

**EFFECT OF RISK MITIGATION COSTS ON FINANCIAL PERFORMANCE OF  
MANUFACTURING FIRMS LISTED IN THE NAIROBI SECURITIES EXCHANGE IN  
KENYA**

**BY**

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## **DECLARATION AND APPROVAL**

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for award of any degree. I also declare that this contains no material written or published by other people except where due reference is made and author duly acknowledged.

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## ABSTRACT

The desire of manufacturing firms like any other business is to maximize profits, achieve wealth maximization and growth. In the midst of this endeavor, businesses are exposed to various risks (uncertainties resulting in adverse variations of profitability or in losses) which need to be mitigated, to mitigate these risks are a cost to the firm. Kenya's manufacturing sector is going through a major transition period largely due to the structural reform process, which the Kenya Government has been implementing since the mid-eighties with a view to improving the economic and social environment of the country. Manufacturing firms fall under the umbrella of Kenya Association of Manufacturers. By incorporating risk management into manufacturing firms' operations, manufacturing firms are better equipped to exploit their resources, thereby enabling their organizations to transform an expenditure activity into an activity that can yield a positive return. However, risk management is a cost to the firm. Several studies relating to risk mitigation have previously been conducted in Kenya. However, there lacks evidence so far of a study conducted in Kenya to investigate the impact of risk mitigation costs on the financial performance of manufacturing firms listed in the Nairobi Securities exchange in Kenya. Therefore, this study sought to fill this gap by answering the following question; what is the effect of risk mitigation costs on the financial performance of manufacturing firms listed at the Nairobi securities exchange in Kenya. The study adopted a correlation approach and panel data design. The population of the study was the 10 manufacturing firms listed at the Nairobi securities exchange in Kenya.

The objective of the study was to establish the effect of risk mitigation costs (Insurance cost, security cost and audit cost) on financial performance of manufacturing firms listed at the NSE. The study relied on secondary data which was analyzed using STATA software and the results presented in tables. The results consistently support the potential association between the three independent variables and the dependent variable (Financial performance) for manufacturing firms listed at the NSE. At 5% level of significance, Insurance cost and audit cost were found to be statistically significant while cost of security was not significant. Moreover, the overall  $r$  squared 71.39% showed that the independent variables can explain 71.39% of variability in the dependent variable which means that 71.39% variation on return on assets was explained by the risk mitigation costs when combined. Based on the findings and conclusions of the study we therefore recommend that the manufacturing firms should consider risk mitigation cost in their budget planning. Of much importance is the cost of insurance and audit cost the firms must seek the most optimal insurance services to cover the risk of the firms as this improves the level of confidence of the stakeholders about the future uncertainties of the firm.

Firms should also consider highly the auditors they have chosen to audit their books. Audit exercises whether internal or external help to identify the risk exposure of institutions. The audit reports also communicate the authenticity of the financial reports prepared and presented by the directors of the firm. These reports also identify areas of improvement to the management. The stakeholders of firms consider the credibility of auditors while looking at a firm. The more credible the audit firm is, the higher the reliability of the reports of institutions. These enhances the level of business agreement and negotiations with external parties which in turn improves on cost management in other areas. Finally, manufacturing firms need to improve the security of the firms we not necessarily to improve their performance but for security and safety purposes.

**Keywords:** Profitability, Wealth Maximization, Risk, Risk Mitigation, Risk Management

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## **DEDICATION**

This dissertation is dedicated to my dear family for their encouragement and moral support through this study, May the Almighty God bless you abundantly



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## **LIST OF ABBREVIATIONS**

<b>KAM -</b>	Kenya association of manufacturers
<b>GRTB-</b>	Global Retail Theft Barometer
<b>CP-</b>	Contingency planning
<b>CCTV-</b>	Closed Circuit Television

## DEFINITION OF TERMS

**Risk:** risk is the potentiality that expected events may have an adverse impact on the capital earnings (Markowitz 1952).

**Mitigation :** Risk mitigation is the process by which an organization introduces specific measures to minimize or eliminate unacceptable risks associated with its operations (Raghavan 2005).

**Cost of Risk:** The implicit or explicit price a company must pay to manage its risk exposures; it is typically comprised of the expected costs and direct and indirect losses arising from risk retention, loss control, loss financing, and risk reduction activities(Bikker 2005).

**Risk Management:** The process of identifying risk exposure, quantifying the risk exposure, evaluating alternative actions and finally managing the various risks hindering an enterprise from maximizing returns (Marx et al, 2003).

**Risk Financing:** Steps taken to ensure that losses can be financed if and when they occur (Garvey, 2008).

**Firm:** business organization, such as a corporation, limited liability company or partnership, that sells goods or services to make a profit.

**Financial Performance:** Refers to the degree to which financial objectives are being met or has been accomplished (Aggrey,2010).

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Risk can occur in personal life as well as in business operations, and a good deal of time and money is spent "mitigating" or managing this risk. Mitigating risk is more about lowering it by eliminating or reducing risk factors that could ultimately leave you or your business in financial ruin. According to Raghavan (2005) risk is the potentiality that expected events may have an adverse impact on the capital earnings. Risk could also refer to the chance that some unfavorable event will occur and in this respect risk describes a situation where there is not just one possible outcome of returns to an investment but an array of potential returns. Risk could therefore be viewed as uncertainty of financial loss (Markowitz 1952).

Risks are uncertainties that are always evident in all business establishments that are in place with the sole aim of making profits. Risk management is a mechanism for managing exposure to risk that enables us to recognize the events that may result in unfortunate or damaging consequences in the future, their severity, and how they can be controlled. The process of risk management comprises the fundamental steps of risk identification, risk analysis and assessment, risk audit monitoring, and risk treatment or control (Bikker and Metzmakers, 2005; Buttimer, 2001). Risk management can also be defined as the identification, analysis, and economic control of those risks which can threaten the assets or earning capacity of an enterprise.

Risk mitigation is the process by which an organization introduces specific measures to minimize or eliminate unacceptable risks associated with its operations. Risk mitigation measures can be directed towards reducing the severity of risk consequences, reducing the probability of the risk materializing, or reducing the organizations exposure to the risk (Bikker 2005).

Risk management has its origins in manufacturing and process industries, in which the need to respond to health and safety issues and to fluctuations in the insurance market have influenced its development (Gordon 1995). Risk is the fundamental element that drives financial behavior. Without risk, the financial system would be vastly simplified. However, risk is omnipresent in the real world. Institutions therefore, should manage the risk efficiently to survive in this highly uncertain world. The future of business will undoubtedly rest on risk management dynamics. Only those institutions that have efficient risk management system will survive in the market in the long run (Akong'a, 2014).

Any organization wishing to manage risk has to invest in the necessary infrastructure to support the risk process. Techniques and procedures must be developed and rolled out. Tools to support the process must be bought or developed. And staff must be trained to use the techniques and tools effectively. If the entry cost is not paid, risk management remains merely a good intention, with no capability to deliver. Risk can occur in personal life as well as in business operations, and a good deal of time and money is spent "mitigating" or managing this risk. Mitigating risk is more about lowering it by eliminating or reducing risk factors that could ultimately leave you or your business in financial ruin (Hillson, 2004).

However, risk mitigation like any other business activity is not free; it costs an organization financial planning and outlay to put the necessary risk mitigation system in place. They install security systems, employ security personnel, train staff, engage the services of internal and external auditors and take various insurance covers. All these are costs to the organization that will definitely have an impact in the financial performance (Njeri 2011). Although many researchers agree that risk management is fundamental to any business success, this study could not find any research done to establish the impact of the costs incurred in risk management to the

financial performance of manufacturing firms in Kenya. This study therefore aimed at filling this gap and discover the relationship between the various costs of risk mitigation- insurance costs, security costs and audit costs and financial performance of manufacturing firms listed in the Nairobi securities exchange.

### **1.1.1 Risk Mitigation**

Risk is considered to be one of the major stumbling blocks in the process of business start-ups and continuity in the business transaction phases. A common saying goes, “*the higher the risk, the higher the return*” (Niringiye, Luvanda and Shitundu 2010). This is an indication that the risk element in a business has an impact onto levels of return that a business expects to realize from trading. Where this is the case, the actual magnitude of this influence is not documented making it possible to vary from business to business. Risk and risk mitigation is a major concern for all companies (Alquier and Lagasse, 2006). Ntlhane (1995) asserts that risk management is the core principle that entrepreneurial or management should focus on in recognizing future uncertainty, deliberating risks, possible manifestations and effects, and formulating plans to address these risks and reduce or eliminate its impact on the enterprise.

The impact of risk on the business environment deals with the level of understanding of cause effect relationships. The impact of a given state of events may cause uncertainty for a firm, industry or the general business environment. By incorporating risk management into manufacturing firms’ operations, manufacturing firms are better equipped to exploit their resources, thereby enabling their organizations to transform an expenditure activity into an activity that can yield a positive return (Kirytopoulos et al., 2001; Banham, 2004). Risk mitigation is therefore taking prominence even far above issues of financing constraints in long-term as well as short term investments (Plourd, 2009). This field is a rapidly developing

discipline and there are many and varied views and descriptions of what risk mitigation involves, how it should be conducted and what it is for. Risk management according to Raghavan (2005) is an ongoing process targeted to enhance operation, practices, resource allocation, ensure compliances to established rules, achieve performance goals, improve financial health and prevent damage to the firm. While risk management needs to be an ongoing process, engaging in risk assessment as early as possible is critical in order to maximize its benefits. Early risk assessment increases the opportunity for innovative solutions that are also less costly. In addition, early risk identification can lead to better estimation of the cost of risk in the projects budget, whether through contingencies, contractual clauses or insurance.

