FOREIGN EXCHANGE RISK MANAGEMENT PRACTICES AND FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN KENYA

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DECLARATION

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

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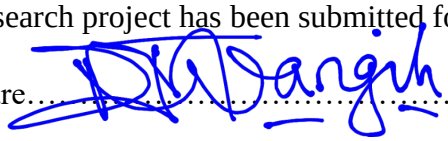
D63/15365/2018

This research project has been submitted for examination with our approval as the supervisors.

Signature……  ……. Date20 November 2020……..

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I dedicate this work to my family and my job colleagues for the support they have accorded me during the research period and to the almighty God for the blessings and grace without which it would not have been possible.

ABSTRACT

Risk management is key to the success of any firm in the business environment. Foreign exchange risk is among the risks that firms face in the business environment especially firms that conduct business internationally and therefore this risk needs to be managed. This risk manifests itself in the form of foreign exchange losses due to adverse fluctuations in exchange rates. This study sought to determine the effect of foreign exchange risk management on the financial performance of manufacturing firms in Kenya. It adopted a descriptive research design and targeted 85 top manufacturing firms in Kenya as per Glassdoor as at September 2020. The variables for the study were financial performance and foreign exchange management strategies. Financial performance was measured using the ROA where used financial data was collected for a period of 5 years (2015-2019) while the foreign exchange management strategies considered were the use of forward exchange contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting. For operationalization of the foreign exchange risk management strategies, a value of "1" was assigned if a firm confirmed the usage the above strategies and a value of "0" if a firm doesn't use the above strategies. From the correlation analysis a strong positive correlation between ROA and the use of forward exchange contracts and leads and lags each with a correlation coefficient of 0.61 and 0.71 respectively. From the regression analysis, a significant relationship between ROA and the use of forward exchange contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting in foreign exchange risk management was established. The R-squared was 0.6888 while the adjusted R-squared was 0.6320 with a p value of 0.0000 implying a significant relationship between ROA and the 7 hedging strategies where 68.80% of the variations in ROA were explained by the usage of the study hedging strategies. From the regression analysis, the study found out that there is statistically significant association between ROA and the use of forward contracts, currency options, swaps, and leads and lags where each had a p value of 0.001, 0.039, 0.005 and 0.003 respectively. From the study findings, the study recommends to manufacturing firms in Kenya as well other firms exposed to foreign exchange risk to adopt the use of forward exchange contracts, leads and lags, currency options, swaps, currency invoicing and netting in foreign exchange management so as maximize on the gains and minimize on the losses from foreign exchange which greatly impact a firm's performance. The use of forward exchange contracts will guarantee a firm to buy or sell foreign currency at a fixed exchange rate thus safeguarding against adverse fluctuations in exchange rates. Leads and lags enables a firm to delay or hasten the payment of its payables or collection of its receivables depending on the movement of exchange rates in the market hence averting the effects of adverse fluctuations in exchange rates. Currency options gives a firm the option but not obligation to buy or sell a specified amount of foreign currency at a specified time hence giving a firm the ability to manage its exposure to foreign exchange risk. Swaps enable a firm to exchange its liabilities denominated in foreign currency with another firm that has liabilities denominated in the home currency hence allowing the firm to settle its liabilities in the home currency averting issues to do with foreign exchange. Currency invoicing ensures that foreign exchange risk is kept in check by either invoicing or being invoiced in the home currency or both. Netting ensures that foreign exchange risk exposure is minimized to only the maximum possible netted amount. It also reduces transactions costs. The study also recommends to the government policy making institutions to ensure that there are well functioning financial derivative markets for the effective trading of financial derivatives. This will ensure that firms exposed to foreign exchange risk embrace fully the use of financial derivatives in foreign exchange risk management.

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ABBREVIATIONS AND ACRONYMS

ANOVA Analysis of Variance

BOP Balance of Payments

CBK Central Bank of Kenya

DY Dividends Yield

EBITDA Earnings Before Interest Tac Depreciation and Amortization.

EPS Earnings Per Share

IAT Income After Tax

ICAI Institute of Chartered Accountants of India

IFE International Fisher Effect

IP Interest Parity

JSE Johannesburg Securities Exchange

KAM Kenya Association of Manufacturers

KES Kenyan Shilling

NSE Nairobi Securities Exchange

OECD Organization for Economic Co-operation and Development

PBT Profit Before Tax

PCC Pearson's Correlation Coefficient

PPP Purchasing Power Parity

ROA Return on Assets

ROE Return on Equity

ROIC Return on Invested Capital

VIF Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The global economy is interdependent in nature. This was confirmed by the 2008 financial crisis which lasted for some years thereafter. The interdependence was confirmed by the negative effects that economic recession resulting from the financial crisis had on both the developed and developing economies of the world. Moreover, different economies are opening and international trading is increasing each day. The negative effects were evident through, volatility in exchange rates, underperformance of both local and international financial markets and volatility in commodity prices. The importance of foreign exchange risk exposure came to manifest itself in 1971 when the fixed rate system of exchange rates was replaced with the fluctuating rate system of exchange rates. Foreign exchange gains/losses reported by a firm determine to a large extent the risk management practices that will be implement as far as foreign exchange risk is concerned. The reported exchange gains/losses consequently affect a firm's financial performance for a given period as they are reflected financial reports before arriving at the bottom line which is the source of metrics for measuring a firm's financial performance.

Several theories have been developed that explain the observed fluctuation in exchange rates between currencies. This study is anchored on four main theories; interest rate parity theory, international fisher effect theory, purchasing power parity theory and the balance of payments theory. The interest rate theory relates real interest rates to exchange rates where the difference between home and foreign real interest rates equates to the difference between the prevailing and forward exchange rates between the home and foreign currency. The international fisher effect theory relates nominal interest rates to exchange rates where the difference between home and foreign nominal interest rates should equate

the difference in exchange rates between the home and foreign currency. The purchasing power parity theory relates purchasing power to exchange rates where the exchange rate between the home and foreign currency should equate each other when the purchasing power in the home and foreign country is the same. The balance of payments theory relates exchange rates with balance of payments in a given country where exchange rates with foreign currencies are influenced by the home country's balance of payments with the respective foreign countries. Based on what each theory holds on foreign exchange rates fluctuation, prediction of future exchange rates can be done and proper foreign exchange risk management practices instituted to avert losses which can significantly affect a firm's financial performance.

The Kenyan currency is not strong in comparison with main foreign currencies which adversely affects firms thar are face risk associated with foreign exchange especially those that import more than they export as a result of adverse movements in exchange rates. Imports create accounts payable denominated in foreign currency where acquiring foreign currency during the date of payment may be quite expensive depending on the prevailing exchange rates. The Kenya manufacturing industry is a more importing industry than an exporting industry. This is because most of all raw materials required in the production are imported and this creates huge foreign currency denominated payables which exposes the manufacturing firms to a significant risk foreign exchange wise during payment. Firms in Kenya especially those under the manufacturing sector should therefore implement the proper hedging techniques so as to mitigate against adverse exchange rate changes which can wipe out its incomes. The researcher therefore undertook the study so as to provide findings and recommendations on the best practices that can be implemented by firms in Kenya under the manufacturing sector as well as other firms to manage this risk improve their performance financially.

1.1.1 Foreign Exchange Risk Management Practices

There are several hedging techniques that a firm which faces risk associated with foreign exchange can employ to mitigate against any adverse effects. Leads and lags involves advance and delayed payments so as to cushion against projected changes in exchange rates (Peddapalli, 2014). Netting involves offsetting foreign currency denominated payables with foreign currency denominated receivables up to the net amount (Abor, 2005). A swap involves exchanging liabilities initially denominated in foreign currency between two parties where each party now services the swapped liability in its home currency with any differential amount being settled between the two parties (Dawson et al,1994). A currency future is a standard contract that has specific settlement timelines and sizes which allows trading on a securities exchange platform (Abor, 2005). A forward exchange contract locks the exchange rate thereby safeguarding a firm against any unfavorable exchange rates movement (Kyte,2002). Basically, foreign exchange risk hedging techniques are techniques for managing the risk associated with foreign exchange such as the use of forward contracts, leads and lags, currency invoicing, netting, currency futures, currency options and swaps that a firm can implement to mitigate against the foreign exchange losses occasioned by adverse exchange rates fluctuations as well as increase gains associated with foreign exchange.

Risk associated with foreign exchange among the many risks that firms face in the business environment. This risk is even more pronounced in countries whose currency is less strong in comparison with major foreign currencies. Each and every firm that conducts its business internationally faces risk associated with foreign exchange irrespective of how strong its home currency is. The US dollar advanced by more than 20 percent against other world currencies from July 2014 to around September 2015. Although this sounds good, the US Global Investors Incorporation, a registered investment adviser, reported in September 2015 that earnings of eight iconic American

companies (Tiffany, Macy's, Walmart, Ford, Yum! Brands, Johnson & Johnson, Procter & Gamble and US Steel) had been greatly hurt by the strong dollar. For instance, Tiffany & Co; reported a 15% drop in profits from $124.1 million to $104.90 million a year ago. Procter & Gamble lost $4.6 billion in the second quarter of 2015 which was erased by foreign exchanges rates. Almost all the manufacturing inputs by manufacturing firms in Kenya are imported and most manufacturing firms have reported huge foreign exchange losses in the past, For instance, the East African Breweries Limited reported transactional foreign exchange losses of KES 391.26 million in 2018. Athi River mining reported net foreign exchange losses of KES 57.89 million in 2017. There is therefore a need for a research to be carried out that links the management of risk associated with foreign exchange with a firm's financial performance for manufacturing firms in Kenya which will provide findings and recommendations on the best hedging techniques that will enhance their financial performance.

The use of different strategies in mitigating risk associated with currency price fluctuations by firms has operationalized and measured differently by different researchers. According to Muiru, Kisaka & Kalui (2018), the techniques for hedging risk associated with foreign exchange were allocated numerical values with 1 denoting the use of external techniques and 0 denoting the failure to use external techniques by a firm. In same way, dummy variables were used to measure the use of internal hedging techniques with 1 denoting the use of internal techniques and 0 denoting the failure by a firm to use internal techniques. Nzioka & Maseki (2017) operationalized the hedging strategies by taking into account the amounts that were hedged using each hedging technique for each firm. Foreign exchange risk management techniques were operationalized and measured using the amounts hedged using each hedging technique (Mwangi, 2013).

1.1.2 Financial Performance

Generally, the performance of a firm measures how well the Management of a firm utilizes the resources entrusted to them by the shareholders (Patti & Berger,2002). Specifically, financial performance measures how well a firm's assets have been used to generate revenues in the course of the business. Financial performance can be measured in different ways such as the use of financial reports' line items for instance operating income, operating cashflows and revenue from operations. Ratios used in finance such as return on equity, return on sales, return on assets and EBITDA can also measure the financial performance of a firm. Financial ratios are majorly applied in measuring a firm's financial performance for standardization so that comparison across a given industry as well as within a given firm over a given period of time can be done.

According to Shipho and Olweny (2011), commonly used financial performance measures include return on investment. The financial ratios used to evaluate a firm's performance will depend on the industry in a which a firm operates in as some ratios are more meaningful in one industry than in the other. For instance, return on assets, inventory turnover and total unit sales may be key performance ratios for a manufacturing firm while share prices, cashflows, operating income and revenue many be key performance ratios for a financial institution. The widely used financial performance ratios are ROA and ROE. (ROA) is a financial performance measurement ratio used to measure how the Management of a given firm has engaged the assets of that firm to make revenue. Net income divided by the total assets of a firm in a given period gives the ROA for that period. ROE is used by investors to gauge how much their investment has gained or lost in a given period of time. Net income that can be distributed to the shareholders divided by the total invested equity of a firm in a given period gives the ROE for that period.

