004). *Executive Corporate Finance*. London: Prentice Hall.
- Asquith, P., R. Gertner, & D. Scharfstein (1994). Anatomy of financial distress: An examination of junk-bond issuers. *Quarterly Journal of Economics*, 109, 625-658.
- Barton, T. L., Shenkir, W. G. & Walker P. L. (2002) Making enterprise risk management pay off: How leading companies implement risk management. Financial Times/Prentice Hall, Upper Saddle River, NJ.
- Bartram, S.M. (2008). Enhancing shareholder value with corporate risk management. *Corporate Finance Review*, 7 (3), November/December, 7-12.
- Bartram, S.M., Brown, G.W. & Fehle, F.R. (2009). International evidence on financial derivatives usage. *Financial Management*, 38(1), 185–206.
- Bergstrand, A., Hansson, K-F., & Thorsheim, M., (2009). *The value of hedging: A study of currency derivatives usage and firm value on the Swedish market*, School of management and economics Lunds University.
- Block, S. & Gallagher (1986). The use of Interest rate futures and options by corporate financial managers, *Financial Management* 15: 73-78.
- Brigham, E., & Ehrhardt, M. (2005). *Financial management: theory and practice*. South-Western, (11th ed). Mason, OH: South-Western.
- Brown & Fehle, (2009). Managing foreign exchange risk with derivatives. *Journal of Financial Economics*, 60, 401-48.
- Brodsky, W. (2010). The globalization of stock index futures: A summary of the market and regulatory developments in stock index futures and the regulatory hurdles which exist for foreign stock index futures in the United States. *Northwestern Journal of International Law and Business*, 15(2).

- Brucaite, V. & Yan, v. (2000). Financial risk management- Case studies with SKF and Elof Hansson. Unpublished Master's Thesis.
- Carter, D. ; Rogers, D.; & Simkins, B. (2006). Does hedging affect firm value? Evidence from the US airline industry. *Financial Management* : 53-86.
- Chance, D.M. (1998). *An introduction to derivatives*, 4th ed. Fort Worth, Texas: The Drydon Press.
- Clark, E.A., Judge, A.P., & Ngai, W.S. (2006). The Determinants and value effects of corporate hedging: An empirical study of Hong Kong and Chinese Firms. *Social Sciences Research Network*, Working paper.
- Crabb, P. (2003). *Financial Risk Management: The Big and the Small*. Nampa: North Nazarene University.
- Cui, S., & Vaja, N. (2008). Drivers of Derivatives use: evidence from the Oslo Stock Exchange. *Unpublished Master of Science Thesis*, Bi Norwegian School Of Management.
- Cumby, R. E., & Obstfeld, M. (1981). A note on exchange-rate expectations and nominal interest differentials: A test of the Fisher hypothesis. *The Journal of Finance*, 36(3), 697-703. doi:10.1111/j.1540-6261.1981.tb00654.
- Dowd, K. (1998). Beyond value at risk. NY; John Willy and Sons.
- Fama, E., (1965). The Behavior of stock- market prices, *The Journal of Business*, Vol.38
- Fatemi, A., & Glaum, M. (2000). Risk management practices of German Firms.
- Fauver, L., & Naranjo, A. (2010). Derivative usage and firm value: The influence of agency costs and monitoring problems, *Journal of corporate finance*, 16, 719-735.
- Froot, Kenneth A., David S. Scharfstein, & Jeremy C. Stein, (1993), Risk management: coordinating corporate investment and financing policies, *Journal of finance*, Vol. 48, No. 5, pp. 1629-1658.
- Gay, G.; Nam, J. (1999). The underinvestment problem and corporate derivatives use. *Financial management* 27(4): 53-69.
- Gezcy, C., Minton, B.A., & Schrand, C., (1997). Why firms use currency derivatives, *Journal of Finance* Vol. 52:1323-1354
- Goldberg, L. S., & Tille, C. (2008). *Vehicle currency use in international trade*, *Journal of International Economics*, 76(2):177-192.