The key to risk mitigation is information, information needs to be provided by all relevant stakeholders to everyone involved so that they can consider risk in their decisions and to communicate about risk effectively. Thus the approach to risk mitigation must be a fundamental part of a firm's culture, and not the responsibility of a small team of experts. In general, the strategies employed include; transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk. Unmitigated risks lead to schedule delays, cost overruns and in the worst case scenarios, disputes and claims. This study therefore will seek to find out the effects of risk mitigation costs on the financial performance of manufacturing firms in Kenya.

### **1.1.2 Risk Mitigation Costs**

Risk mitigation is the actions aimed at reducing the severity/ impact of risk. In order to mitigate risks, one must first assess the potential impact of risk. Business Risk Mitigation may be defined as a concept used by stakeholders, management, employees or auditors to express concern about the probable material effects of an uncertain environment on business goals (Crabb, 2003).



Business risk mitigation helps organization to find ways to manage events that will negatively impact the financial, physical, or human capital of an organization. Business risk mitigation also recognizes that the purpose of organizations is to deliver services and goods to their respective customers and to meet business goals. Organizations and institutions put tangible assets (such as dollars, technology, processes, and people) and intangible assets (such as reputation, brand and information) at risk to achieve objectives. Whether the organization is for-profit, not-for-profit or governmental the task of management is to manage these risks in an uncertain environment. Organizational management becomes synonymous with risk management. The simplest type of risk mitigation is to set limits on exposures in the different risk categories in order to achieve diversification effects (Alquier and Lagasse, 2006).

There are three generic types of risk mitigation costs incurred by firms which include: costs related to elimination or avoidance of risks through simple business practices, costs of transferring risks to other participants and costs associated with management of risks at the firm level. In the first of these cases, the practice of risk avoidance involves actions to reduce the chances of idiosyncratic losses by eliminating risks that are superfluous to the institution's business purpose. Garvey (2008) observes that organizations employ two basic methods to manage the related risk: risk control and risk financing. Risk control seeks to minimize losses by either avoiding or eliminating unacceptable risks, where it is possible to do so and by deploying preventative measures to reduce the likelihood of other risks occurring to an acceptable level. Therefore, to reduce the risk of physical theft, they employ security officers; install security systems such as access controls, cctv and alarms systems and engage the services of auditors to avoid or eliminate certain financial risks (Garvey, 2008).

The second method, risk financing, deals with taking steps to ensure that losses can be financed if and when they occur. This is accomplished through either transferring a risk to a third party, such as an insurer (for a price, the premium, the insurer assumes the risk and finances up to an agreed amount of loss), retaining a risk that cannot be avoided or reduced (and hence bearing the burden of financing the loss), or some combination of both (Garvey, 2008)

### **1.1.3 Risk Management**

Risk management deals with identifying risk exposure, quantifying the risk exposure, evaluating alternative actions and finally managing the various risks hindering an enterprise from maximizing returns (Marx et al, 2003). Such risks include market risk, interest rate risk, foreign exchange risk, credit risk, liquidity risk, technology and operational risk, insolvency risk, sovereign risk and systemic risk (Saunders, 2008). Risk is defined as both an uncertainty and an exposure to that uncertainty and the presence of both elements is mandatory for risk to exist (Marx et al, 2003). Saunders (2008) has identified management of risks as one way of managing a financial institution. Saunders (2010) argues that effective risk management is central to the performance of any financial institution and that the main business of financial institutions is to manage risks. According to Chandan (2006), management is defined as the set of activities directed at the efficient and effective utilization of resources in the pursuit of one or more goals. Risk management if successful, avoids or mitigate costly risks while increasing the payoff by managing the risks effectively. There are many techniques available for manufacturing companies to manage risks including; loss financing (insurance), risk avoidance and loss prevention and control. Insurance refers to a form of risk transfer where one party (the insurer) undertakes to indemnify the other (insured) in the event of an insured risk taking place in consideration of a premium (Ingram, 2006).

Risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities (Wenk, 2005). Effective risk management can bring far reaching benefits to all organizations, whether large or small, public or private sector (Ranong and Phuenngam, 2009). These benefits include, superior financial performance, better basis for strategy setting, improved service delivery, greater competitive advantage, less time spent firefighting and fewer unwelcome surprises, increased likelihood of change initiative being achieved, closer internal focus on doing the right things properly, more efficient use of resources, reduced waste and fraud, and better value for money, improved innovation and better management of contingent and maintenance activities (Wenk, 2005). According to Dorfman (2007), ensuring that an organization makes cost effective use of risk management first involves creating an approach built up of well-defined risk management practices and then embedding them. These risk management practices include financial risks management practices, operational risk management practices, governance risk management practices, and strategic risk management practices. The following are listed as some of the areas or aspects of the organization that a risk manager need to look into namely: the people, intellectual assets, brand values, business expertise and skills, principle source of profit stream and the regulatory environment (Searle, 2008). This will help organization to balance the two most significant business pressures; the responsibility to deliver succeed to stakeholders and the risks associated with and generated by the business itself in a commercially achievable way. By doing so, the risk manager is constantly aware of the risks it faces and therefore constantly monitors its exposure and be positioned to change strategy or direction to ensure the level of risks it takes is acceptable.

#### **1.1.4 Risk Mitigation and Financial Performance**

According to Stoner (2003), performance refers to the ability to operate efficiently, profitably, survive, grow and react to the environmental opportunities and threats. In agreement with this, Sollenberg and Anderson (1995) asserts that, performance is measured by how efficient the enterprise is in use of resources in achieving its objectives. It is the measure of attainment achieved by an individual, team, organization or process. Financial measures of organizational performance include; return on assets, return on sales, return on equity, return on investment, return on capital employed and sales growth.

Sustained profitability can simply be seen as a continuous financial benefit that is realized when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the activity. Every business decision contains risk; avoiding or mitigating this risk is achieved through strong risk management program. In this study, return on Assets will be used to measure performance.

Financial performance is measured through profitability which is the ability to earn profit. Profit is defined as the positive gain from an investment or business operation after subtracting all expenses. There are other several definitions of profit though they are all related to the above definition. Profit can also be defined as a financial benefit that is realized when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the business activity. Investopedia ([www.investopedia.com](http://www.investopedia.com)) also defines profit as the money a business makes after accounting for all the expenses. Pandey (2006) defines profit as the difference between revenues and expenses over a period of time, which is usually one year.

Firms are faced with various risks that cause their profitability to fluctuate. Some risk factors that firms face include interest rates, technology, exchange rates, changes in demand, taxes, costs and selling price. Firm managers are therefore required to develop strategies to manage these risks and hence the concept of risk management and the relationship between risk management and profitability (Pandey, 2006).

The intent of risk mitigation planning is to answer the question of what is the program approach for addressing this potential unfavorable consequence. One or more of these mitigation options may apply: avoiding risk by eliminating the root cause and/or the consequence, controlling the cause or consequence, transferring the risk, and/or assuming the level of risk and continuing on the current program plan. Risk mitigation therefore entails planning the activity that identifies, evaluates, and selects options to set risk at acceptable levels given program constraints and objectives. Risk mitigation planning is intended to enable program success. It includes the specifics of what should be done, when it should be accomplished, who is responsible, and the funding required to implement the risk mitigation plan (Pandey, 2006).

The most appropriate program approach is selected from the mitigation options listed above and documented in a risk mitigation plan. The level of detail depends on the program life-cycle phase and the nature of the need to be addressed. However, there must be enough detail to allow a general estimate of the effort required and technological capabilities needed based on system complexity. For each root cause or risk, the type of mitigation must be determined and the details of the mitigation described (Gweyi, 2013).

Once alternatives have been analyzed, the selected mitigation option should be incorporated into program planning, either into existing program plans or documented separately as a risk mitigation plan (not to be confused with the risk management plan). Hofmann, (2009), posits

that, the risk mitigation plan needs to be realistic, achievable, measurable, and documented. In addition, it should address descriptive title for the identified risk; the date of the plan; the point of contact responsible for controlling the identified root cause; a short description of the risk (including a summary of the performance, schedule, and resource impacts, likelihood of occurrence, consequence, whether the risk is within the control of the program), root causes leading to the risk. Furthermore, it should provide the options for mitigation (possible alternatives to alleviate the risk), definition of events and activities intended to reduce the risk, success criteria for each plan event, and subsequent “risk level if successful” values, a management recommendation whether budget or time is to be allocated, and whether or not the risk mitigation is incorporated in the estimate at completion or in other program plans. Finally, it should provide appropriate approval levels (higher-level Product Manager and Systems Engineer), and identified resource needs.

### **1.1.5 Financial Performance**

Financial performance refers to the degree to which financial objectives are being met or has been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms and is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Aggrey, Eliab and Joseph, 2010). In other words, financial performance is company's ability to generate new resources, from day-to-day operations, over a given period of time; performance is gauged by net income and cash from operations. Performance is a quality of any company, it is achieved by valuable outcome such as higher returns. It can also be measured by the levels of efficiency and this can be analyzed by a variety of methods, such as the parametric (stochastic frontier analysis) and non-parametric (data

envelopment analysis). The management of any company would like to identify and eliminate the underlying causes of inefficiencies, thus helping their firms to gain competitive advantage and attain sustainable competitive advantage, or at least, withstand the challenges from others (Yang, 2006). In the economically competitive world, good financial management is a key indicator of a corporation performance.