EBITDA is basically a firm's operating income before considering depreciation and amortization which are non-cash expenses. It can be used to analyze and compare financial performance among firms and industries since it eliminates the effects of capital expenditures and financing. Operating income which is lower than EBITDA and is the result of the difference between a firm's revenues and its operating expenses. Operating cash flow is the cash derived from a firm's core business activities and is calculated by adjusting a firm's reported net income for expenses which do not involve actual cash outflow and revenues brought about by the accrual accounting. Revenue from operations is basically the revenue a firm derives from its core business activities excluding extraordinary incomes such as gains from fixed assets disposals. Return on sales is a financial performance measure that measures how well a firm makes profits from its sales and is given by operating profit divided by net sales. The measures discussed above are accounting measures of a firm's financial performance. A firm's financial performance can also be measured using market-based measures such as the earnings per share (EPS) and the Tobin's Q ratio. The earnings per share is basically a firm's stock return and is computed by dividing a firm's profit in a given period that is attributable to the ordinary shareholders by outstanding ordinary shares in that period. The higher the EPS, the higher the value of the shares of that firm. The Tobin's Q ratio is a ratio which measures whether a firm is overvalued or undervalued in the sense that a firm's market value should equate the costs to replace it. It is computed by dividing the total market value of a firm by the total asset value of a firm. The total market value of a firm is basically the total outstanding shares multiplied by the prevailing market price per share.

1.1.3 Foreign Exchange Risk Management Practices and Financial Performance

Hedging techniques exist to safeguard firms exposed to risk associated with foreign exchange against losses as a result of currency prices fluctuations. These losses come up in the form of foreign exchange losses for unhedged foreign currency transactions when the home currency either appreciates or

depreciates. These unhedged foreign exchange losses will definitely affect a firm's financial performance as they will reduce reported revenues and increase the reported operating expenses in the home currency. Reuters (2013), reported that American companies that had been affected by volatility in emerging market currencies as well as the uncertainty over the outlook for the dollar, had stepped up hedging of their foreign exchange exposure. Hedging firms also confirmed increase in business.

Popular U.S. and European companies such as the U.S. oil company, PepsiCo Inc and UK drinks company Diageo warned that the recent foreign exchange volatility may hurt their earnings (Reuters, 2013). The U.S. bank saw a 35 percent increase in corporate foreign exchange hedging volumes year-to-date in 2013 which was mostly driven by hedging of emerging market currencies. Companies with revenues or outgoings in foreign currencies can protect themselves against adverse currency moves either through the forwards market or by buying options which provide assurance of buying and selling at a particular rate of exchange (Reuters, 2013). A survey by FireApps an hedging services company estimated that U.S businesses lost more than $4 billion in the second quarter of 2013 due to currency swings (Reuters, 2013). As a result of this, the Bank of New York through its global head of currency administration confirmed the increased interest from U.S. based firms that operate abroad looking to hedge foreign exchange exposure.

It's clear that all firms that conduct their businesses internationally face risk emanating from fluctuations in currency prices irrespective of how strong the home currency is. This therefore necessitates such firms to implement the necessary hedging techniques for safeguard against adverse currency fluctuations which if unhedged, will definitely eat into the firm's profits and consequently negatively affect its financial performance in a given period. These hedging techniques therefore act as cushion mechanisms to firms against the financial returns that can be lost from foreign exchange rate exposure (Gachua, 2011). A positive relationship between the hedging techniques implemented

by a firm and its financial performance in a given period is expected as established by various prior studies (Wangechi, 2016). This is because hedging techniques help firms avert losses associated with foreign exchange while at the same time ensuring that firms maximize on gains associated with foreign exchange as well.

1.1.4 Manufacturing Firms in Kenya

Manufacturing firms in Kenya are very key to the growth of the Kenyan economy as they create lots of employment opportunities in the country. These firms vary by size in terms of asset base. Most of the manufacturing firms in Kenya are medium in size and depend on the large manufacturing firms which are mostly subsidiaries of foreign multinational manufacturing firms for their production inputs. Only less than 10 manufacturing firms are listed at the NSE. As such, it's only these firms that publish their financial information publicly as they are mandated to do so. These firms report their foreign exchange risk management in the notes to the financial reports where the various hedging techniques that were used in a given period are discussed as well the resulting foreign exchange gains/losses. The foreign exchange gains/losses are reflected in the statement of comprehensive income before arriving at the bottom line. Although majority of the manufacturing firms in Kenya are not listed in the NSE and therefore not mandated to publish their financial information publicly, they are also exposed to the risk associated with foreign exchange majorly due import of raw materials. There is therefore the need to conduct a study to establish how these firms manage this risk and the relationship between the use of various hedging strategies and financial performance.

1.2 Research Problem

Countries depend on each other for products which they don't have hence the importance of international trade. In this regard, firms do not operate in a vacuum but are continuously involved in transactions with the rest of the world there by exposing themselves to risk associated with foreign

exchange due to foreign currency denominated transactions. If unhedged, foreign exchange risk can significantly affect a firm's financial performance for a given period in the form of foreign exchange losses which manifest mainly in reduced revenues and increased expenses. There is therefore need for risk management strategies so as to keep this risk and guarantee improve financial performance by firms. Different hedging strategies exist majorly to safeguard firms exposed to this risk against the negative effects of adverse exchange rates fluctuations as well as maximize on the gains that can result from currency price fluctuations in the form of foreign exchange gains hence improving a firm's financial performance. A study therefore needs to be undertaken to establish the relationship between the different hedging strategies as implemented by different firms and the financial performance reported by these firms and provide recommendations on the best strategies.

Manufacturing firms contribute greatly towards the growth of a country's economy. For the Kenyan economy, it's through firms like manufacturing firms in Kenya that foreign investors make their direct foreign investment in the country as these firms are either subsidiaries of foreign multinational firms or have subsidiaries in foreign countries. Most of all manufacturing firms in Kenya import their inputs from foreign markets and they export as well their outputs although not in large scale. This definitely exposes these firms to risk associated with foreign exchange which has of late significantly affected the financial performance reported by the firms. For instance, the East African Breweries Limited reported transactional foreign exchange losses of KES 391.26 million in 2018. Athi River mining reported net foreign exchange losses of KES 57.89 million in 2017. A study carried out by Runo (2013) on how risk associated with foreign currency denominated transactions affected the net incomes of oil firms registered in the Nairobi securities exchange namely Total Kenya Limited and Kenol Kobil found out that risk associated with foreign exchange highly influenced the net incomes reported by the firms.

NSE listed companies that employ hedging methods essentially perform better than those which do not hedge their foreign transactions as per the study carried out by Wanja (2013) on how hedging of risks related to foreign currency transactions affected the overall organization performance among organization listed in the NSE. Implementing the right hedging strategies at the right time would ensure that foreign exchange risk is highly minimized and this would improve a firm's financial performance. Improved financial performance would imply more resources to a firm for business expansion purposes and new product innovation and invention. Business expansion would create more job opportunities as well as reduced prices for manufactured products due to large scale production and new product innovation and invention.

Several studies have been undertaken in the field of foreign exchange risk management. Most of these studies only explored on the various hedging strategies used by firm to mitigate against this risk. The results of the international studies done so far cannot be generalized to the Kenyan firms due to difference in frameworks, policies and business environment. Locally, Avutswa, Olweny and Oluoch (2018) investigated on the effect the exchange rates movements had on the value of nonfinancial companies listed at the NSE. Foreign exchange risk management and financial performance was not investigated in this study. Moreover, the study did not target manufacturing firms specifically. The same study gaps apply to a study by Mutembei (2017) which established the determinants of the choice of hedging strategies in managing financial risks by firms listed at the NSE.

Kiio and Jagongo (2017) as well Ochieng and Ntoiti (2016) investigated on the topic under study. However, the studies targeted all firms listed in the NSE and non-financial firms listed in the NSE respectively without specifically narrowing down to manufacturing firms. Likewise, Kihara and Muturi (2016) investigated on the topic under study although the study targeted the commercial banks in Kenya and considered financial derivatives only as the hedging strategies. Wangechi (2016)

conducted a study related to the topic under study although the study targeted all non-financial firms listed in the NSE. Moreover, the conceptual framework for this study used only three hedging strategies (currency invoicing, leads and lags and forwards). The study actually recommended for a further study to be done on specific firms under the non-financial firms such as manufacturing firms. Ubindi (2006) and Mumoki (2009) investigated on the various foreign exchange risk hedging strategies employed by forex bureaus and commercial banks in Kenya. The relationship between these hedging strategies and financial performance was not investigated in these studies. In addition, all the above studies were conducted in different periods as compared to the current study. This study therefore fills the above research gaps by answering the research question; what is the effect of foreign exchange risk management practices on the financial performance of manufacturing firms in Kenya?

1.3 Research Objective

The objective of this research was to establish the relationship between foreign exchange risk management practices and financial performance of manufacturing firms in Kenya. In order to achieve this general objective, the following specific objectives were the basis of this study:

i. To establish the various hedging techniques used by manufacturing firms in Kenya.
ii. To establish the effect of the use natural hedging techniques in managing foreign exchange risk on financial performance of manufacturing firms in Kenya.
iii. To establish the effect of the use financial derivatives in managing foreign exchange risk on financial performance of manufacturing firms in Kenya.

1.4 Value of the Study

This study was of great value to the manufacturing firms in Kenya as well as other Kenyan firms that are faced with risk emanating from currency price fluctuations, as through it, it was be possible to visualize the influence of the use of different hedging strategies on the performance of firms exposed

to risk associated with foreign exchange. From the findings of this study, these firms as well as other firms were in a position to compare and evaluate themselves with respect to their application of various hedging strategies in mitigating risk associated with foreign exchange as this study pointed out the outcome of using each technique.

The government of Kenya through the CBK as the policy maker also benefited from this study in that it pointed out the effect that risk associated with foreign exchange which is managed by implementing various hedging strategies, had on the financial performance of manufacturing firms which contribute greatly to the Kenyan economy. Being aware of the effect, CBK was in a position to institute the appropriate policies to ensure less foreign currency fluctuations so as to keep foreign exchange risk exposure in check. This is because it's changes in currency prices which result to gains/losses from foreign exchange and they are brought about by the demand and supply of money which CBK has powers over through the monetary policy. The study also contributed to existing literature by establishing the various hedging strategies that are employed by manufacturing firms in Kenya to manage their exposure to risk associated with foreign exchange. It also established the relationship between the use of these hedging strategies and financial performance of manufacturing firms in Kenya. By establishing the relationship, the study provided recommendations on the best hedging strategies for use by firms exposed to this risk in effectively managing the risk.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter looked into and examines existing literature on the management of risk related to foreign exchange. The chapter comprises of three parts; review of theories related to the topic, review of previous studies related to the study both local and international and a summary of the two reviews which leads to the justification of the study through identification of study gaps.

2.2 Theoretical Review

In an attempt to provide explanations for the observed fluctuations in prices of currencies, several theories have been developed. What follows is a discussion of some of these theories:

2.2.1 Interest Rate Parity Theory

This theory was developed by Keynes as explained in his book "A Tract on Monetary reform" (1923). It relates real interest rates to exchange rates where the difference between home and foreign real interest rates equates to the difference between the prevailing and forward exchange rates between the home and foreign currency. As a result of this, there can't be arbitrage emanating from the difference in interest rate between the home and foreign currencies as this difference will manifest itself in the forward exchange rates in the form of exchange rate discount or exchange rate premium.

There are two forms of this theory, the covered and the uncovered interest rate parity theories. The covered interest rate parity theory uses forward exchange rates where the premiums or discounts for these forward exchange rates eliminate any differentials in interest rates in the home and foreign country. The uncovered version of this theory asserts that if a given currency appreciates or depreciates in the future, the future interest rates in that country which will either be higher or lower will offset

such currency appreciation or depreciation. However, the random walk of exchange rates seems not to be fully related to differences in interest rates (Huang, 2009). The relevance of this theory to the study is that a firm can use the prevailing home and foreign real interest rates to predict future exchange rates and implement the necessary foreign exchange risk management strategies to mitigate against any projected adverse exchange rate fluctuations which can significantly affect its financial performance.