- Graham & Rogers (2002). Does executive portfolio structure affect risk management? CEO risk-taking incentives and corporate derivatives usage. *Journal of Banking and Finance*, 26, 271-295.
- Graham, J., & Rogers, (2000). How big are the tax benefits of debt? *Journal of Finance* 55, 1901–1941.
- Gutierrez, E. (2003). *Infaltion performance and constitutional Central Bank Independence: Evidence from Latin America and the Carribbean*. IMF.
- Hagelin, N. (2003). Why firms hedge with currency derivatives: an examination of transaction and translation exposure. *Applied Financial Economics*, 13, 55-69.
- Hagelin, N.; Holmen, M.; Knopf, J. and Pramborg, B. (2004). Managerial stock option and the hedging premium, unpublished paper.
- Haushalter, G.D. (2000). Financing Policy, Basis Risk, and corporate hedging Evidence from oil and gas producers. *The Journal of Finance*, 55(1), February, 107-152.
- Hill, C.W.L. (2001). *International Business: Competing in the global marketplace* (3rd ed.). Irwin/McGraw-Hill, Boston, MA.
- Holton, G. A., (2003). *Value-at-Risk: Theory and Practice*, San Diego, California: Academic Press. International Swaps and Derivatives Association, Inc.
- Jensen, M.C., & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and capital structure. *Journal of Financial Economics*, 3, 305-360.
- Judge, A. (2003). Why Do firms hedge? A review of the evidence, *Journal of Issues in Finance and Monetary Policy* 9: 1-67.
- Judge, A.P. (2006). Why and how UK firms hedge. *European Financial Management*. 12(3),407-441.
- Kahneman, D. & A. Tversky (1979). Prospect Theory: An analysis of decision under Risk. *Econometrica* 47: 263 – 291.
- Kenyon, A., (1999). *Currency risk and business management* Massachussets, Basil Blackwell.
- Khun, J. (2007). Corporate risk management and hedging practice by medium-sized companies in Denmark: An empirical investigation of the determinants of companies' foreign exchange risk management. *Unpublished Master of Science Thesis*, Aarhus School of Business.
- KIPPRA (2017). Kenya economic report 2017: Sustaining Kenya's economic development by deepening and expanding economic integration in the region.

- KNBS (2018). Economic Survey, 2018.
- Lel, U. (2006). Currency hedging and corporate governance: a cross-country analysis. *International Finance Discussion Papers (Board of Governors of the Federal Reserve System)*.
- Leland, H. (1998). Agency cost, risk management, and capital structure, *Journal of Finance* 53, 1213–1243.
- Madura, J. (2009). International financial management, 2nd Edition. St. Paul, Minnesota: West Publishing Company.
- Mathur, I. (1985), Managing foreign exchange risks: *Strategy considerations*, (p.7-8). Elsevier Science Ltd.
- Mayers, D., & Smith, C.W. (1987). Corporate insurance and the underinvestment problem. *Journal of Risk and Insurance*, 45–54.
- Mugenda, N. G., Momanyi, G. & Naibei, K. I. (2012). Implications of risk management practices on financial performance of sugar manufacturing firms in Kenya. *An International Journal of Arts and Humanities* 1(1) 14-29.
- Moraa (2010). Hedging practices adopted by Kenya Airways Limited (KQ). *Unpublished MBA Thesis*, United States International University.
- Nance, D. R (2003). On the determinants of corporate hedging, *The Journal of Finance* 48: 267-284.
- Nance, D.R., Smith, C.W., & Smithson, C.W. (1993). On the determinants of corporate hedging, *Journal of Finance*, 48, 267-284.
- Nzuki, V.G. (2010). Managing price risk using Futures: Case of oil companies in Kenya. *Unpublished Master Thesis*, Kenyatta University.
- Pantzalis, Christos, Simkins, Betty J., & Laux, Paul A. (2001). Operational hedges and the foreign exchange exposure of U.S. multinational corporations, *Journal of International Business Studies*, 32, 4, p. 793-812.
- Pwc. (2012). *Survey on Market Risk*. PricewaterhouseCoopers LLP.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students*, 5th Ed. New Jersey: Prentice Hall.
- Shapiro, A., & Rutenberg, D. (2006). Managing exchange risks in a floating world, *Financial management*, Summer, 48-58.