Financial performance is also measured using financial ratios which make a comparison between current and past performance; firm's financial standard with that of the industry. According to Angell and Brewer (2003), financial performance is determined by asset utilization, relative profitability and company's financial leverage. Angell and Brewer (2003) warn that the major problem with these three determinants is that they depend on each other and no one of them can work independently to influence financial performance. Rakshit (2006) on exploration of Economic Value Added based performance measurement in Dabur India limited, indicates that performance of organizations is measured using Net Profit Margin, Earning per Share, Return on Equity, Return on Asset and Operating Profit Margin. Rakshit (2006) further argues that Return on Assets is the most popular profit indicator though it does not tell true profits and does not show if it covers the cost of capital or not.

According to Awino (2011) manufacturing is an important sector in Kenya and it makes a substantial contribution to the country's economic development. It has the potential to generate foreign exchange earnings through exports and diversify the country's economy. This sector has grown over time both in terms of its contribution to the country's gross domestic product and employment. The average size of this sector for tropical Africa is 8 per cent. Despite the importance and size of this sector in Kenya, it is still very small when compared to that of the

industrialized nations according to United Nations Industrial Development Organization (UNIDO, 1987).

### **1.1.6 Manufacturing Firms in Kenya**

The manufacturing sector in Kenya in which the study is based on is one of the major contributors to the economic development of the country. According to the Economic Survey of 2015, KNBS stated that manufacturing sector's contribution to Gross Domestic Product has remained at an average of 10 per cent for more than ten years. However, the Vision 2030 stipulates that the sector should account for 20 per cent of GDP. In an effort to spur growth in the sector, the Government continues to invest in both infrastructure development projects and cheap energy supply mainly in geothermal and wind energy. In 2014, the manufacturing sector real output expanded by 3.4 per cent compared to a growth of 5.6 per cent in 2013. Formal employment in the manufacturing sector rose by 2.9 per cent to 287,456 persons in 2014. Similarly, total wage earnings increased by 12.4 per cent from KSh 98.3 million in 2013 to KSh 110.5 million in 2014 (KNBS, 2015).

In Kenya, the manufacturing sector is divided into 14 sub-sectors, which are Food and Beverages, Tobacco, Building, Construction and Mining, Chemical and Allied, Energy, Electrical and Electronics, Leather Products and Footwear, Metal and Allied, Paper and Paperboard, Motor Vehicle and Accessories, Pharmaceutical and Medical Equipment, Plastics and Rubber, Textiles and Apparels, Timber, woods Product and Furniture. (Manufacturing in Kenya: a Survey by KAM 2006). Although Kenya manufacturing sector is still small when compared to those of developed countries, it is still the largest in East Africa (Aosa, 1992).



Kenya Association of Manufacturers has lauded the government for its renewed effort to support growth of the manufacturing sector. The manufacturers have many times cried foul over the same challenges especially to do with policies that do not favor the local sector, but now the measures adopted in the (2015-2016) budget are friendly to growing the sector -KAM Chief Executive Phyllis Wakiaga.

Njeri (2011) conducted a research on the effect of risk management strategies on financial performance of manufacturing firms in Kenya and found out that the main risk mitigation strategies used by manufacturing firms in Kenya was risk transfer strategies such as insurance (mean of 4.12), risk prevention/reduction/control strategies such as security controls to reduce the risk of theft etc audit to reduce risk of financial noncompliance, fraud etc (mean of 4.04) other risk mitigation strategies followed with mean of 3.90 (Njeri, 2011).The above findings therefore provided reasons why the risk mitigating costs commonly incurred by the manufacturing sector, that is the cost of insurance, the cost of security and the cost of audit needed to be studied. This study focus on the impact of these costs on manufacturing firms listed in the Naironi Securities exchange as listed in Appendix 2.

## **1.2 Statement of The Problem**

Manufacturing firms incur a range of risk mitigation costs in order to transfer, prevent, reduce or generally control risks. They seek to mitigate risks and improve financial performance through installing security systems, recruiting and training staff, carrying out financial and compliance audits, and insuring property. However, in spite of this expenditure in such initiatives, firms are still incurring losses as a result of staff theft, fraud, heists on cash in transit and remain exposed to legal costs, loss of revenue, compliance violation fines and loss of future profits resulting from an inability to demonstrate a strong security process to clients, vendors and partners. Each move

to reduce risk has costs; it is this cost of risk and its impact on Financial performance which is the subject of this paper.

According to Njeri (2011) companies incur expenses to mitigate risks through initiatives such as Risk transfer, Risk prevention/ reduction, collaboration/ partnership and Diversification. In 2015, one of Kenya's largest retailers Nakumatt Holdings lost more than 1.5 per cent of their turnover through shoplifting, staff theft, fraud and other loss avenues while another retailer Tusky's Ltd showed that it was losing in excess of 100 million shillings monthly on top of costs associated with the loss prevention services (Shah 2015). According to the 2011 Global Retail Theft Barometer (GRTB) by the Centre for retail Research, global shrinkage covering stock losses due to internal systems exceeded 119 billion dollars in 2011 in a study covering 1,187 global firms. In 2009 an assessment by the World Bank on the investment climate in Kenya indicated that manufacturing enterprises in Kenya lose 2.6 per cent of their sales to spoilage, fraud and theft during transportation. Thus, in spite of the expenditure in risk mitigation and huge investment on the risk mitigation there still remains uncertainty on firm's results (Larossi, 2009)

A number of studies have been done in various firms viewing the problem of risk management as the need to control risks which make up most, if not all, of their risk exposure. Studies in Kenya have only focused on risk management practices of firms in general with no study focusing on the costs associated with risk mitigation and its effect on profitability. A search on studies on risk management in Kenya yielded studies done on credit risk management (Njiru, 2003; Kioko, 2008; Ngare, 2008; Simiyu, 2008; and Wambugu, 2008), information systems risk management (Weru,2008) foreign exchange risk management (Kipchirchir, 2008; Mangoli, 2012) and operational risks and losses in the banking industry (Idarus,2005; Ongera, 2006; Ombaka ,2010).

While the above research outcomes provide valuable insights on risk management, they have not shown the significance of the cost incurred while managing risk and its impact to firm performance. In order to fill this gap, this study investigated the impact of Risk Mitigation costs on Financial Performance of Manufacturing Companies Listed in the Nairobi Securities Exchange in Kenya

### **1.3 objectives of the study**

The following are the specific objectives;

- i. To determine the effect off cost of insurance on financial performance of the firm.
- ii. To establish the effect of cost of security on financial performance of the firm.
- iii. To establish the effect of audit costs on financial performance of the firm.

### **1.4. Research Hypothesis**

The study has the following hypotheses in line with the specific objectives

H<sub>01</sub> Cost of insurance does not have a significant effect on financial performance of manufacturing firms in Kenya.

H<sub>02</sub> Cost of security does not have a significant effect on financial performance of manufacturing firms in Kenya.

H<sub>03</sub> Cost of audit does not have a significant effect on financial performance of manufacturing firms in Kenya.

### **1.5 Justification of the Study**

Manufacturing firms incur a range of risk mitigation costs in order to transfer, prevent, reduce or generally control risks. They seek to mitigate risks and improve financial performance through installing security systems, recruiting and training staff, carrying out financial and compliance audits, and insuring property. However, in spite of this expenditure in such initiatives, firms are

still incurring losses as a result of staff theft, fraud, heists on cash in transit and remain exposed to legal costs, loss of revenue, compliance violation fines and loss of future profits. Despite this fact the effect of these costs of risk mitigation on Financial performance of manufacturing firms has not been conclusively studied, this study aimed at filling this gap in order to provide the findings to all stakeholders in the manufacturing sector.

## **1.6 Significance of the Study**

### **1.6.1 Management**

This study will be important to the management of manufacturing firms in formulating policies and procedures that will lead to high productivity and prevent risks within their organizations hence maximize profit. The study will create awareness on the effect of the various risk mitigation costs on the profitability of their businesses. To the practice therefore, the study will help managers to understand how their decisions in investing in risk mitigation impacts on the firm's performance. Manufacturing firms just like any other firm exist to maximize shareholder's wealth. It is therefore necessary for this sector to ensure all ethical measures that will enhance good financial performance is put in place. All risks that can hinder this must be assessed in the light of the present risk management system and mitigated against.

### **1.6.2 Government**

In terms of policy implications, the study will be important in the formulation of policies by the government with regard to risk mitigation measures such as insurance with the aim of protecting businesses and investors.

### **1.6.3 Investors and Investment Managers**

This study will equip the existing and potential investors with the knowledge about the costs of risk mitigation and this will help them forecast, plan, analyze and manage well their portfolios to maximize their returns.

#### **1.6.4 Academicians**

The study will also add some literature to the already existing knowledge in academic world in this area and equip future researchers with sufficient foundation to conduct further research in this area.

#### **1.7 Scope of the Study**

This study embarked on the manufacturing firms listed at the Nairobi Securities Exchange. The data was analyzed for a period of 10 years, from 2007 to 2016.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter summarizes the information from other researchers who have carried out their research in the same field of study. The specific areas covered here are the theoretical framework, empirical review, and culminate by presenting a summary of the chapter.

#### **2.2 Theoretical Framework**

A theoretical framework is a collection of interrelated concepts which is supposed to help the reader make logical sense of the relationships of the variables and factors that have been deemed relevant/important to the problem (Ravitch and Riggan, 2012). The theoretical framework as discussed below is intended to bring an understanding on risk management and risk mitigation strategies. The theories that have been discussed are the theory of opportunistic entrepreneurship, portfolio theory and contingency planning theory.