2.2.2 International Fisher Effect Theory

This theory was developed by Fisher (1930) in his book, "The Theory of Interest". It relates nominal interest rates to exchange rates where the difference between home and foreign nominal interest rates should equate the difference in exchange rates between the home and foreign currency. In summary, the difference in nominal interest rates prevailing in two given countries, can be used to predict future rates of exchange between the home and the foreign currency.

Nominal interest rates are a good basis of predicting the fluctuations in rates of exchanges as inflation is reflected in these rates and therefore if a country has higher nominal interest rates, it will experience higher rates of inflation which will result to its currency depreciating against the other country's currency. According to Giddy (2007), the differentials in nominal interest rates between the home and foreign country is offset by the changes in the rates of exchange between the home and foreign currency and hence the returns on investing in either country is the same. The relevance of this theory to the study is that a firm can use the prevailing home and foreign nominal interest rates to predict future exchange rates and implement the necessary foreign exchange risk management strategies to mitigate against any projected adverse exchange rate fluctuations which can significantly affect its financial performance. However, according ICAI (2012), the IFE theory is limited to only interest

rates and inflation rates as the only variables that affect currency prices while there are other variables that do also affect currency prices.

2.2.3 Purchasing Power Parity Theory

This theory was developed by Cassel in 1918 in an attempt to examine the rates of exchange of currencies of different currencies. It relates purchasing power to exchange rates where the exchange rate between the home and foreign currency should equate each other when the purchasing power in the home and foreign country is the same. As a result, if inflation is experienced in a given country as evidenced in general increase in price levels, that country's currency must depreciate and therefore change the rate of exchange between the home and foreign currency for this theory to hold.

There are two versions of the PPP theory that are used in explaining exchange rate movements, the absolute and relative PPP theories. The absolute version of this theory asserts that the rate of exchange between the home and foreign currency equates to the ratio of price levels in the home and foreign country. The relative version of this theory concludes that the home currency will appreciate or depreciation in comparison with the foreign currency depending on the inflation rate in the home country as compared to inflation rate in the foreign country (Kenneth Rogoff, 1996). The relevance of this theory to the study is that a firm can use the prevailing home and foreign inflation rates to predict future exchange rates and implement the necessary strategies to mitigate against any projected adverse exchange rate fluctuations which can significantly affect its financial performance.

2.2.4 Balance of Payments Theory

The origins of the balance of payments theory is the work of a Scottish economist Hume in 1749 in his work on price-specie flow mechanism where he attempted to explain how imbalances in trade can adjust and self-correct under the gold standard. The new approach to this theory was outlined by

Gordon in 1972 in his work *"the monetary approach to the balance of payments theory"* where his main aim was to advance the monetary aspect rather than the relative price aspect of international adjustment. This theory relates exchange rates with balance of payments in a given country where rates of exchange between the home and foreign currencies are influenced by the home country's balance of payments with the respective foreign countries. An unfavorable BOP will lead to depreciation of the home currency in relation with the respective foreign currency. Unfavorable balance of payments comes up basically in the form of excess imports compared to exports. A Favorable BOP will lead to appreciation of the home currency as the foreign currency will be in high supply due to the high exports compared to imports. The relevance of this theory to the study is that the BOP in the home country can be used as a basis of explaining fluctuations in the rate of exchange between the home and foreign currency in the future and hence a firm can implement the necessary strategies to mitigate against any projected adverse exchange rate fluctuations.

2.3 Determinants of Financial Performance

There are several factors that can affect the performance of a given firm financially. These include; asset utilization, firm size, liquidity, leverage, exchange rate fluctuations and market share. Each of the above factors is discussed below:

2.3.1 Risk Management Practices

One of the most vital functions of any firm's Management is risk management (Pillai, 2009). Firms face a lot of risks in the business environment ranging from economic risk, risk associated with compliance, financial risk, security risk, operational risk and reputational risk (Van Wyk, et al. 2004). These risks can have disastrous effects on a firm's business activities once they manifest to the extent of pushing a firm out of business especially the compliance risks. For instance, Compliance risk is usually associated with high fines and penalties from the relevant government authorities for non-

compliance which usually eat into a firm's profits. Financial risk usually come in the form of foreign exchange rate fluctuations, interest rate fluctuations as well as credit extended to customers where a firm needs to come up with appropriate debt collection practices to avoid having non-collectible accounts receivable. Foreign exchange risk basically results from foreign exchange rate fluctuations where if proper techniques are not implemented to manage this risk, a firm can incur significant foreign exchange losses which will definitely affect the bottom line reported by a firm (Bank of Jamaica, 2005).

It is therefore evident that the risk management practices put in place by a firm, do significantly determine the financial performance of that firm since the risks in the business environment can occur anytime. Firms therefore need to implement the necessary strategies tailored to the various risks that a firm is exposed to.

2.3.2 Asset Utilization

Asset utilization is a measure of how a firm's assets are employed in a profitable activity (Luftig, 1999). A firm's revenues are generated from its assets. For instance, a service firm uses its staff to generate revenues through the provision of services in addition to the various equipment engaged by the staff during the provision of these services. For a manufacturing firm, the products it sells are manufactured using its machineries which are operated by its production staff. In summary, it is essentially how a firm engages its assets in its core activities that determine the revenues that will be generated by the firm. The generated revenues will consequently determine the bottom line reported by a firm in any given period. Therefore, how efficiently and effectively a firm utilizes its assets will determine its performance in any given reporting period.

2.3.3 Firm Size

How large a firm is, definitely influences its performance. This is because, the asset base of a firm which is the best measure of a firm size, determine how efficiently and effectively a firm undertakes investment opportunities that arise in the market. In addition, a large firm can easily access huge credit financing and at a lower cost for its investment and other expansion strategies as compared to small firms as the financing institutions find such a firm to be less risky (Ezeoha,2008). In fact, small firms have many constraints that hinder their ability to improve their financial performance (Punnose, 2008).

2.3.4 Liquidity

Liquidity of an asset in concerned with how quickly an asset can be converted into cash with affecting it value in the market where cash is the most liquid asset (Mwangi, 2014). It can be measured in two versions; market and accounting liquidity. Market liquidity relates to how easily assets can be sold in the market at stable prices. Accounting liquidity relates to the ease with which a firm can settle its financial obligations as and when they fall due with the available liquid assets. The level of liquidity of a firm affects it performance as it determines its responsiveness to new investment opportunities as and when they arise in the market (Almajali, 2012). There are various ratios that are used to measure a firm's liquidity such as the current, quick and cash ratios.

2.3.5 Leverage

Leverage refers to the use of debt in acquisition of additional assets (Saoud, 2019). The use of debt has an advantage in the form of tax savings as the interest paid on the debt is tax allowable. However, the level of debt used by a firm can adversely affect its financial results. This is because, if such debt is not obtained economically, it will eat into the firm's returns in the form of high interest expenses. Moreover, the high interest rates will affect the firm's liquidity as more cash outflows will be directed towards debt repayment in the form of interest and principal and the firm will not be in a position to

invest in any lucrative investment opportunities that may arise in the market. In fact, according to Saoud (2019), leverage increases the risk of failure as debt repayment becomes more difficult. In addition, some debt providers come up with covenants that restrict the debt beneficiary from investing in certain investments which may have very high returns but considered to be risky by the debt providers.

2.3.6 Exchange Rate Fluctuations

Exchange rate fluctuations refer to currency price changes overtime. These changes basically affect the prevailing prices of products in the market as a result of the import-export trading. The change in product prices affect demand as the purchasing power is affected which will ultimately affect supply and in the end the revenues reported by a firm thereby affecting its performance. Exchange rate fluctuations also affect directly firms involved in international trade in the form of exchange gains/losses. This results from exchange rate changes for unhedged accounts receivable and accounts payable denominated in foreign currency. Therefore, the more a firm is involved in foreign trade, the more it exposes itself to risk associated with foreign exchange unless proper hedging techniques are implemented (Khalil, 2011).

2.3.7 Market Share

Market share is measured by the percentage of total sales in a given industry generated by a particular firm in a given period (O'Regan, 2002). A firm's market share changes are used by investors when making their investing decisions as the changes act as a sign of the competitiveness of the firm's products and/or services. A firm that is growing its market share will also be growing its revenues and consequently its financial performance.

2.4 Empirical Review

Most of the studies that have been done on the area of foreign exchange risk management have been conducted outside Kenya with only a few being conducted in Kenya. Internationally, Bernal-Ponce et.al., (2020) investigated on the impact that exchange rate derivatives had on the stocks in Brazilian and Mexican stock markets. The study covered a period of 13 years running from 2007 to 2017. It was established that currency futures were most frequently used derivative and explained the exposure in currency price fluctuations in addition to the spot exchange rate. Delani and Turgut (2020) conducted a study to investigate on the impact that exchange rates and inflation had on the financial performance of South African commercial banks. The period of the study was from 2003 to 2019 and narrowed down to only four commercial banks which were the largest in South Africa. Financial performance was measured using return on equity and the FMOLS, DOLS and ARDL models were applied in data analysis. It was found out that there was less strong relationship between financial performance as measured by ROE and exchange rates while a significant inversely relation between ROE and inflation was established.

Pradita and Geraldina (2019) investigated on the potential impact that risk associated with currency prices had on the performance of banks in Indonesia. This study was done for a period of 5 years running from 2014-2018 and used panel data in the data analysis. Currency risk was measured using the gain/loss on transaction and translation divided by the total assets value while ROA was applied to measure the performance of banks. The study found out that currency risk as measured by transaction risk significant effect on the financial performance of Indonesian commercial banks while translation risk had an insignificant effect on the same. Dhagat and Raju (2016) undertook a study to measure the exposure of selected Indian firms to foreign exchange risk. These firms were basically firms under the non-financial sector for a period of study of 15 years spanning from 2001 to 2015. A

panel data methodology was used. The study found out that 55% of the variation in the returns of stocks was accounted for by the exchange rate variation. It was also found out that the major determinant of exchange rate exposure was market capitalization which is a firm size proxy followed by net capital inflows and trade.

Mogaladi (2016), conducted a study to explore the various hedging techniques employed in management of risk associated with foreign exchange by firms listed in the JSE with more emphasis on the firms under the non-financial sector. This study found out that transaction risk exposure was the highly prioritized with translation risk being lowly prioritized for management. It was also found out that most of the firms employed natural hedging techniques such as leading and lagging, netting and currency invoicing in addition to financial derivatives. Netting was found to be frequently used internal hedging technique with the highly preferred derivate being the use of forward contracts.

Yildiran (2015) investigated on the strategies used by export firms in Turkey to manage financial risk. From the results of the study, foreign exchange risk topped the list of financial risks as revealed by 80% of the respondents to the study. This due to the high foreign currency transactions associated with these exporting firms. It was found out that derivatives were in low use in managing foreign exchange risk by these firms. Swaps, currency options and currency futures were the main financial derivatives being used by these firms.

From a study carried out by Sivakumar and Sarkar (2014) on how Indian firms cushioned themselves against foreign currency fluctuations and how the same affected the reported financial results of the firms, it was found out that forwards exchange contracts, swaps and currency options were in frequent use by these firms in mitigating the risk exposure. Dhanani (2003) conducted a study to investigate the various techniques employed by a multinational firm in the UK to manage its risk associated with foreign exchange. Forward exchange contracts were found to be the most used technique in managing

this risk especially the transactional risk. This firm had a short-term strategy to managing this specific risk which was anchored on its annual performance. Economic and translational exposure were found not to be actively managed by the firm.