- Shapiro, A.C., (1976). Exchange rate changes, inflation and the value of multinational corporations. *Journal of Finance* 30, 485–502.
- Skapof (2011). Hedging foreign exchange exposure: Risk reduction from transaction and translation hedging, *Journal of International Financial Management and Accounting*, (15), 33- 45.
- Smith, C.W., & Stulz R.M. (1985). The Determinants of firms' hedging policies. *Journal of Financial and Quantitative Analysis*, 20(4), December, PP391-405.
- Stock, J. H., & Watson, M. M. (2012). *Introduction to Econometrics (3rd Edition ed.)*. Essex: Pearson Education Limited.
- Stulz, R.M. (1996) Rethink risk management. *Journal of Applied Corporate Finance*, 9, 8-25.
- Stulz, R.M. (2001). Creating value with risk management. *Derivatives, Risk Management and Financial Engineering*. Southwestern college publishing Co., Cincinnati, Chapter 3.
- Stulz, R.M. (2002). How companies can use hedging to create shareholder value. *Journal of Applied Corporate Finance*, 25, 21-29.
- Sullivan, A., & Sheffrin, S.M. (2003). *Economics: Principles in action*. Upper Saddle River, New Jersey.
- Tufano, P. (1996). Who Manages Risk? An empirical examination of risk management practices in the Gold-Mining Industry. *Journal of Finance*.
- Van Deventer, D.R., Imai, K. & Mesler, M., (2004). Advanced financial risk management: Tools and techniques for integrated credit and interest rate risk management, Hoboken, New Jersey: John Wiley and Sons.
- Warner, J.B., (1977). Bankruptcy costs: Some evidence, *Journal of Finance*, Vol. 32, No. 2, pp. 337-347.
- World Bank (2010). Special economic zones performance, lessons learned, and implications for zone development. The World Bank, Washington DC.

APPENDICES

Appendix I: Listed Firms in the Manufacturing and Allied Sector in Kenya as at 31st

December 2017

\

1. Automated Teller Machine
2. Covered Interest Rate Parity
3. Capital Market Authority
4. Current Ratio
5. Dividend Pay-out
6. Forward exchange contract
7. Great British Pound
8. International Accounting Standard
9. International Business Machines
10. International Fisher Effect Theory

Appendix II: Research Data

Hedging	Foreign Exposure (000)	Financial Distress	Firm size	Liquidity
0	-0.415	0.127791	6.298504	2.64053
1	-2.462	0.113129	6.305311	2.479792
1	-0.916	0.248426	6.205341	1.759479
1	-4.328	0.268387	6.249393	1.94529
1	6.306	0.23714	6.378426	2.130066
0	-8.663	1.152746	6.313546	2.020446
0	-2.76	0.591081	6.323871	2.023818
1	-0.468	0.059435	6.308027	2.508091
1	-0.193	0.942703	6.304402	2.303491
1	-0.415	0.127791	6.298504	2.64053
1	-2.462	0.113129	6.305311	2.479792
1	-0.916	0.248426	6.205341	1.759479
1	-4.328	0.268387	6.249393	1.94529
1	6.306	0.23714	6.378426	2.130066
0	-8.663	1.152746	6.313546	2.020446
1	-2.76	0.591081	6.323871	2.023818
0	-0.468	0.059435	6.308027	2.508091
1	-0.193	0.942703	6.304402	2.303491
1	-0.415	0.127791	6.298504	2.64053
1	-2.462	0.113129	6.305311	2.479792
1	-0.916	0.248426	6.205341	1.759479
0	-4.328	0.268387	6.249393	1.94529
1	6.306	0.23714	6.378426	2.130066
1	-8.663	1.152746	6.313546	2.020446
0	-2.76	0.591081	6.323871	2.023818
1	-0.468	0.059435	6.308027	2.508091
0	-0.193	0.942703	6.304402	2.303491
1	-0.415	0.127791	6.298504	2.64053
1	-2.462	0.113129	6.305311	2.479792
1	-0.916	0.248426	6.205341	1.759479
1	-4.328	0.268387	6.249393	1.94529
1	6.306	0.23714	6.378426	2.130066
1	-8.663	1.152746	6.313546	2.020446
1	-2.76	0.591081	6.323871	2.023818
0	-0.468	0.059435	6.308027	2.508091
1	-0.193	0.942703	6.304402	2.303491
1	-4.328	0.268387	6.249393	1.94529