##### **2.2.1 Contingency Planning Theory**

Contingency planning (CP) also known as business continuity planning is a crucial element of risk management. The fundamental basis of Contingency Planning (CP) is that, since not all risks can be eliminated in practice, the business will still be exposed to particular risks that are unavoidable. Despite the organization's very best efforts to avoid, prevent or mitigate them, incidents of loss will still occur. Particular situations, combinations of adverse events or unanticipated threats and vulnerabilities may conspire to bypass or overwhelm even the best information security controls designed to ensure confidentiality, integrity and availability of information assets (Hisnson and Kowalski, 2008). In the context of this study, CP is defined as the totality of activities, controls, processes, plans etc. employed by businesses to mitigate, that is

eliminate or reduce significantly the risks that the business is exposed to. These risk mitigation strategies include insurance, audit and security which the business invests heavily in. The very word 'contingency' implies that the activities and resources that will be required following major incidents or disasters are contingent (depend) on the exact nature of the incidents and disasters that actually unfold. In this sense, CP involves preparing for the unexpected and planning for the unknown. The basic purpose of CP is to minimize the adverse consequences or impacts of incidents and disasters, in other words CP is risk mitigation which involves preventing or reducing the risk of loss through risk mitigation strategies such as insurance, audit and security, it is the cost of these contingency planning (risk mitigation costs) that was the subject of this study. This theory therefore stresses the need for risk mitigation and hence justifies the importance to understand the impact of investment on risk mitigation on firm performance.

### **2.2.2 The Theory of Opportunistic Entrepreneurship**

Opportunism is the conscious policy and practice of taking selfish advantage of circumstances, with little regard for principles. There are entrepreneurs that are visionaries, but also there are entrepreneurs that are opportunists. Cressy (1991) on the theory of entrepreneurial opportunism points out that the theory allows the individual to receive a continuous sequence of projects in each of which he makes a decision to invest or not. The model takes the form of the derivation of an optimal decision rule over project success based on probability which maximizes the entrepreneur's expected return and minimize risk given his current knowledge. This rule tells the entrepreneur which projects to accept and which to reject. The optimal reservation probability is shown to be a function of the quality of the entrepreneur's data, ability to formulate the correct model and to update that model as information accumulates. This theory tends to suggest that it is possible for an investor to choose to invest in a project that is free from risk and hence no need

to put in place a risk mitigation plan. It was therefore important to study the impact of risk mitigation costs on financial performance in order to justify this theory or disapprove it.

### **2.2.3 Portfolio Theory**

Harry Markowitz first developed the basis of portfolio theory in 1959. The common sense behind the portfolio theory is based on the adage 'do not put all your eggs in one basket'. This explains the risk-reducing effect of spreading investment across a range of assets, that in a portfolio unexpected bad news concerning one company will be compensated for to some extent by an expected good news about another. Markowitz (1959) has given the tools for identifying portfolios that give the highest return for a particular level of risk. The investors can then select the optimum risk-return trade-off for themselves depending on the level of personal risk aversion.

These portfolios of different proportions satisfy a particular level of investor risk tolerance.

According to the portfolio theory there is a risk-reducing effect of spreading investment across a range of assets rather than running a single investment. This means that even without incurring the costs of risk mitigation investors can still increase their profitability by maximizing portfolio expected return for a given amount of portfolio risk, or equivalently minimizing risk for a given level of expected return, by carefully choosing the proportions of various assets. Portfolio theory deals with the value and risk of portfolios rather than individual securities. It is often called modern portfolio theory or Markowitz portfolio theory. The key result in portfolio theory is that the volatility of a portfolio is less than the weighted average of the volatilities of the securities it contains. Modern portfolio theory (MPT) was introduced by Harry Markowitz in his paper "Portfolio Selection," which appeared in the *Journal of Finance* of 1952.



Markowitz (1959), defines modern portfolio theory as a theory on how risk-averse investors can construct portfolios to optimize or maximize expected return based on a given level of market risk and emphasizes that risk is an inherent part of higher reward. According to this theory, it is possible to construct an "efficient frontier" of optimal portfolios offering the maximum possible expected return for a given level of risk. A portfolio is a combination of two or more investments. The risk of any single proposed investment should not be viewed independently of other investments. New investments must be considered in light of their impact on risk and return of the portfolio of investments held by an investor with the goal of creating an efficient portfolio, which is a portfolio that minimizes risk for a given level of return or one that maximizes returns for a given level of risk.

According to Markowitz (1959), having a portfolio of assets/investments is a better way of avoiding or controlling risks implying that rather than invest in risk mitigation techniques such as the ones being studied- insurance, audit and security, the investor would rather invest in a range of assets whereby when one faces a risk of loss the loss will be neutralized by a profit realized in another investment in the same portfolio.

## **2.3 Empirical Review**

A number of studies have been carried out on Risk Mitigation in both the public and private sector both locally and globally.

### **2.3.1 Effect of Insurance Costs on Financial Performance**

Insurance is a risk transfer strategy which involves handing risk off to a willing third party. As a key component of risk financing, insurance companies have traditionally developed products based on the assumption that companies purchased them as a means to transfer risk. But as the science of risk management advances and more companies hire dedicated risk management

professionals to design and implement their risk management solutions, this assumption may no longer be valid for many businesses. In fact, for many companies, the desire to transfer risk is neither the sole nor even the primary factor driving insurance purchasing decisions.

According to Garvey et al (2008), the reasons for this are varied. For example, a company may buy insurance simply to put a customer at ease or to fulfill a government regulation. Or it may do so for cash flow benefits and access to an insurer's claims-handling skills. Another reason a company might purchase insurance is to address, for example, a joint venture partner's concern about a risk that the first company would otherwise feel comfortable about retaining. Or a company simply might want to avoid taking some earnings hit in a given quarter, should a major negative event occur, even though it might otherwise have no concerns about paying for the loss over time (Garvey 2008).

For these reasons, and many others, a company may purchase insurance even though the need or desire to transfer risk is not part of the company's agenda. A number of leading insurance companies, including AIG, have developed a variety of techniques to address these kinds of needs. Insurance continues to play a crucial role in helping companies manage risk by transferring it. But it also serves as a vital risk management tool in nontraditional uses in which risk transfer is, at best, a minor consideration. Today's corporate risk managers play a critical role in identifying, evaluating, and developing strategies to mitigate and finance risk in a way that vastly improves the protection of their organization's assets. For those not already doing so, one way to improve, even further is to explore new ways to partner with their companies' insurance provider to ensure that existing and emerging risks are being addressed by the most effective and cost-efficient means available. Means that today often will include the implementation of both traditional and nontraditional insurance solutions that are better aligned with their companies' overall risk management strategies, and with the motivations behind them.

Purchasing insurance is a way to reduce the financial impact of a business interruption, loss or damage to a facility or equipment (Garvey 2008).

Insurance companies provide coverage for property damage, business interruption, workers' compensation, general liability, automobile liability and many other losses. Insurers only pay when the peril (i.e., hazard) that caused the loss is insured by a policy (Garvey, 2008). The central function of an insurance company is its ability to distribute risk across different participants (Merton, 1995). Saunders and Cornett (2008), also state that modern insurance companies are in the risk management business. They discuss that insurance companies undertake risk bearing and management functions on behalf of their customers through the pooling of risks and the sale of their services as risk specialists. Insurance companies borrow heavily from the risk management process suggested by Kiochos (1997). According to Kiochos (1997), the risk management process involves four steps: identifying potential losses, evaluating potential losses, selecting appropriate risk management techniques for treating loss exposures and implementing and administering the risk management program. Kimball (2000) concurs that risk management is the human activity which integrates recognition of risk, risk assessment, developing strategies to manage it and mitigation of risk using managerial resources. Generally, a proper risk management process enables a firm to reduce its risk exposure and prepare for survival after any unexpected crisis. On the other hand, firms take insurance not only so that they can be compensated in case of a loss but also to give them more latitude in making investment and financial decisions. With insurance in place managers can engage in riskier projects that will also give higher returns without fear of loss.

Several studies relating to risk mitigation have previously been conducted in Kenya, for instance Kagwathi, Kamau, Njau and Kamau (2014) conducted a study on Risks Faced and Mitigation

Strategies Employed by Small and Medium Enterprises in Nairobi, Kenya. The findings of their study indicated that SMEs in Kenya employ diversification, collaboration, insurance and credit scorecards as strategies to risk mitigation strategies whereby 66% of SMEs used at least one of these strategies. Another study conducted by Ayiekoh (2006) on Risks faced by the Kenyan Banking Industry and associated Mitigation Strategies, found out that Banks in Kenya employ record management, credit management, insurance, partnerships and mergers, due diligence and macroeconomic forecasting as strategies to mitigate risks. In view of the above insurance cost is a cost that needs to be studied to establish its effect on financial performance of a firm

### **2.3.2 Effect of Security Costs on Financial Performance**

Firms are exposed to security risks such as staff stealing information, network based attacks such as viruses and Malware – the ever-evolving threat, information and Identity thefts as well as threats to Physical Security which can lead to loss of revenue, loss of intellectual, competitive or proprietary information and also risk loss of future profits. Firms therefore install Security controls and other counter measures in order to safeguard, avoid, detect, counteract, or minimize security risks to physical property, information, computer systems, or other assets. They do this through building and maintaining a Secure Network and Systems, implementing and installing firewalls to protect data and through regular monitoring and testing networks and conduct regular security audits using external specialist companies (Gossy, 2008).

Security controls can be classified by several criteria. For example, according to the time that they act, relative to a security incident: Before the event, preventive controls are intended to prevent an incident from occurring for example, by locking out unauthorized intruders, during the event, detective controls are intended to identify and characterize an incident in progress by for example, sounding the intruder alarm and alerting the security guards or police, after the

event corrective controls are intended to limit the extent of any damage caused by the incident for example, by recovering the organization to normal working status as efficiently as possible (Gossy, 2008).