Abor (2005) investigated of the various techniques employed by firms in Ghana to manage risk associated with foreign exchange where it was established that derivatives were in low use by firms whose countries of origin had either small or developing economies. The study found out that internal hedging techniques such as netting and currency invoicing which are basically short-term were in frequent use by the Ghanaian firms in managing their exposure. Spot transaction was found to be the most appropriate technique in the management of risk associated with foreign exchange by commercial banks in Nigeria. This is according to Adetayo and Oladejo (2004) who investigated on how firms managed the fluctuations in foreign currency prices for selected Nigerian commercial banks. Firms usually prioritize which risk to manage among the three foreign exchange risk forms. As found out by Popov and Stutzmann (2003) in their study on foreign exchange risk management by Swiss firms where there was prioritization of the different forms by these firms. The study found out that economic and translational risk exposure were not prioritized for management by the Swiss firms. The study also found out that the most preferred techniques by the firms were forward exchange contracts and netting.

Locally, Avutswa et al., (2018) established that unexpected exchange rate changes have a negative significant effect on the value of companies listed in the NSE under the non-financial sector. This was according to their study that investigated on effect that unanticipated fluctuations in rates of exchange had on the value of multinational firms listed at the NSE under the non-financial sector. The unexpected changes in rates of exchange were determined using the GARH and ARIMA models. The study was based on a period of fifteen years from 2001 to 2016. Mutembei (2017) carried out a study

to establish what determined the choice of strategies in managing financial risks by firms listed in the NSE under the non-financial sector. It was found out that majority of nonfinancial firms faced risks such as foreign exchange risks, risks associated with commodity prices and risks of interest rate changes with risks associated with foreign exchange being more prevalent. The study also found out that forwards and swaps were the mostly used derivative instruments with futures and options being often used. Foreign exchange risk was the risk mostly hedged using derivatives followed by interest rate risk.

From a study carried out by Kiio and Jagongo (2017) to investigate the effect that the use of different strategies to hedge financial risks had on the performance of NSE listed firms, a positive relationship between hedging practices and performance of listed firms was established which was moderated by central bank controls. The hedging practices used in this study were forwards, futures, options and swaps. Performance was measured using ROIC and ROA for a 5-year period spanning from 2011 to 2015. Kihara and Muturi (2016) conducted a study on the effect that the management of risk associated with foreign exchange had on the financial results reported by banks in Kenya under the commercial sector. Their conceptual framework used swaps, currency options and forward contracts as the risk management techniques for the independent variables. The financial performance of banks under study was measured using ROA, EPS, DY and IAT. From the results of here study, 79% of the study respondents agreed that the way a firm manages its risk associated with foreign exchange determines by a large extent its financial performance. The three independent variables had a significant positive influence on the four measures of financial performance for the banks under study. The use of currency options was found to have the most significant influence, with the use of swaps following closely and lastly the use of forward exchange contracts. The three derivatives considered in this study were also

found to account for 71%, 67%, 64% and 68% of the four measures of financial performance respectively.

Wangechi (2016), investigated on the relationship between foreign exchange risk management strategies and financial performance of firms listed at the NSE under the non-financial sector. For the research design, a descriptive one was adopted and the strategies considered were; leading and lagging, currency invoicing and forward exchange contracts in the conceptual framework. Financial performance was measured using ROA based on a 5-year period spanning from 2011 to 2015 on a quarterly basis. The lead and lag strategy of hedging was found to have a strong positive correlation with ROA in the correlation analysis. From the results of regression analysis, it was found out that currency invoicing and forward exchange contracts significantly explained the financial performance variations. Ochieng and Ntoiti (2016) investigated on the effect of foreign exchange risk management techniques on financial performance firms listed at the NSE under the non-financial sector. It was revealed that currency futures, forward contracts, swaps and options had a positive impact on the performance of this firms financially. Financial performance was measured using ROA, profit before tax (PBT) and return on Equity (ROE).

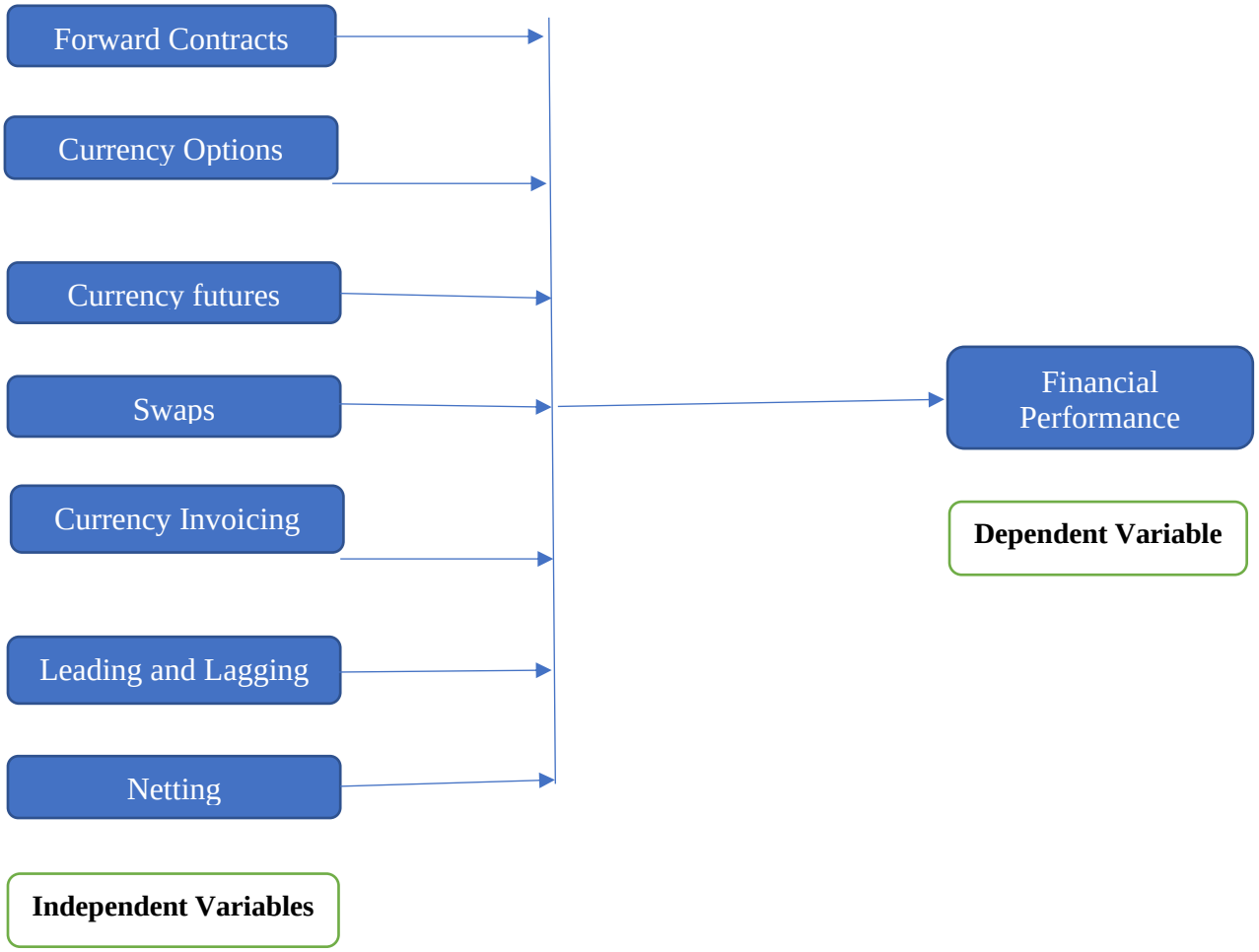
A study carried out by Ubindi (2006) on how forex bureaus in Kenya managed their risk associated with foreign exchange, revealed that the mostly used foreign exchange risk management practices were money market hedging, swaps, forward contracts and options with forward contracts being frequently used. The study also found out that the most form of risk exposure under foreign exchange risk encountered by the bureaus was the transaction exposure. Mumoki (2009) carried out a study to explore on the various strategies used by banks in Kenya to manage their exposure to foreign exchange risk. The research design employed was a census one and data was collected using a questionnaire from the 42 commercial banks listed by CBK by then. Forward contracts were found out to be the

most frequently used hedging technique. Money market hedging as well as swaps were also in frequent use. In moderate use were cross hedging techniques, foreign currency denominated debt and parallel loans. Foreign currency option, leading and lagging and futures contract were in occasional use with prepayment being least in use.

2.5 Conceptual Framework

The impact of foreign exchange risk usually manifests in form of reduced revenues and/or increased expenses from conducting business internationally. Foreign exchange risk hedging strategies exist to help firms minimize foreign exchange losses and maximize on foreign exchange gains and ensure better financial performance. This is because these losses/gains are reflected in the financial reports which are the main sources of financial performance measures. The use of currency options, forward contracts and swaps were found to account for 71%, 67%, 64% and 68% of the changes in ROA, EPS, DY and IAT respectively in a study on foreign exchange risk management and financial results of commercial banks in Kenya (Kihara and Muturi, 2016). Therefore, the hedging strategies employed by a firm will definitely impact on its financial performance and therefore a positive relationship is expected between hedging strategies employed by a firm and its financial performance. To achieve the research objectives of the study, the following conceptual framework was employed:

Figure 2.1: Conceptual



2.6 Literature Review Summary and Study Gaps

Both theories and previous studies related to the topic under study were reviewed in this chapter. On the theoretical side, theories on exchange rate determination which include the PPP theory, the IP theory and the BOP theory were discussed as well as the determinants of firm financial performance. The empirical review looked at and analyzed previous studies which the current study is related to, both local and international. Most of these studies only explored on the various hedging strategies used by firm to mitigate against this risk. The results of the international studies reviewed cannot be generalized to the Kenyan firms due to difference in frameworks, policies and business environment. Locally, Avutswa, Olweny and Oluoch (2018) investigated on the effect the exchange rates movements had on the value of nonfinancial companies listed at the NSE. Foreign exchange risk management and financial performance was not investigated in this study. Moreover, the study did not target manufacturing firms specifically. The same study gaps apply to a study by Mutembei (2017) which established the determinants of the choice of hedging strategies in managing financial risks by firms listed at the NSE.

Kiio and Jagongo (2017) as well Ochieng and Ntoiti (2016) investigated on the topic under study. However, the studies targeted all firms listed in the NSE and non-financial firms listed in the NSE respectively without specifically narrowing down to manufacturing firms. Likewise, Kihara and Muturi (2016) investigated on the topic under study although the study targeted the commercial banks in Kenya and considered financial derivatives only as the hedging strategies. Wangechi (2016) conducted a study related to the topic under study although the study targeted all non-financial firms listed in the NSE. Moreover, the conceptual framework for this study used only three hedging strategies (currency invoicing, leads and lags and forwards). The study actually recommended for a further study to be done on specific firms under the non-financial firms such as manufacturing firms.

Ubindi (2006) and Mumoki (2009) investigated on the various foreign exchange risk hedging strategies employed by forex bureaus and commercial banks in Kenya. The relationship between these hedging strategies and financial performance was not investigated in these studies. In addition, all the above studies were conducted in different periods as compared to the current study. The current study therefore sought to fill the identified gaps by investigating on foreign exchange risk management practices and financial performance of manufacturing firms in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter outlines the various methods that the researcher will use to realize the study objective. Discussed herein are the design to be used by the researcher, study population and study sample, research data and collection of study data, validity and reliability of collected data and how collected data will be analyzed where the model for the study will be specified and discussed.

3.2 Research Design

A research design is a master plan that guides a researcher in the collection and analysis of data for the realization of the research objectives (Mathoko,2007). A descriptive research design was adopted for this study. A descriptive research design is a quantitative research design that is used to describe a population, phenomenon or a situation is an accurate and systematic manner (Shona, 2019). This research design is more appropriate when a researcher intends to establish the features and trends of a population as well as when not much is known about a given area of study (Creswell, 2006). The research design was used for this study since there is no much known about foreign exchange risk management and financial performance of manufacturing firms in Kenya.

3.3 Population

This is the number of items to be considered in a given study (Mugenda & Mugenda, 2003). The population for the study comprised of 85 top manufacturing firms in Kenya as per Glassdoor (2020) as listed in appendix I. A census survey was used in this survey.

3.4 Data Collection

The use of both primary and secondary data was considered in this study. For primary data, questionnaires were used with both closed ended and open-ended questions. The closed ended questions in the questionnaire were mainly used to collect data on foreign exchange risk management by each firm while the open-ended question was used to collect financial data for evaluating financial performance where a firm does not publish its financial reports publicly. The questionnaire used for data collection is in appendix II of this paper. For secondary data, publicly published information by the respective firms in the form of financial statements for a period of 5 years spanning from 2015 to 2019 was used. Data that was collected was mainly financial data that was used for evaluating financial performance. ROA was used as the financial performance measurement metric for the said period.

3.5 Validity and Reliability Tests

The accuracy of the assessment and evaluation of a research work is enhanced by the consistency and legitimacy of the data used (Tavakol & Dennick, 2011). Validity is all about the legitimacy/accuracy of the data used in a study while reliability is concerned about the consistency of the data used in that for a data to be reliable, the results derived using the data should be able to be replicated over in a different study using the same data. To guarantee the validity and reliability of the data that was used in this study, the analysis of variance (ANOVA) and correlation coefficient were done to ascertain any association between the variables for the study as well as the strength and direction of association thereof.

The presence of multicollinearity between variables was also tested using the variance inflation factor (VIF) as well as the Pearson correlation coefficient (PCC). Breusch Godfrey test was also executed to test for autocorrelation especially for the financial performance data over the research

period (2015-2019). The results of these tests were presented and discussed in chapter four of this research paper.

3.6 Data Analysis

According to Ader and Mellenbergh (2008), this is the act of inspecting, cleaning and processing data with the sole aim of getting useful information which will support the making of decisions and suggestion of conclusions and recommendations. Data collected was analyzed using the measures of central tendency, frequencies, standard deviation and regression analysis. A multiple regression analysis with a 5% significance level was used for the regression analysis. Data presentation was done through the use of tables and graphs.

3.6.1 Analytical Model

As alluded above, a multiple regression was used to determine the effect that the use of various hedging strategies has on the financial performance of firms under the manufacturing sector in Kenya. The following regression model that was used:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + €$$

Where; Y = Financial performance (ROA)

β_0 = Constant X_1 = Forward contracts X_6 = Leading and Lagging

X_2 = Currency options X_3 = Currency futures X_7 = Netting

X_4 = Swaps X_5 = Currency Invoicing

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Coefficients

€ = Estimation error- Other factors affecting financial performance

For purposes of data analysis, the variables for this study were measured as follows:

Financial performance- This was measured using the ROA for each firm for each year for a period of 5 years (2015-2019). ROA for each respondent for each year was computed by dividing net income by the total assets (Net income/Total assets).

For the hedging strategies, a numerical value of "1" was assigned to each of the seven hedging strategies if a respondent firm confirms that it uses that hedging strategy. If a firm confirms that it doesn't use a given hedging strategy among the 7 strategies, a numerical value of "0" was assigned to that specific strategy.

3.6.2 Significance Test

Hypothesis testing was done to test the degree of association of each independent variable (currency options, forwards, currency futures, leading and lagging and currency invoicing) and the dependent variable (financial performance). Significance of the model as a whole was tested using the coefficient of determination (R^2).

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

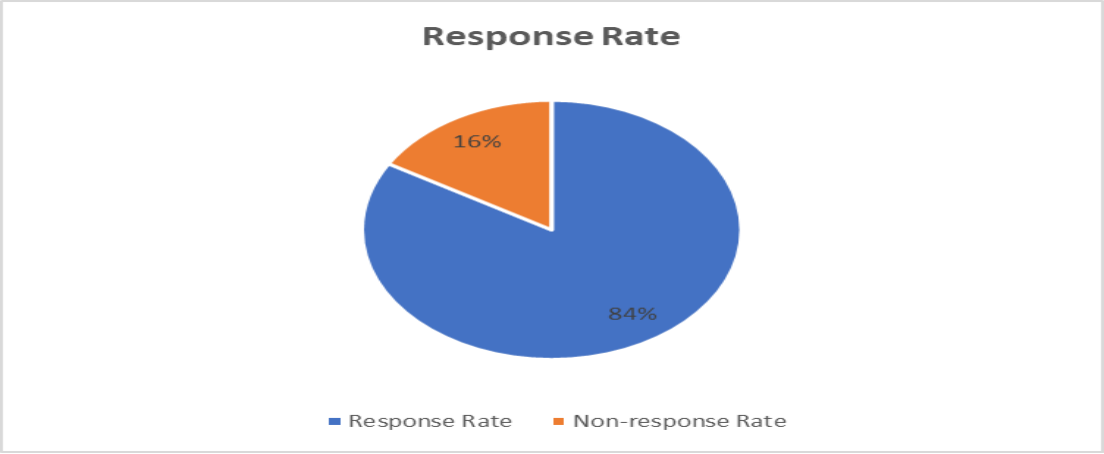
4.1 Introduction

The chapter presents the analysis of data collected and findings from the data analysis in line with the objectives and research methodology of the study. Presented in this chapter are the descriptive statistics, regression results and finally the summary and interpretation of the study findings.

4.2 Response Rate

The population of the study was the top manufacturing firms in Kenya as per Glassdoor as at September 2020 which were 85 in number. Out of the 85 firms, 71 firms availed data which was used in data analysis thus giving a response rate of 83.53% which is a good response rate for the generalization of the study findings as per Mugenda and Mugenda. Out of the 71 firms that responded, 32 of them were subsidiaries of foreign multinational companies while 39 were domestic firms. All the 71 firms that responded confirmed that they either imported or exported any of its products. The response rate is illustrated in figure 4.1 below:

Figure 4.1: Response Rate



As far as foreign exchange risk management is concerned, out of the 71 firms that responded, 58, 11, 7, 31, 48, 42 and 43 firms confirmed that they employed the use of forward exchange contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting respectively in the management of foreign exchange risk.

4.3 Descriptive Statistics

Table 4.1 below shows the distribution of descriptive statistics for the study variables. The main statistics shown is table 4.1 are the number of observations, mean and standard deviation for each variable and the maximum and minimum value for each variable.

Table 4.1: Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Minimum value	Maximum value
ROA	71	6.256338	6.898216	-21.43	41.19
Forward Contracts	71	0.8169014	0.3895	0	1
Currency Options	71	0.1549296	0.3644129	0	1
Currency Futures	71	0.0985915	0.3002347	0	1
Swaps	71	0.4647887	0.5023086	0	1
Currency Invoicing	71	0.6760563	0.4713097	0	1
Leads and Lags	71	0.5915493	0.4950459	0	1
Netting	71	0.6056338	0.4921926	0	1

From table 4.1 above, the ROA for all firms that responded had a mean of 6.25% with a standard deviation of 6.90%, a minimum of -21.43% and a maximum of 41.19%. This implies that on average the ROA for all firms that responded was 6.26% with the lowest ROA being -21.43% and

the highest ROA being 41.19%. For the foreign exchange risk management strategies, the use of forward exchange contracts ranked the highest while the use of currency futures ranked the lowest with a mean of 0.81 and 0.10 and standard deviation of 0.39 and 0.30 respectively. Also, from the findings in table 4.1, it is evident that the firms that responded tend to apply natural hedging (currency invoicing, leads and lags and netting) in foreign exchange risk management as compared to the use of derivatives (forward contracts, currency futures, swaps and currency options). The only derivative that appears to be in high use in managing foreign exchange risk is forward exchange contracts with a mean of 0.81 and standard deviation of 0.39.

4.4 Validity and Reliability Tests

Prior to conducting the regression analysis for the study, diagnostic tests were conducted to guarantee the validity and reliability of the data that was used in this study. First, to ensure that there is no severe multi-collinearity between the independent variables of the study (foreign exchange risk management strategies), the study used the VIF and PCC. As shown in table 4.5 above, all the Pearson Correlation Coefficients between the seven considered foreign exchange risk management strategies were less than 0.8 implying that there was no severe multi-collinearity. Table 4.2 shows the results of the VIF analysis. All the variance inflation factors for all the seven strategies were less 5 which implies that there was no severe multi-collinearity.

Table 4.2: Variance Inflation Factors

Variable	VIF	1/VIF
Swaps	1.50	0.666621
Netting	1.40	0.715008
Leads and Lags	1.36	0.737702
Forward Contracts	1.24	0.804117
Currency Options	1.15	0.870465
Currency Futures	1.11	0.897758
Currency Invoicing	1.03	0.966467
Mean VIF	**1.26**	

Analysis of variance (ANOVA) was carried out to test the fitness of the model in estimating the relationship between the dependent and independent variables. The ANOVA was conducted at a significance level of 5% and the results of this analysis were presented in table 4.3 below. The calculated F value as per table 4.4 below was 8.60 while the critical F value at a significance level of 5% was 2.143. Since the calculated F value was greater than the critical F value, this implies that model was relevant in explaining the relationship between the dependent and independent variables. The p value (0.0000) was also less than 0.05 thus indicating the significance of the model in explaining the relationship between the dependent and independent variables.

Table 4.3: ANOVA

	Sum of Squares	Df	Mean Square	F	Prob>F
Model	1060.0729	7	151.43899	8.60	0.0000
Residual	1108.8056	63	17.600089		
Total	**2168.8785**	**70**	**30.983979**		

Presence of serial correlation in the dependent variable (financial performance-ROA) for the period under review (2015-2019) was also tested using the Breusch-Godfrey LM test for autocorrelation at a significance level of 5%. The results of this test were as shown in table 4.5 below. Since the p value in table 4.5 below is greater than 0.05. it implies that the null hypothesis (no serial correlation) cannot be rejected. This in effect confirms that there is no autocorrelation in financial performance data used for the study over the study period.

Table 1.4: Breusch-Godfrey LM test for autocorrelation

Lags(p)	Chi2	Df	Prob>chi2
1	5.000	1	0.0821

H_0: no serial correlation

To test the internal consistency and consequently the reliability of the responses given by the respondent firms on the different hedging strategies employed by the firms in managing foreign exchange risk, the Cronbach's alpha test was done. The results of this test showed that the scale reliability coefficient was 0.7410. Since the reliability coefficient was more than 0.7, this showed that the collected data could be relied on and hence could be used for data analysis.

4.5 Correlation

A correlation analysis was conducted to establish the relationship as well as the strength of the relationship between the considered foreign exchange management strategies and the firms' financial performance as measured through the ROA. The results of the correlation analysis are tabulated in table 4.5 below:

From the correlation findings in table 4.5 below, the correlation coefficient between forward contracts, leads and lags and ROA were 0.68 and 0.71 respectively. This implies that there is strong positive correlation between the use forward contracts and leads and lags in foreign exchange risk management and the reported financial results as denoted by ROA. The correlation coefficient between currency options, currency futures, currency invoicing, netting and ROA was -0.37, -0.31, -0.28 and -0.29 respectively which implies that there is a weak negative correlation between the use of currency options, currency futures, currency invoicing and netting in foreign exchange risk management and the reported financial results as denoted by ROA. Lastly, the correlation coefficient between swaps and ROA was 0.47 which implies that there is a weak positive correlation between the use of swaps in foreign exchange risk management and the reported financial results as denoted by ROA.