Security controls can also be classified according to their nature, for example, physical controls such as fences, doors, locks and fire extinguishers, procedural controls e.g. incident response processes, management oversight, security awareness and training and technical controls e.g. user authentication (login) and logical access controls, antivirus software, firewalls or legal and regulatory or compliance controls e.g. privacy laws, policies and clauses (Gossy, 2008). A similar categorization distinguishes control involving people, technology and operations/processes. In the field of information security, such controls protect the confidentiality, integrity and/or availability of information - the so-called CIA Triad Systems of controls can be referred to as frameworks or standards. Frameworks can enable an organization to manage security controls across different types of assets with consistency (Gossy, 2008).

While many owners accept that ensuring the security of their assets is a cost of doing business, the lack of minimum cyber security frameworks can tempt industries to opt for cost-effective rather than all-encompassing strategies. Defective systems may instigate unauthorized actions, disrupted operation, equipment shutdown and supply outage leading to environmental flaws. Second to the catastrophic, potential endangerment of human lives lies the risk of financial penalties, regulatory investigation and reputational impact. Because of the complex nature of security risks the mitigation strategies are as well complex and varied making it even more expensive (Mulu, 2010). Kuloba et al (2013) studied risks and mitigation strategies in micro and small enterprises in Meru County and observed that the main risks were theft and burglary (33%)

and fire (13%) and that the main mitigation strategies were insurance and tight security. This study aimed at investigating the impact that this cost has on the firm's performance.

### **2.3.3 Effect of Audit Costs on Financial Performance**

The independent audit is one of the mechanisms identified as a solution to increase the transparency in management - investor relationships. Its purpose is to approve financial statements through an impartial investigation and with acknowledged technical expertise. The independent audit has the key role of attesting to the veracity and accuracy of the company's financial statements on behalf of shareholders and other stakeholders. For this to happen, it is necessary that the auditor is, in fact, independent (Niemi, 2005).

Firms enlist the services of internal and external auditors. The internal audit department is very important inside a firm that the internal audit is regarded as the key element in the application of accounting systems which in turn, helps in evaluating the work of the department. The internal audit is considered as the backbone of the business accounting as it is the section that records all businesses related to the sector. The efficiency of internal audit helps develop the work of the company because the financial reports reflect the internal audit department's quality. Moreover, an internal audit is a significant part of the CG structure in an organization and CG encompasses oversight activities taken by the board of directors and audit committees to make sure that the financial reporting process is credible (Public Oversight Board, 2014).

The financial and corporate strategy of a company is underpinned by effective internal systems in which the internal audit has an important role in raising the reliability of the internal control system, improving the process of risk management and above all, satisfying the needs of internal users. The internal audit support enhances the system of responsibility that the executive

directors and employees have towards the owners and other stakeholders (Eighme and Cashell, 2002). Taken together, the internal audit department provides a reliable, objective, and neutral service to the management, board of directors, and audit committee, while stakeholders are interested in return on investments, sustainable growth, strong leadership, and reliable reporting on the financial performance and business practices of a company (Ljubisavljević and Jovanovi, 2011).

Several empirical studies have sought to explain audit costs through governance mechanisms, although without being able to reach a unanimous conclusion. This relationship can be affected by two opposing forces: (i) the demand effect leads to a positive relationship between governance and audit costs, explained by the greater complexity and scope of the studies; and (ii) the risk effect shows a negative relationship because companies with better governance have better monitoring mechanisms, which can reduce the cost of independent auditing services (Griffin, Lont and Sun, 2008).

Academic research has developed this topic by studying the relationship between corporate governance and the cost and independence of audit firms. Better governance practices can positively affect audit costs because they require more complex and extensive analysis, but governance also can affect costs negatively if it represents a reduction in the external audit's risk, thereby reducing service costs. According to Adelopo, Jallow, and Scott (2009), greater monitoring by large shareholders is related to lower audit costs, while larger companies with more dispersed ownership tend to have higher costs. Vafeas and Waegelin (2007) identified a negative relationship between insider ownership and the determination of compensation based on long-term incentives with audit costs. Boards of directors with greater levels of independence,

diligence and experience show a positive relationship with audit costs, which is consistent with the demand effect (Carcello, Hermanson, Neal and Riley Jr, 2000; Lifschutz, 2010).

The relationship between the existence of an internal audit department and audit costs has been studied by Ho and Hutchinson (2010) in the Hong Kong market. The authors concluded that there is a relationship between these two variables, i.e., the higher the internal audit effort, the lower the external audit fees. However, Hay, Knechel, and Ling (2008) and Goodwin-Stewart and Kent (2006) found a positive relationship. However, when governance variables interact as proxies for audit risk (previous losses, coverage by analysts and others), there is a negative relationship with audit costs, consistent with the risk effect of auditing. The present study however, was purely on the cost of audit, both internal and external and its effect on the performance of the firm.

#### **2.4 Conceptual Framework**

The key variables in this study were categorized as independent variable, moderator and dependent variable. Mugenda (2008) explains that the independent variables are called predictor variables because they predict the amount of variation that occurs in another variable while dependent variable, also called criterion variable, is a variable that is influenced or changed by another variable. The dependent variable is the variable that the researcher wishes to explain. A moderator variable is a variable that alters the strength of the causal relationship (Frazier, Tix and Barron, 2004).



**Independent Variable**  
**Risk Mitigation costs**

**Dependent Variable**

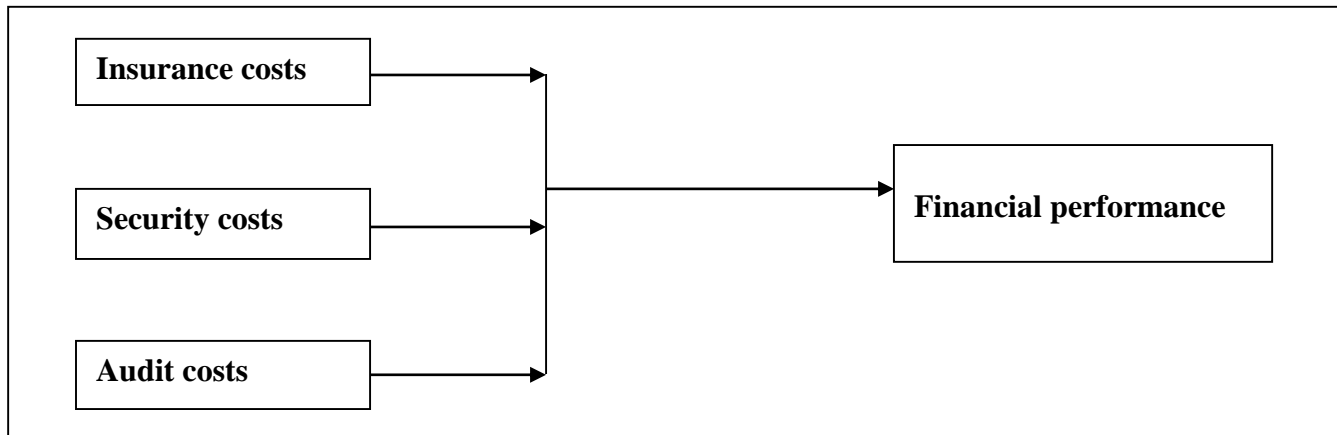


Figure 1 *Conceptual Framework*

## 2.5 Operationalization of Variables

*Table 1 Operationalization of Variables*

<b>Variable</b>	<b>Variable type</b>	<b>Indicator</b>	<b>Measurement</b>
Financial Performance	Dependent	Return on assets	Return on Asset- Income divided by Total assets
Insurance cost	Independent	Total cost of insurance	Total expenditure on insurance as a proportion of total cost for the year
Security Cost	Independent	Total cost of security	Total expenditure on security as a proportion of total cost for the year
Audit cost	Independent	Total cost of audit	Total expenditure on audit as a proportion of total cost for the year

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the methodology that was used in this study. It covers among others the research design, population, sampling, data collection methods and explains the data analysis process

#### **3.2 Research Design**

A research design is a programme to guide the researcher in collecting, analyzing and interpreting observed facts Orotho (2003). This study adopted a correlation research design and examined the effect of risk mitigation costs on financial performance of manufacturing firms listed in the Nairobi Securities Exchange in Kenya. To achieve this purpose, the study undertook a quantitative approach. A quantitative approach was deemed appropriate in this study since the data that was used was quantitative.

The purpose of the research design is to explain the effect of risk mitigation costs on financial performance of manufacturing firms listed in the Nairobi Securities Exchange in Kenya. The study adopted a panel data design and obtained annual data from 10 manufacturing firms listed at the NSE for the period 2007 to 2016. According to Simon (2011) in a correlation research design, the purpose of the researcher is investigating one or more characteristics of a specified group in order to discover the extent to which the characteristics co-vary. A descriptive correlation study examines variables in their natural environments and without researcher-imposed treatments. The main purpose of a correlation study is the determination of relationships between variables and establishing a regression equation that could be used to make predictions to the whole population.

### **3.3 Target Population**

Population refers to a large collection of all subjects from where a sample is drawn (Zikmund, Babin, Carr, and Griffin, 2012). The target population for this study was manufacturing firms listed in the Nairobi securities exchange. There are 10 such firms listed at the Nairobi Securities exchange ([www.nse.co.ke](http://www.nse.co.ke)). The list of the manufacturing firms listed at the Nairobi Securities exchange is given in Appendix 2.