Table 4.5: Correlations

	ROA	Forward contracts	Currency Options	Currency Futures	Swaps	Currency Invoicing	Leads and lags	Netting
ROA	1.0000							
Forward Contracts	0.6753	1.0000						
Currency Options	-0.3681	0.3021	1.0000					
Currency Futures	-0.3037	0.2344	-0.2110	1.0000				
Swaps	0.4689	0.4952	0.42253	0.4602	1.0000			
Currency Invoicing	-0.2805	0.3392	0.2469	-0.2739	0.2416	1.0000		
Leads and lags	0.7089	0.4734	-0.3985	-0.3097	-0.2299	-0.2241	1.0000	
Netting	-0.2899	0.2651	0.2269	0.2735	0.6053	-0.2043	-0.5188	1.0000

4.6 Regression Analysis

The study conducted a multiple regression analysis to determine the variations in financial performance as measured by ROA that can be explained by the considered foreign exchange management strategies as well as establish the coefficients of the hedging strategies and finally come up with analytical model. The results of this regression were illustrated in table 4.6 and 4.7 below:

Table 4.6: Model Goodness of Fit

	Sum of Squares	**Df**	**Mean Square**	Number of Observations	71
Model	1060.0729	7	151.438986	F (7, 63)	8.60
				Prob>F	0.0000
Residual	1108.80562	63	17.6000893	R-squared	0.6888
				Adj R-squared	0.6320
Total	2168.87853	70	30.983979	Root MSE	6.1952

Table 4.7: Regression Coefficients

ROA	**Coefficient**	**Standard Error**	**t**	**P>|t|**	**[95% Confidence Interval]**	
Forward Contracts	4.944358	1.435626	3.44	0.001	2.075488	7.813227
Currency Options	-3.112867	1.47482	-2.11	0.039	-6.060059	-0.1656752
Currency Futures	-3.10013	1.762657	-1.76	0.083	-6.622519	0.4222599
Swaps	3.559932	1.222639	2.91	0.005	1.116682	6.003182
Currency Invoicing	-1.62532	1.082203	-1.50	0.138	-3.78793	0.5372891
Leads and Lags	3.628767	1.179295	3.08	0.003	1.272134	5.9854
Netting	-1.38662	1.204808	-1.15	0.254	-3.794237	1.020996
Constant	1.142588	1.580691	0.72	0.472	-2.016171	4.301348

From table 4.6, R-squared was 68.88% while the adjusted R-squared was 63.20%. This signified a fairly strong relationship between the dependent variable and the independent variables in the sense that 68.88% of the variations in financial performance as measured by ROA was accounted

for by the use of forward contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting in foreign exchange risk management. This also implied that 31.12% of the variations in financial performance as measured by ROA was accounted for by other factors not included in the regression model which provides a basis for further research.

Table 4.7 above shows the coefficients and p values of the independent variables. The correlation coefficients between the dependent variables and each of the independent variables were presented in table 4.2 above. The coefficient for the constant was 1.1426 which implies that without the use of any foreign exchange risk management strategy (forward contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting), the ROA would be 1.1426%. The coefficient for the use of forward exchange contracts was 4.9444 with a p value of 0.01. This implies that a unit increase in the use of forward exchange contracts while holding other factors (the use of currency options, currency futures, swaps, currency invoicing, leads and lags and netting) would increase ROA by 4.9444%. Also, since the p value was less than 0.05, this implies that there is a statistically significant association between the use of forward contracts in foreign exchange risk management and the financial performance as measured by ROA.

The coefficient for the use of currency options was -3.1129 with a p value of 0.039. This implies that a unit increase in the use of currency options while holding other factors (the use of forward contracts, currency futures, swaps, currency invoicing, leads and lags and netting) would reduce ROA by 3.1129%. Also, since the p value was less than 0.05, this implies that there is a statistically significant association between the use of currency options in foreign exchange risk management and the financial performance as measured by ROA. The use of currency futures had a coefficient of -3.1001 with a p value of 0.083. This implies that a unit increase in the use of currency futures while holding other factors (the use of forward contracts, currency options, swaps, currency

invoicing, leads and lags and netting) would reduce ROA by 3.1001%. Also, since the p value was more than 0.05, this implies that there is no a statistically significant association between the use of currency options in foreign exchange risk management and the financial performance as measured by ROA.

The use of swaps had a coefficient of 3.5599 with a p value of 0.005. This implies that a unit increase in the use of currency futures while holding other factors (the use of forward contracts, currency options, currency futures, currency invoicing, leads and lags and netting) would increase ROA by 3.5599%. Also, since the p value was less than 0.05, this implies that there is a statistically significant association between the use of currency options in foreign exchange risk management and the financial performance as measured by ROA. The use of currency invoicing had a coefficient of -1.6253 with a p value of 0.138. This implies that a unit increase in the use of currency futures while holding other factors (the use of forward contracts, currency options, currency futures, swaps, leads and lags and netting) would reduce ROA by 1.6253%. Also, since the p value was more than 0.05, this implies that there is no a statistically significant association between the use of currency options in foreign exchange risk management and the financial performance as measured by ROA.

The coefficient for the use of leads and lags was 3.6288 with a p value of 0.003. This implies that a unit increase in the use of leads and lags while holding other factors (the use of forward contracts, currency options, currency futures, swaps, currency invoicing and netting) would increase ROA by 3.6288%. Also, since the p value was less than 0.05, this implies that there is a statistically significant association between the use of currency options in foreign exchange risk management and the financial performance as measured by ROA. Lastly, the coefficient for the use of netting was -1.3866 with a p value of 0.254. This implies that a unit increase in the use of netting while

holding other factors (the use of forward contracts, currency options, currency futures, swaps, currency invoicing and leads and lags) would reduce ROA by 1.3866%. Also, since the p value was more than 0.05, this implies that there is no a statistically significant association between the use of currency options in foreign exchange risk management and the financial performance as measured by ROA.

Based on findings in table 4.7 and the preceding interpretation, the study established the following analytical model:

$$Y = 1.1426 + 4.9444X_1 - 3.1129X_2 - 3.1001X_3 + 3.5599X_4 - 1.6253X_5 + 3.6287X_6 - 1.3866X_7$$

Where; Y = Financial performance (ROA)

X_1 = Forward contracts X_6 = Leading and Lagging X_7 = Netting

X_2 = Currency options X_3 = Currency futures

X_4 = Swaps X_5 = Currency Invoicing

To establish how robust and fit the model is, a robust regression was done and the results presented in table 4.8 below. As can be seen from table 4.8 below, the results of this regression were fairly the same as those of the multiple regression hence confirming the robustness and fitness of the model.

Table 4.8: Robust Regression

					Number of Observations = 71 F (7, 63) = 10.77 Prob>F= 0.0000 R-Squared = 0.6888 Root MSE = 6.1952	
ROA	**Coefficient**	**Robust Standard Error**	**t**	**P>|t|**	**[95% Confidence Interval]**	
Forward Contracts	4.944358	1.010852	4.89	0.000	2.924331	6.964384
Currency Options	-3.112867	1.168639	-2.66	0.010	-5.448206	-0.7775279
Currency Futures	-3.10013	1.432183	-2.16	0.034	-5.96212	-0.2381392
Swaps	3.559932	1.771128	2.01	0.049	0.0206151	7.099248
Currency Invoicing	-1.62532	1.449608	-1.12	0.266	-4.52213	1.271489
Leads and Lags	3.628767	0.7727577	4.70	0.000	2.084534	5.173
Netting	-1.38662	1.699436	-0.82	0.418	-4.782671	2.009431
Constant	1.142588	1.741767	0.66	0514	-2.338054	4.623231

4.7 Discussion of Findings

The study conducted a correlation analysis between the dependent and independent variables where it established a strong positive correlation between ROA and the use of forward contracts and lead and lags with correlation coefficients of 0.68 and 0.71 respectively. A weak negative correlation between ROA and the use of currency options, currency futures, currency invoicing

and netting was also established with correlation coefficients of -0.37, -0.31, -0.28 and -0.29 respectively. Lastly, a weak positive correlation between ROA and the use swaps was established with a correlation coefficient of 0.47. The study also conducted data validity and reliability tests such as the test of multicollinearity where the PCC and VIF were used. The results from the analysis of PCC and VIF indicated that there was no severe multicollinearity. The ANOVA analysis was also conducted to test the fitness of the model in estimating the relationship between the dependent and independent variables. The results of this analysis indicate that the model was significant in explaining the relationship between the dependent and independent variables. Breusch Godfrey LM test for autocorrelation was also done to test for autocorrelation specifically for the dependent variable where no serial autocorrelation was found.

The study finally conducted a multiple regression analysis to establish the variations in financial performance as measured by ROA that can be accounted by the use of forward exchange contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting in foreign exchange risk management. A fairy significant relationship between the dependent and independent variables was established with the independent variables accounting for 68.88% of the variations in the dependent variable. The regression analysis also established a statistically significant association between ROA and the use forward exchange contracts, currency options, swaps and leads and lags with p values of 0.001, 0.039, 0.005 and 0.003 respectively. Finally, from the regression analysis, it was established that there was no statistically significant association between the ROA and the use currency futures, currency invoicing and netting with p values of 0.083, 0.138 and 0.254 respectively.

As can be seen from the findings of this study, foreign exchange risk hedging strategies do affect the financial performance of manufacturing firms in Kenya by minimizing on the possible losses

associated with adverse foreign currency prices fluctuations as confirmed by the R-squared of 68.88%. This is in agreement with the findings of previous studies done on the topic such those done by Bernal-Ponce et.al., (2020), Delani and Turgut (2020), Pradita and Geraldina (2019), and Dhagat and Raju (2016) as elaborated in empirical review of the literature review.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter provides a summary of the study findings based on the study objectives and the variables of the study. A conclusion is also made based on the summary of the research findings. This chapter also provides recommendations based on the study and discusses the limitations of the study. Finally, this chapter provides suggestions on areas of further study as far as the study topic is concerned.

5.2 Summary of the Study Findings

The objective of this research was to establish the relationship between foreign exchange risk management practices and financial performance of manufacturing firms in Kenya. To achieve this general objective, the study was guided by three specific objectives which were; to establish the various hedging strategies used by manufacturing firms in Kenya to manage their foreign exchange risk exposure, the relationship between the use of natural hedging strategies in foreign exchange risk management and the financial performance of manufacturing firms in Kenya and the relationship between the use of financial derivatives in foreign exchange risk management and the financial performance of manufacturing firms in Kenya.

As far as foreign exchange risk management strategies are concerned, it was found out that forward exchange contracts were in high use with 58 out of the 71 firms that responded confirming that the use forward exchange contracts in hedging foreign exchange risk. For the other hedging strategies considered in this study, out of the 71 firms that responded 11, 7, 31, 48, 42 and 43 firms confirmed

that they employed the use of currency options, currency futures, swaps, currency invoicing, leads and lags and netting respectively in the management of foreign exchange risk.

On descriptive statistics, the study found out that the dependent variable (ROA) has a mean of 6.2563, standard deviation of 6.8982, a minimum value of -21.43 and a maximum value of 41.19. For the independent variables (hedging strategies), the use of forward exchange contracts had a mean of 0.8169, standard deviation of 0.3895, a minimum value of 0 and a maximum value of 1. The use of currency options had a mean of 0.1549, standard deviation of 0.3644, a minimum value of 0 and a maximum value of 1. The use of currency futures had a mean of 0.099, standard deviation of 0.3002, a minimum value of 0 and a maximum value of 1. The use of swaps had a mean of 0.4648, standard deviation of 0.5023, a minimum value of 0 and a maximum value of 1. The use of currency invoicing had a mean of 0.6761, standard deviation of 0.4713, a minimum value of 0 and a maximum value of 1. The use of leads and lags had a mean of 0.5915, standard deviation of 0.4950, a minimum value of 0 and a maximum value of 1. Finally, the use of netting had a mean of 0.6056, standard deviation of 0.4922, a minimum value of 0 and a maximum value of 1.

The correlation analysis conducted found out that the correlation coefficients between ROA and forward contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting were 0.68, -0.37, -0.30, 0.49, -0.28, 0.71 and -0.29 respectively. From the validity and reliability tests, it was established that there was no multicollinearity where the PCC and VIF were used to test for this. All PCCs between each of the hedging strategies were less than 0.8 and all VIFs for all hedging strategies were less than 5 hence ruling out any presence of multicollinearity. ANOVA test was also done to test the fitness of the model in estimating the relationship between the dependent and independent variables where the calculated F value was 8.60 with a p value of 0.0000. The critical F value was 2.143 hence confirming the significance of the model in

explaining the relationship between the dependent and independent variables. The Breusch-Godfrey LM test for autocorrelation was also done to check for any autocorrelation in the financial data used in the study. This test established that there was no autocorrelation since the null hypothesis could not be rejected as the p value (0.0821) was more than 0.05.

From the regression analysis, the study found out a fairly strong relationship between the dependent variable and the independent variables where the R-squared was 0.6888 while the adjusted R-squared was 0.6320. The coefficients for the hedging strategies; forward contracts, currency options, currency futures, swaps, currency invoicing, leads and lags and netting were 4.9444, -3.1129, -3.1001, 3.5599, -1.6253, 3.6288 and -1.3866 while their p values were 0.01, 0.039, 0.083, 0.005, 0.138, 0.003 and 0.254 respectively. This showed that there was a statistically significant association between ROA and the use of forward contracts, currency options, swaps, and leads and lags while there was no statistically significant association between ROA and the use of currency futures, currency invoicing and netting.

5.3 Conclusion

The study concludes that the mostly used hedging strategy among the respondent firms was the use of forward exchange contracts. From the model of goodness of fit, the study concludes that there exists a statistically fairly strong relationship between ROA and the use of forward exchange contracts, currency options, currency futures, swaps, currency invoicing and netting. This is supported by the multiple regression analysis results where the R-squared was 0.6888 while the adjusted R-squared was 0.6320 with a p value of 0.0000. This implies that out of 100% of the variations in financial performance as measured by ROA, 68.80% of these variations are explained by the use of forward exchange contracts, currency options, currency futures, swaps, currency invoicing and netting in foreign exchange risk management.

The study also concludes that there is a strong positive correlation between ROA and the use of forward exchange contracts and leads and lags. Finally, the study concludes that there is a statistically significant association between ROA and the use of forward contracts, currency options, swaps, and leads and lags while there is no statistically significant association between ROA and the use of currency futures, currency invoicing and netting.

5.4 Recommendations of the Study

The study sought to establish the various hedging strategies employed by manufacturing firms in Kenya to manage their foreign exchange risk as well the association between the use of these strategies and the financial performance of these firms as measured by ROA. From the study findings, the study recommends to manufacturing firms in Kenya as well other firms exposed to foreign exchange risk to adopt the use of forward exchange contracts, leads and lags, currency options, swaps, currency invoicing and netting in foreign exchange management so as maximize on the gains and minimize on the losses from foreign exchange which greatly impact a firm's performance.

The use of forward exchange contracts will guarantee a firm to buy or sell foreign currency at a fixed exchange rate thus safeguarding against adverse fluctuations in exchange rates. Leads and lags enables a firm to delay or hasten the payment of its payables or collection of its receivables depending on the movement of exchange rates in the market hence averting the effects of adverse fluctuations in exchange rates. Currency options gives a firm the option but not obligation to buy or sell a specified amount of foreign currency at a specified time hence giving a firm the ability to manage its exposure to foreign exchange risk. Swaps enable a firm to exchange its liabilities denominated in foreign currency with another firm that has liabilities denominated in the home currency hence allowing the firm to settle its liabilities in the home currency averting issues to do

with foreign exchange. Currency invoicing ensures that foreign exchange risk is kept in check by either invoicing or being invoiced in the home currency or both. Netting ensures that foreign exchange risk exposure is minimized to only the maximum possible netted amount. It also reduces transactions costs.

The study also recommends to the government policy making institutions to ensure that there are well functioning financial derivative markets for the effective trading of financial derivatives. This will ensure that firms exposed to foreign exchange risk embrace fully the use of financial derivatives in foreign exchange risk management. This is because from the responses from the target population of the study, it was noted that there was low use of derivatives other than forward exchange contracts especially the use of currency futures.

5.5 Limitations of the Study

Each and every study has its own limitations. This study was limited to foreign exchange risk management strategies as the only determinants of financial performance of manufacturing firms in Kenya. There are of course other factors that determine the financial performance of a firm such as assets utilization, market share, liquidity etc. which may actually moderate the relationship between foreign exchange risk management and financial performance of manufacturing firms in Kenya. The study also considered only seven hedging strategies while actually there are other various hedging strategies that a firm may choose from such money market hedging, foreign currency denominated debt etc. hence one of the limitations of this study. ROA was used as the financial performance measurement metric in this study. There are however other financial performance measures that can be used such return on equity which may result to different findings.

The period of the study was also limited in that the study considered only a period of five years. In this regard, a longer period may produce different findings. There was also a limitation on the data required for this study as most of the manufacturing firms considered in this study do not publish their data publicly and therefore collecting the required data proved quite a challenge.

5.6 Suggestions for Further Study

The study evaluated the relationship between foreign exchange risk management and the financial performance of manufacturing firms in Kenya. The study recommends for further studies to done on the topic but to be targeted to firms in the service industry as well as manufacturing firms in other countries. The study also recommends for a replication of the study which may provide different findings especially in the future when the financial derivative market is expected to be fully functioning.

The current study considered only seven hedging strategies. There are however other several hedging strategies that a firm may use such as money market hedge, foreign currency-denominated debt, insurance, parallel loans, cross hedging etc. The study therefore recommends for further studies to be done taking into consideration the other foreign exchange risk hedging strategies. The period of the study was also a short one (5 years, 2015-2019). The study recommends for a further study to be done covering a longer period which may provide different results and findings.

The current study used the ROA as the financial performance measure. The study recommends for further studies to be done on the topic but to consider other measures of financial performance such as return on equity, return on invested capital etc.

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APPENDIX I: TOP MANUFACTURING FIRMS IN KENYA AS PER GLASSDOOR

SEPTEMBER 2020

No	Company	Industry
1	East African Breweries	Food & Beverage Manufacturing
2	Nestle	Food & Beverage Manufacturing
3	The Coca-Cola Company	Food & Beverage Manufacturing
4	Unilever	Consumer Products Manufacturing
5	Golden Africa Kenya Limited	Food & Beverage Manufacturing
6	General Electrics	Industrial Manufacturing
7	British American Tobacco	Consumer Products Manufacturing
8	Kenya Breweries	Food & Beverage Manufacturing
9	Henkel Kenya Ltd	Consumer Products Manufacturing
10	KONE Kenya Limited	Industrial Manufacturing
11	Pernod Ricard Kenya Limited	Food & Beverage Manufacturing
12	Krones East Africa Ltd	Industrial Manufacturing
13	Unga Group PLC	Consumer Products Manufacturing
14	Bamburi Cement Kenya	Building Products Manufacturing
15	Eveready East Africa Ltd	Chemical Manufacturing
16	Scania East Africa	Transportation Equipment Manufacturing
17	Atlas Copco	Industrial Manufacturing
18	Syngenta Kenya	Chemical Manufacturing
19	Tata Chemicals Magadi Limited	Chemical Manufacturing
20	Associated Battery Manufacturers (E.A.) Ltd	Industrial Manufacturing

21	Carbacid (CO2) Limited	Chemical Manufacturing
22	ACME Containers Ltd	Industrial Manufacturing
23	Rok Industries Ltd	Chemical Manufacturing
24	Flame Tree Africa Ltd	Industrial Manufacturing
25	Pan Africa Transformers & Switchgears Limited	Electrical & Electronic Manufacturing
26	Silpack Industries Limited	Industrial Manufacturing
27	Toyota Kenya	Transportation Equipment Manufacturing
28	Cooper K- Brands Ltd	Health Care Products Manufacturing
29	Bayer East Africa Ltd	Chemical Manufacturing
30	Bobmil Industries Ltd	Consumer Products Manufacturing
31	Danone Baby Nutrion Africa And Overseas	Food & Beverage Manufacturing
32	Becton Dickinson East Africa Ltd	Health Care Products Manufacturing
33	General Motors East Africa Ltd	Transportation Equipment Manufacturing
34	PZ Cussons East Africa Ltd	Consumer Products Manufacturing
35	Holman Brothers (E.A) Ltd	Electrical & Electronic Manufacturing
36	Nails & Steel Products Ltd	Industrial Manufacturing
37	Ecolab East Africa (K) Ltd	Chemical Manufacturing
38	Nationwide Electrical Industries Ltd	Electrical & Electronic Manufacturing
39	Bidco Africa Ltd	Food & Beverage Manufacturing
40	Brookside Diary Limited	Food & Beverage Manufacturing
41	Flamingo Tiles (Kenya)Limited	Building Products Manufacturing
42	Alpha Medical Manufacturers Ltd	Health Care Services & Hospitals

43	AEA Limited	Electrical & Electronic Manufacturing
44	FRIGOGLASS EAST AFRICA LTD	Metal & Mineral Manufacturing
45	Farmer's Choice Limited	Food & Beverage Manufacturing
46	Rok Industries Ltd	Consumer Products Manufacturing
47	Silentnight (K) Ltd	Consumer Products Manufacturing
48	Deluxe Inks Ltd	Consumer Products Manufacturing
49	Brush Manufacturers Ltd	Industrial Manufacturing
50	Crown Paints Kenya PLC	Chemical Manufacturing
51	Devki Group of Companies	Metal & Mineral Manufacturing
52	Simba Corporation Limited	Transportation Equipment Manufacturing
53	East African Cables	Misellaneous Manufacturing
54	Complast Industries Limited	Industrial Manufacturing
55	Nairobi Plastics Ltd	Industrial Manufacturing
56	Kenya Tea Packers Ltd (KETEPA)	Food & Beverage Manufacturing
57	Mobius Motors Kenya Ltd	Transportation Equipment Manufacturing
58	Kapa Oil Refineries Ltd	Food & Beverage Manufacturing
59	Allpack Industries Ltd	Consumer Products Manufacturing
60	Kansai Plascon Kenya Ltd	Chemical Manufacturing
61	Spirax Sarco East Africa Ltd	Industrial Manufacturing
62	Interconsumer Products Limited	Consumer Products Manufacturing
63	BMG Holdings Ltd	Transportation Equipment Manufacturing
64	BEIERSDORF EAST AFRICA LTD	Consumer Products Manufacturing
65	Dow Chemicals East Africa Ltd	Chemical Manufacturing

66	Honda Motorcycle Kenya Ltd	Transportation Equipment Manufacturing
67	Buhler Limited	Misellaneous Manufacturing
68	DPL Festive Ltd	Food & Beverage Manufacturing
69	Signode Packaging Systems Ltd	Industrial Manufacturing
70	S. C. Johnson & Son (K) Ltd	Consumer Products Manufacturing
71	Super Manufacturers ltd	Industrial Manufacturing
72	Chandaria Industries Limited	Consumer Products Manufacturing
73	Kartasi Industries Ltd	Consumer Products Manufacturing
74	Delmonte Kenya Ltd	Consumer Products Manufacturing
75	Ellams Products	Industrial Manufacturing
76	Schneider Electric Ltd	Electrical & Electronic Manufacturing
77	Manji Food Industries	Food & Beverage Manufacturing
78	Twiga Chemical Industries Limited	Chemical Manufacturing
79	Tropikal Brand (Afrika) Ltd	Chemical Manufacturing
80	Metsec Cables Ltd	Electrical & Electronic Manufacturing
81	Mineral Enterprises Ltd	Building Products Manufacturing
82	Cosmos Limited	Health Care Products Manufacturing
83	Brava Food Industries Limited	Food & Beverage Manufacturing
84	Plenser Limited	Electrical & Electronic Manufacturing
85	Alloy Steel Castings Ltd	Metal & Mineral Manufacturing