### **3.4 Instrumentation and Data Collection**

There are several ways of collecting data which differ considerably in terms of money costs, time and other resources at the disposal of the researcher (Orodho, 2008). This study used secondary data from the annual financial statements of the manufacturing firms for the last ten years. Merit of using panel data constitutes a mix of cross-sectional and time series data and is therefore relevant for the study. The advantages of using the panel data over both cross sectional and time series data are: (a) since it relates to firms over time, there is the likelihood of the existence of heterogeneity in the units and therefore panel data takes this into account well by allowing for the subject specific variables. (b) by combining time series for the cross-sectional observations, this data becomes useful by giving more informative data, as well as more variability, leading to less collinearity among variables and more degrees of freedom and hence more efficiency. (c) this makes the data better suited to enable the study the dynamics that involve change. Data for this study was collected on each variable for the past ten years on a yearly basis. The data relates to manufacturing firms listed in the Nairobi Securities Exchange in Kenya as at the close of end of the financial year 31<sup>st</sup> December 2016 covering ten years' period (2007 to 2016). The instrument that was used for data collection is given in Appendix 1.

### **3.5 Data Analysis and Processing**

This study employed descriptive statistics in the form of percentages, and means and measures of dispersion. Descriptive statistics allow for the presentation of data in a more meaningful way which allows simpler interpretation of the data. The data analysis comprised the data preparations, data analysis and reporting. Excel and STATA software packages were used to explore and analyze the data. Data was first analyzed using panel regression methods due to the fact that neither cross sectional data analysis nor time series data analysis would alone give the best results because of the combined variations of firms and time. Initially the data was analyzed using the pooled ordinary least squares (OLS) regression model. The panel regression model used in analysis of the data could be either the fixed effects model or the random effects. The Fixed effect model assumes that individual groups / time had different intercept in the regression equations, while random effects model hypothesizes that individual groups / time have different disturbances.

#### **3.5.1 Model selection criteria (Random vs. Fixed effect model)**

To resolve the dilemma of choice between the random effect model or fixed effect model, the Hausman (1978) specification tests were carried out. If the null hypothesis is rejected the fixed effect model will be used; otherwise we would go for the random effects model. The Hausman test that examines whether the unobservable heterogeneity term is correlated with explanatory variables, while continuing to assume that regressors are uncorrelated with the disturbance term in each period. The null hypothesis for this test is that unobservable heterogeneity term is not correlated or random effect model is appropriate, with the independent variables. If the null hypothesis is rejected, then we employ Fixed Effects method. (Padachi ,2006). A panel data

would be subjected to the use of descriptive statistics such as the mean, standard deviation maximum and minimum to describe the data used in the analysis.

### **3.5.2 Research Variables**

This research has four variables. The dependent variable is financial performance. This variable is defined according to Trivedi (2010) who defined financial performance in terms of the return on Assets (ROA). There are three independent variables namely cost of insurance measured by a firm's annual expenditure on insurance, cost of security measured by a firm's annual expenditure on security and cost of audit measured by a firm's annual expenditure on audit services.

The following model was used to study the effect of risk mitigation costs on financial performance of manufacturing firms listed in the Nairobi Securities Exchange in Kenya :

$$Y_{it} = f(CInsurance_{it}, CSecurity_{it}, CAudit_{it}) + \epsilon_{it}$$

Where:  $CInsurance_{it}$ : is the cost of insurance for firm  $i$  at time  $t$

$CSecurity_{it}$ : is the cost of security of firm  $i$  at time  $t$

$CAudit_{it}$ : is the cost of audit of firm  $i$  at time  $t$

$\epsilon_{it}$ : is the Error term

### **3.6 Diagnostic tests**

Diagnostic tests are robust statistical tests carried out to verify if the data used have met the assumptions underlying the ordinary least squares regression and where possible to remove problems associated with panel data. The diagnostic tests carried out in the study are detailed below. Since this is panel data, Panel regression analysis diagnostic test for heteroscedasticity, serial correlation, multicollinearity and fixed effects are tested.

#### **3.6.1 Testing for serial correlation**

Serial correlation is usually a result of model miss-specification or genuine autocorrelation of the model error term. In the presence of such a phenomenon, ordinary least squares are no longer BLUE (Best Linear Unbiased estimators). In such cases R-squared may be overestimated.

According to Brooks (2008) when the error term for any observation is related to the error term of other observation, it indicates that autocorrelation problem exist in this model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. The result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis testing, it may lead to misleading results on the significance of parameters in the model. In this study autocorrelation was tested by using the Durbin-Watson test.

### **3.6.2. Heteroscedasticity**

According to (Brooks, 2008), Heteroscedasticity means that error terms do not have a constant variance. If heteroscedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will underestimate the variances and standard errors. There are several tests to detect the Heteroscedasticity problem, which are Park Test, Glesjer Test, Breusch-Pagan-Goldfrey Test, White's Test and Autoregressive Conditional Heteroscedasticity (ARCH) test. To detect the presence of Heteroscedasticity this study used the Breusch-Pagan test.

### **3.6.3. Test for Multicollinearity**

Multicollinearity is an assumption of a linear relationship between explanatory variables that creates biased regression model. This problem occurs when the explanatory variables are very highly correlated with each other (Brook, 2008). According to (Hair et al., 2006) multicollinearity problem exists when the correlation coefficient among the variables are greater than 0.90.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND INTERPRETATION**

#### **4.1 Introduction**

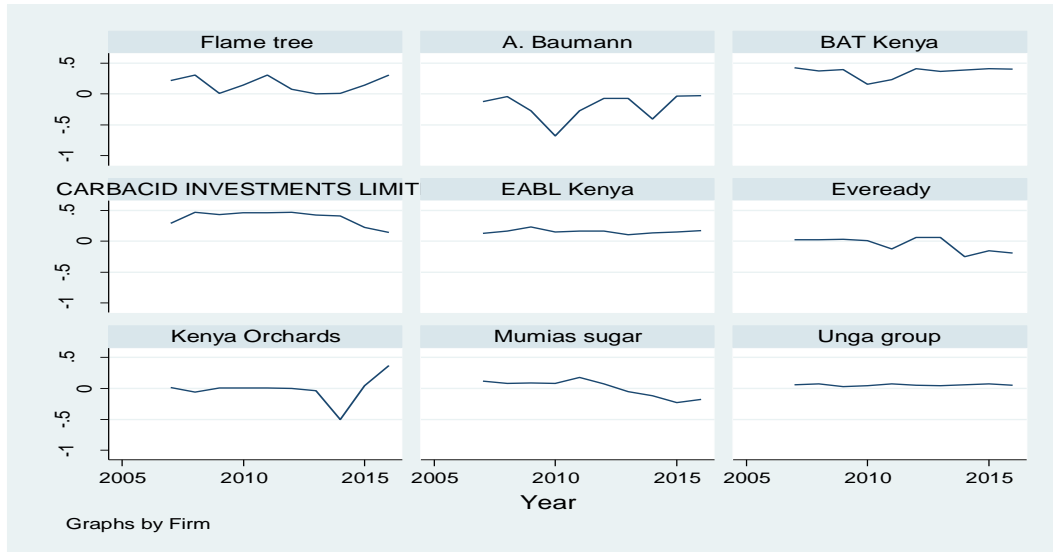
The main objective of this study was to determine the impact of risk mitigation cost on financial performance of the manufacturing firms listed on the NSE. The specific objectives of the study were to determine the effect off cost of insurance on financial performance of the firm, to establish the effect of cost of security on financial performance of the firm and to establish the effect of audit costs on financial performance of the firm. Secondary data was obtained from these manufacturing firms was collected and analyzed using Stata software. Exploratory analysis, diagnostic tests and panel data analysis was conducted and presented.

#### **4.2 Exploratory Data Analysis**

We first conduct an exploration data analysis and the results summarized and presented using tables and graphs. We conduct an exploratory analysis on the dependent variable, financial performance in order to perform diagnostic test for the data to ascertain the suitable regression model to use for analysis.

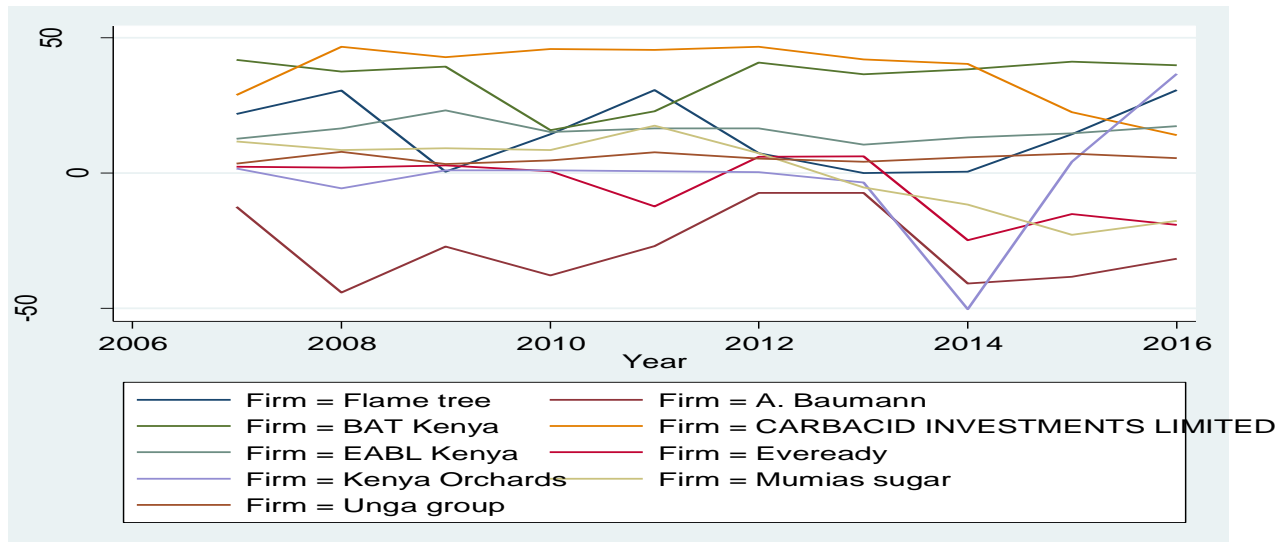
As shown in Figure 4.1 below, different patterns for the financial performance of the firms as measured by their return on assets is depicted. Unga Group appeared to have a predictable financial performance as measured by the ROA. Mumias Sugar and Carbacid Investment had a downward sloping financial performance in the period of study. The other six firms have unpredictable trend patterns.