APPENDIX II: RAW DATA-RETURN ON ASSETS

Company	Financial Performance (ROA)					
	2015	2016	2017	2018	2019	Average
East African Breweries Limited	14.7	17.44	16.5	3.08	9.69	12.288
Nestle Kenya Limited	7.64	6.73	5.78	7.64	10.09	7.576
The Cola Cola Company	8.18	7.51	1.34	8.08	10.4	7.102
Unilever Kenya Limited	10.06	9.83	10.8	16	9.3	11.194
General Electrics	0.35	2.42	-2.4	-6.9	-0.01	-1.308
British American Tobacco Kenya	41.19	34.84	29.7	32.5	33.61	34.372
Henkel Kenya Ltd	8.82	7.49	8.98	7.88	6.7	7.974
KONE Kenya Limited	14.03	12.86	12.6	10.9	10.9	12.264
Pernod Ricard Kenya Limited	2.89	4.1	4.72	5.42	4.77	4.38
Krones East Africa Ltd	5.77	5.51	6.16	4.53	0.28	4.45
Unga Group PLC	7.17	5.56	0.84	7.89	5.12	5.316
Bamburi Cement	15.36	14.4	2.88	5.44	3.43	8.302
Eveready East Africa Ltd	-3.78	-21.4	35.1	-19	-15.7	-5.004
Scania East Africa	4.78	1.99	4.91	4.84	5.2	4.344
Atlas Copco	11.38	11.89	13.3	16.3	14.81	13.55
Syngenta Kenya	7.08	6.19	-0.5	6.85	6.5	5.23
Tata Chemicals Magadi Limited	2.86	3.7	5.23	10.4	5.15	5.476
BOC Kenya PLC	7.29	6.62	3.02	5.21	4.09	5.246
Carbacid (CO2) Limited	22.62	14.05	15.2	14.9	13.1	15.982
Flame Tree Africa Ltd	13.48	9.53	2.37	1.84	2.44	5.932

Pan Africa Transformers & Switchgears Limited	2.73	2.49	2.19	0.97	0.08	1.692
Silpack Industries Limited	10.99	6.06	5.99	7.95	6.48	7.494
Toyota Kenya	4.55	4.88	3.76	4.96	3.63	4.356
ACME Containers Ltd	6.5	3.38	-1.2	3.73	9.94	4.472
Rok Industries Ltd	12.92	10.28	11.5	8.55	11.38	10.932
Golden Africa Kenya Limited	-10.2	-5.41	-0.1	2.86	1.25	-2.308
Cooper K- Brands Ltd	8.86	9.59	3.71	3.96	3.5	5.924
Bayer East Africa Ltd	5.44	4.57	4.33	2.54	5.39	4.454
Bobmil Industries Ltd	20.67	16.25	11.7	11.3	8.53	13.678
Danone Baby Nutrion Africa And Overseas	3.97	4.15	5.54	3.8	4.57	4.406
Becton Dickinson East Africa Ltd	2.62	3.81	2.92	0.58	2.38	2.462
General Motors East Africa Ltd	4.93	4.18	0.16	3.55	2.92	3.148
PZ Cussons East Africa Ltd	5.3	5.96	5.82	4.06	2.72	4.772
Nails & Steel Products Ltd	10.85	9.17	13.2	22.6	12.79	13.714
Holman Brothers (E.A) Ltd	1.35	5.91	8.72	13.8	7.47	7.458
Ecolab East Africa (K) Ltd	5.46	6.8	7.61	7.17	7.55	6.918
Nationwide Electrical Industries Ltd	2.61	2.58	3.17	2.56	2.48	2.68
Bidco Africa Ltd	18.66	16.4	13.7	1.72	11.92	12.47
Flamingo Tiles (Kenya)Limited	9.57	6.48	6.65	3.91	5.57	6.436
Brookside Diary Limited	8.74	4.4	2.57	2.26	-2.3	3.134
Alpha Medical Manufacturers Ltd	2.35	2.86	3.23	2.03	-2.58	1.578

AEA Limited	-1.35	0.71	0.68	1.02	1.01	0.414
FRIGOGLASS EAST AFRICA LTD	-11.1	-9.95	8.93	-0.2	3.07	-1.85
Farmer's Choice Limited	6.56	6.93	7.53	6.78	2.08	5.976
Silentnight (K) Ltd	17.13	13.24	6.08	4.89	-4.19	7.43
Deluxe Inks Ltd	11.87	10.5	10.4	6.49	-10.3	5.798
Brush Manufacturers Ltd	6.96	13.31	16.5	9.99	8.55	11.068
Crown Paints Kenya PLC	0.68	2.61	3.8	3.36	5.75	3.24
Devki Group of Companies	-7.89	-1.01	5.61	6.29	0.78	0.756
Simba Corporation Limited	3.28	1.94	3.01	1.44	0.03	1.94
East African Cables	-6.28	-5.78	-8.7	-7.9	14.88	-2.75
Complast Industries Limited	6.42	6.19	7.47	7.98	3.85	6.382
Nairobi Plastics Ltd	2.36	2.4	1.26	1.43	2.49	1.988
Kenya Tea Packers Ltd (KETEPA)	6.63	3.61	3.93	5.16	6.05	5.076
Mobius Motors Kenya Ltd	2.68	3.02	3.6	3.99	1.68	2.994
Kapa Oil Refineries Ltd	3.65	6.94	4.97	1.54	1.46	3.712
Allpack Industries Ltd	8.24	7.4	7.72	6.64	6.78	7.356
Kansai Plascon Kenya Ltd	5.61	8.26	5.18	3.73	3.64	5.284
Spirax Sarco East Africa Ltd	13.99	14.04	10.7	14.4	9.86	12.592
Interconsumer Products Limited	13.3	14.72	13.8	15.1	26.33	16.64
BEIERSDORF EAST AFRICA LTD	9.76	9.6	8.4	8.4	7.31	8.694
Dow Chemicals East Africa Ltd	11.46	5.54	0.74	5.99	-2.84	4.178
Honda Motorcycle Kenya Ltd	15.6	16.6	16.3	16.2	10.1	14.96
Buhler Limited	5.63	5.28	5.04	4.93	5	5.176

DPL Festive Ltd	5.1	7.22	9.45	7.46	6.51	7.148
Schneider Electric Ltd	3.53	4.33	5.55	5.75	5.61	4.954
Twiga Chemical Industries Limited	5.57	-2.01	3.98	14.1	5.24	5.37
Tropikal Brand (Afrika) Ltd	5.72	2.04	4.67	4.63	3.2	4.052
Metsec Cables Ltd	5.94	8.26	7.58	3.98	2.99	5.75
Cosmos Limited	4.83	5.18	-1.3	2.28	-1.21	1.954
Brava Food Industries Limited	1.81	2.35	4.91	4.43	3.41	3.382

APPENDIX III: QUESTIONNAIRE

FOREIGN EXCHANGE RISK MANAGEMENT PRACTICES AND FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN KENYA

Dear respondent, you have been honored to participate in my research.

The purpose of this research is to establish the effect of foreign exchange risk management practices on the financial performance of manufacturing firms in Kenya. Confidentiality is very key and the data collected will only be used for research purposes only. Honesty and objectivity by respondents are highly encouraged when responding to questions/statements in this questionnaire. Your acceptance to participate in ensuring the success of this research is highly appreciated in advance.

SECTION A: BACKGROUNG INFORMATION

Please indicate/ tick appropriately:

1. Name of your firm…….
2. Location of the Head office……
3. Is your firm a domestic firm or a foreign firm?
   (i) Domestic firm ☐
   (ii) Foreign firm ☐
4. Does your firm import and/or export any of its products?
   (i) Yes ☐
   (ii) No ☐

5. Does your firm have subsidiaries in foreign countries?

   (i) Yes ☐

   (ii) No ☐

SECTION B: FOREIGN EXCHANGE RISK MANAGEMENT

The following are several foreign exchange risk management techniques that firms can use to manage their foreign exchange risk exposure. Please tick appropriately whether your firm uses each strategy based on either of the guiding statements provided:

1. My firm uses forward exchange contracts in managing its exposure to foreign exchange risk.

   (i) Yes ☐

   (ii) No ☐

Guiding statements:

(a) My firm enters into an agreement with its bank to sell a given amount of foreign currency on a specific future date at a predetermined exchange rate for the receipt of foreign currency denominated receivables in the future.

(b) My firm enters into an agreement with its bank to buy a given amount of foreign currency on a specific future date at a predetermined exchange rate for future payment of foreign currency denominated payable.

2. My firm uses currency options in managing its exposure to foreign exchange risk.

   (i) Yes ☐

   (ii) No ☐

Guiding statements:

(a) My firm trades currency put options in the Nairobi Securities Exchange or any other securities exchange, or its banks offers customized currency put options that grant my firm the right but not the obligation to sell a specified amount of foreign currency it receives from its foreign currency denominated receivables at a specific exchange rate within a specific period of time

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(b) My firm trades currency call options in the Nairobi Securities Exchange or any other securities exchange, or its banks offers customized currency call options that grant my firm the right but not the obligation to buy a specified amount of foreign currency at a specific exchange rate in the settlement of its foreign currency denominated payable within a specific period of time .

3. My firm uses currency futures in managing its exposure to foreign exchange risk.

   (i) Yes ☐

   (ii) No ☐

Guiding statements:

(a) *My firm sells currency futures in the Nairobi Securities Exchange or any other securities exchange so as to exchange its foreign currency denominated receivables at a fixed exchange rate at a specified date in the future.*

(b) *My firm purchases currency futures in the Nairobi Securities Exchange or any other securities exchange so as to exchange the home currency against the foreign currency at a fixed exchange rate in the settlement of foreign currency denominated payable at a specified date in the future.*

4. My firm uses swaps in managing its exposure to foreign exchange risk.

   (i) Yes ☐

   (ii) No ☐

Guiding statement:

(a) My firm enters into agreements with other parties for the exchange of cash flows and/or liabilities from different financial instruments such as bonds denominated in foreign currency for each party in way that after the exchange, each party receives the cash flows or services the liability in its home currency.

5. My firm employs currency invoicing in managing its exposure to foreign exchange risk.

   (i) Yes ☐

   (ii) No ☐

Guiding statements:

(a) My firm invoices for its foreign currency sales and any resulting foreign currency denominated receivables in the home currency only.

(b) My firm demands to be invoiced by its foreign suppliers for its foreign purchases and any resulting foreign currency denominated payables in the home currency only.

6. My firm employs leading and lagging in managing its exposure to foreign exchange risk.

   (i) Yes ☐

   (ii) No ☐

Guiding statements:

(a) My firm collects its foreign currency denominated receivables early in time so as to safeguard against unfavorable exchange rate fluctuations.

(b) My firm settles its foreign currency denominated payables early in time so as to safeguard against unfavorable exchange rate fluctuations.

(c) My firm delays in the collection of its foreign currency denominated receivables so as to take advantage of any expected favorable exchange rate fluctuations.

(d) My firm delays in the settlement of its foreign currency denominated payables so as to take advantage of any expected favorable exchange rate fluctuations

7. My firm employs netting in managing its exposure to foreign exchange risk.

   (i) Yes ☐

   (ii) No ☐

Guiding statement:

(e) My firm has an arrangement with its foreign business partners of offsetting its foreign currency denominated payables with its foreign currency denominated receivables to the minimum possible netted amount.

SECTION C: DATA FOR FINANCIAL PERFORMANCE EVALUATION

Please indicate the figures as per the audited and signed financial statements.

	2015	**2016**	**2017**	**2018**	**2019**
Firm's Net Income					
Firm's Total Assets					