**Figure 2 Financial Performance of the firms over the 10-year period**



The pictorial presentation in Figure 3 showed that there were changing slopes on the return in assets among the firms. We observe unpredictable trend patterns for the firms over the 10 year period.

**Figure 3 Overlain Financial Performance**





### 4.3 Panel Data Descriptive Analysis

The Table 2 below presents descriptive analysis of the firms under study for the ten year period. Mean values, standard deviation, minimum and maximum values for the variables are presented. The dependent variable is the financial performance as measured by the return on assets while the independent variables are the three risk mitigation costs: cost of insurance; cost of security and cost of audit.

The average return on assets for the firms over the ten-year period was 9.31% with a standard deviation of 21.89%. The maximum ROA was 46.76% while the minimum ROA was -67.7%. which shows that some firms operated at a loss over the ten-year period

The average cost of insurance was 1.205% of the total cost with a standard deviation of 1.23%. The maximum insurance cost was 4.47% while the minimum was 0.019%. this indicates that at least every manufacturing company listed in NSE undertakes insurance

The average cost of security was 1.09% of the total cost with a standard deviation of 1.33%. The maximum cost of security was 4.69% while the minimum was 0.00%. which means that there were some companies that did not invest in security in certain periods.

The average cost of audit was 1.14% of the total cost with a standard deviation of 1.3%. The maximum cost of audit was 4.14% while the minimum was 0.00%.

**Table 2 Descriptive Statistics for the variables**

<b>Variable,</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>	
<b>ROA</b>	<b>overall   .0930387</b>	<b>.218925</b>	<b>-.6772487</b>	<b>.4676755</b>	<b>N = 90</b>
<b>Insura~t</b>	<b>overall   .01205112</b>	<b>.01239057</b>	<b>.0001887</b>	<b>.04477911</b>	<b>N= 90</b>
<b>Securi~t</b>	<b>overall   .01097678</b>	<b>.01331869</b>	<b>9.60e-07</b>	<b>.04698933</b>	<b>N= 90</b>
<b>Auditc~t</b>	<b>overall   .01138933</b>	<b>.01313773</b>	<b>.0000102</b>	<b>.04145676</b>	<b>N= 90</b>

#### 4.4 Diagnostic Tests

Before we conduct a regression analysis we needed to determine the appropriate regression model to apply between pooled, random and pooled effects model. We first conducted test for serial correlation, multi-collinearity and heteroscedasticity. This helped determine if the error terms were serially correlated and thus choose between pooled, random and pooled effects model.

##### 4.4.1 Test for serial correlation

Autocorrelation is a characteristic of data in which the correlation between the values of the same variables is based on related objects. This study used Wooldridge test. The null hypothesis for Wooldridge is that there is no serial correlation. A significant p-value of less than 0.005 lead to rejection of this null hypothesis (Oscar 2007). From the test shown in table 3 below a p value of 0.0858 indicate we should not reject the null hypothesis and confirm there is no first order autocorrelation between variables.

**Table 3 Wooldridge Test for Autocorrelation**

Wooldridge test for autocorrelation in panel data			
H0: no first-order autocorrelation			
F( 1,	8)	=	3.837
Prob > F		=	0.0858

There is no autocorrelation since the p value is greater than 5%.

##### 4.4.2 Test for multicollinearity

Multi-collinearity is a phenomenon in which one predictor variable in a multiple regression model can be linearly predicted from the others with a substantial degree of accuracy.

Multicollinearity test helps identify highly correlated variables causing the presence of

collinearity High mean VIF-greater than 5 is not good as it shows presence of multicollinearity. The results of the test as seen bellows showed that there was no multicollinearity since the mean VIF is 1.36.

**Table 4 Testing for Multicollinearity**

Variable	VIF	SQRT VIF	Tolerance	R- Squared
Insurancecost	1.51	1.23	0.6622	0.3378
Securitycost	1.53	1.24	0.6539	0.3461
Auditcost	1.04	1.02	0.9649	0.0351
Mean VIF	1.36			

#### 4.4.3 Test for Heteroscedasticity

Heteroscedasticity, occurs when the standard deviations of a variable, monitored over a specific amount of time, are not constant. The likelihood ratio test was used to test for heteroscedasticity. It states that there is a constant variance while the alternative is that there is heteroscedasticity. Table 5 below presents the results for the test:

**Table 5 Likelihood Ratio Test for Heteroscedasticity**

Likelihood-ratio test	LR chi2(29) =	6.19
(Assumption: hetero nested in .)	Prob > chi2 =	1.0000

Since the p value is greater than 5% we accept the null hypothesis that the variance is constant and conclude that there is no Heteroscedasticity

#### 4.4.4 Hausmann Test

The study undertook a Breusch Pagan Lagrangian Multiplier test to determine whether the pooled effects regression model would be appropriate. The results indicated that the random effects model was the most appropriate since the p value is greater than 5%.

The results are as show in the table below:

**Table 6 Hausmann Test**

	— Coefficients —			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Insurancec~t	.736154	.6404043	.0957498	.0585226
Securitycost	.0472187	.1569346	-.1097159	.0682441
Auditcost	.5349781	.6009505	-.0659724	.0829654

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$\chi^2(3) = (b-B)' [(V_b-V_B)^{-1}] (b-B)$   
 = 3.43  
 Prob>chi2 = 0.3305

#### 4.4.5 Panel Data Regression Analysis

The regression model was fitted using the random effects model as concluded from the Hausmann test. The results showed that all independent variables have a positive and significant effect on ROA except security cost. The entire model (chi square test) is also significant, with a p value of 0.000. Moreover, the overall r squared 71.39% shows that the independent variables can explain 71.39% of variability in the dependent variable which means that 71.39% variation on return on assets was explained by the risk mitigation costs when combined. Further, the results show that there was a positive and significant relationship between cost of insurance and ROA.

A unit increase in insurance therefore leads to an increase in ROA by 0.64 units. We also deduce that the cost of audit is positive and significant. A unit increase in audit cost results in the increase of ROA by 0.60 units. However, we observe that security cost is insignificant to the ROA of the firms. When all the three variables are held constant the ROA will be -0.069. This is evident as the constant is negative and significant. The model was fitted in the equation as below;

$$Y = -0.069 + 0.64X_1 + 0.15X_2 + 0.60X_3$$

Where:

X<sub>1</sub>: Cost of Insurance

X<sub>2</sub>: Cost of Security

X<sub>3</sub>: Cost of Audit

The results that present the coefficients and their significance are presented in Table 4.6 below:

**Table 7 Random Effects Model Fitting**

```

Random-effects GLS regression              Number of obs   =       90
Group variable: Firmi                     Number of groups =        9

R-sq:  within = 0.4489                    Obs per group:  min =       10
        between = 0.8511                    avg =      10.0
        overall = 0.7139                    max =       10

corr(u_i, X) = 0 (assumed)                 Wald chi2(3)    =     106.31
                                                Prob > chi2     =     0.0000

```

ROA	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Insurancecost	.6404043	.2921052	2.19	0.028	.0678885 1.21292
Securitycost	.1569346	.2802087	0.56	0.575	-.3922645 .7061336
Auditcost	.6009505	.2864044	2.10	0.036	.0396081 1.162293
_cons	-.0698077	.0295318	-2.36	0.018	-.127689 -.0119265
sigma_u	.06756981				
sigma_e	.10044789				
rho	.31153441	(fraction of variance due to u_i)			

## **CHAPTER FIVE**

### **DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents discussion of the findings, conclusion and recommendation drawn from the study findings. This is based on the three objectives of the study: to determine the effect off cost of insurance on financial performance of the firm; to establish the effect of cost of security on financial performance of the firm; and to establish the effect of audit costs on financial performance of the firm. Based on results of the Hausmann test we use random.

Based on these findings we then make our conclusions and recommendations relevant to policy makers, theory and practice.

#### **5.2 Discussion of Findings**

The main objective of this study was to determine the impact of risk mitigation cost on the financial performance of the manufacturing firms listed in the Nairobi securities exchange in Kenya. Specifically, the three objectives of the study: to determine the effect off cost of insurance on financial performance of the firm; to establish the effect of cost of security on financial performance of the firm; and to establish the effect of audit costs on financial performance of the firm.

Secondary data was obtained from the manufacturing companies listed on the NSE and analyzed using Stata software. Exploratory analysis, diagnostic tests and panel data analysis was conducted and presented using tables, figures and graphs.

The study undertook a Hausmann test to determine the appropriate model between the pooled effects, fixed effect and random effects model. The results determine that the random effects model is the most appropriate to use for regression and answer the three hypothesis:

- i. H<sub>01</sub>: Cost of insurance does not have a significant effect on financial performance of manufacturing firms in Kenya.
- ii. H<sub>02</sub>: Cost of security does not have a significant effect on financial performance of manufacturing firms in Kenya.
- iii. H<sub>03</sub>: Cost of audit does not have a significant effect on financial performance of manufacturing firms in Kenya.

### **5.2.1 Cost of insurance and financial performance of manufacturing firms in Kenya.**

The results depict a positive and significant relationship between the cost of insurance and the return on assets. A unit increase in insurance therefore leads to an increase in ROA by 0.64 units. We therefore reject the hypothesis that Cost of insurance does not have a significant effect on financial performance of manufacturing firms in Kenya. These results agree with previous studies conducted by Kagwathi, Kamau, Njau and Kamau (2014) who found insurance expenditure has an impact on the financial performance of an entity. The results however disagree with the study by Kimball (2000) that risk mitigation cost through insurance is insignificant to the financial performance of a firm. Manufacturing firms listed in the Nairobi securities exchange should therefore invest in insuring their assets as it has a positive impact on their financial performance. Therefore, firms should take insurance not only so that they can be compensated in case of a loss but also to give them more latitude in making investment and financial decisions. With insurance in place managers can engage in riskier projects that will also give higher returns without fear of loss. Insurance gives investors comfort since they are assured that their investment is secured and that they are well covered and sure of a compensation in case of loss.

### **5.2.2 Cost of security and financial performance of manufacturing firms in Kenya.**

The results of this study showed that security cost is insignificant to the ROA of the firms since the p-value is greater than 5%. We therefore fail to reject the null hypothesis and conclude that cost of security does not have a significant effect on financial performance of manufacturing firms in Kenya. The results support Gossy (2008) who also found out that security cost does not have a significant effect on financial performance of firms. However, it is important to note that although security was not found to be a significant variable independently, its contribution in the significance of the entire model cannot be ignored and hence it is an important part of risk mitigation that should be given the same attention as the other two risk mitigation costs. Firms must improve the level of security of their firms for security and safety purposes and not necessarily for improvement in financial performance.

### **5.2.3 Cost of audit and financial performance of manufacturing firms in Kenya.**

The results depict positive and significant impact of audit cost on the return on assets. A unit increase in audit cost results in the increase of ROA by 0.60 units. We therefore reject the null hypothesis and conclude that Cost of audit has a significant effect on financial performance of manufacturing firms in Kenya. This study agrees with Eighme and Cashell (2002) who established that there was a positive and significant effect of cost of audit and financial performance of firms listed on the stock market. This may be due to the level of confidence with the stakeholders who include the customers, suppliers, creditors and even shareholders as a result of proper audit investigations and reports that assures effective risk management of the firms. In general, the study therefore conclude that risk mitigation cost of manufacturing firms has an impact on their financial performance.



### **5.3 Recommendations of the Study**

Based on the findings and conclusions of the study we therefore recommend that the manufacturing firms should consider risk mitigation cost in their budget planning. Of much importance is the cost of insurance and audit exercises in the firms.

The firms must seek the most optimal insurance services to cover the risk of the firms as this improves the level of confidence of the stakeholders about the future uncertainties of the firm.

The manufacturing firm has a high risk exposure and thus need a comprehensive insurance plan to appeal to the service providers and also the staff of the firms.

We also recommend that the manufacturing firms listed on the NSE should consider highly the auditors they have chosen to audit their books. Audit exercises whether internal or external help to identify the risk exposure of institutions. The audit reports also communicate the authenticity of the financial reports prepared and presented by the directors of the firm. These reports also identify areas of improvement to the management. The stakeholders of firms consider the credibility of auditors while looking at a firm. The more credible the audit firm is, the higher the reliability of the reports of institutions. These enhances the level of business agreement and negotiations with external parties which in turn improves on cost management in other areas. We appreciate that credible audit firms charge a premium for their service. The cost may also be higher as a result of the establishment and enhancement of internal audit services and external audit services for the firms.

Finally, while there is need to improve the security of the firms we conclude that this does not necessarily improve their performance. We however recommend that firms must improve the level of security of their firms for security and safety purposes and not necessarily for improvement in financial performance.

#### **5.4 Recommendations for Further Studies**

This study focused only on the impact of risk mitigation cost on the financial performance of manufacturing firms listed on the NSE. We recommend the study to be extended on other industries and probably all the firms listed so as to share a general risk management guideline to the commercial enterprises.

The study also focused on only three risk mitigation cost. Further studies can look at other risk management methods. The risk mitigation plans factored were only operational. Further studies should also consider financial and governance risk management techniques in determination of the level of impact.

Further studies should also consider use of primary data collected through interviews and questionnaires as the main implementers of risk management plans would give their feedback and be actively engaged in performance improvement of their firms.

#### **5.5 Limitation of the Study**

Data used for the analysis of this study was limited to availability of detailed financial reports available to the Nairobi Securities Exchange. This is because it relied on secondary data which is the published financial reports of the listed firms. Most of this reports only provide summarized information on operational expenditures and therefore the line items of risk management may not be available.

The study was also limited to the manufacturing listed firms on the Nairobi Securities Exchange in Kenya. Firms not in this sector were not considered in the data collection and analysis. We also note that firms not listed on the Nairobi Securities Exchange in Kenya were not considered.

## REFERENCES

- Adelopo, I., Jallow, K., and Scott, P.(2009). Multiple large shareholders, audit committee activity and audit fees.
- Allen, F., and Carletti, E. (2011). Systemic Risk and Macroprudential Regulation. Pennsylvania, USA: University of Pennsylvania and European University Institute.
- Alquier, B., and Lagasse, T., (2006). Risk management in small-medium sized enterprises. *African Journal of Business Management*, 17:273-282.
- Ayiekoh Y., (2006). Banking Industry Associated Risks and Mitigation Strategies- University of Nairobi.
- Azende, T., (2012). Risk management and Insurance of small and medium scale enterprises (SMEs) in Nigeria. *International Journal of Finance and Accounting*, 1(1), 8-17.
- Beck, U., (1992). *Risk Society: Towards a New Modernity*, (sage, 260 pp)
- Blumenstein, H., J., (2000). “*The changing Nature of Risk and the Challenges to Sound Risk Management in the new global financial Landscape*”: *Financial Market Trends*. March, 174 – 194
- Brucaite, V. and Yan, V. (2000): *Financial Risk Management – Case Studies with SKF and Elof Harrison*; Unpublished Maters Thesis.
- Chandra P., (2002): *Investment Analysis and Portfolio Management*. McGraw-Hill. Tata
- Crabb, P., R., (2003). *Financial Risk Management: The Big and the Small*. Nampa: Northwest Nazarene University.
- Donald, M., and Carl, L., (1998). The dynamics of micro and small enterprises in developing countries, *World Development*, 26: 61-74
- Douglas, M., and Wildavsky, A., (1982). *Risk and Culture*: University of California Press, Berkeley.
- Dowd, K. (1998): “Beyond value at Risk. John Wiley and Sons. NY.
- Gossy, G. (2008) *A Stakeholder Rationale for Risk Management: Implications for Corporate Finance Decisions*, Google Books.
- Hinson, D and Kowalski, L (2008). *Roles and Responsibilities for Contingency Planning*. London: UCL Press
- Ho, S., and Hutchinson, M.(2010). Internal audit department characteristics/activities and audit fees: some evidence from Hong Kong firms. *Journal of International Accounting, Auditing and Taxation*, 19(2),121-136.

- Hosna, A. Bakaeva M. and Juanjuan S. (2009). Credit Risk Management and Profitability in Commercial Banks in Sweden, Maser degree project, school of business, economics and law, Goteborg University
- Irukwu, J. O. (1991). Risk Management in Developing Countries. Witherby and Company Limited, London
- Islam MA (2008) Risk management in small and medium-sized manufacturing organization in New Zealand, PhD Thesis, Department of Mechanical Engineering. The University of Auckland
- Kioko, K.T. (2008) A Survey Of Credit Risk Management Techniques Of Unsecured Bank Loans of Commercial Banks in Kenya, Unpublished MBA Project, University of Nairobi.
- Doering H.U (2003) Operational Risk in Financial Services, Report, April FSA 2000.
- Kipchirchir, D.T. (2008) Foreign Exchange Risk Management Practices: A Survey of Motor Vehicle Industry In Kenya, Unpublished MBA Project, University of Nairobi.
- Klimczak, K. M., Ph.D.(2007). Risk Management Theory: A comprehensive empirical assessment, MPRA Warsaw
- Lifschutz, S.(2010). Corporate governance characteristics and external audit fees: a study of large public companies in Israel. International Journal of Business and Management, 5(3),109-116.
- Marx, J. Mporfu, R. and Venter G. V. (2003). Investment Management Van Schaik, Pretoria
- Monica PB, John RW (1999). HEDOMS -Human errors and disturbance occurrence in manufacturing systems: toward the development of an analytical framework. Human Factors and Ergonomics in Manufacturing 9(1):87–104
- Mugenda, O. M., and Mugenda, A. G. (2008). Research Methods: Quantitative and Qualitative Approaches. Nairobi, Kenya: ACID Press.
- Mugenda, O.M. and Mugenda, A.G. (1999), Research Methods: Quantitative and Qualitative Approaches. Nairobi: ACTS Press.
- Murphy, E. V. (2012). What Is Systemic Risk? Does It Apply to Recent JP Morgan Losses? . Washington: Congressional Research Service.
- Muthee, J. G. (2010). The Relationship Between Credit Risk Management and Profitability; A Study of Commercial Banks in Kenya Unpublished MBA Project University of Nairobi
- Mwangi, A. K. (2010). The Effect of Risk Management Practices on the Financial Performance of Commercial Banks in Kenya Unpublished MBA Project University of Nairobi
- Ngare, E.M. (2008) A Survey Of Credit Risk Management Practices By Commercial Banks In Kenya, Unpublished MBA Project, University of Nairobi

- Niemi, L.(2005). Audit effort and fees under concentrated client ownership: evidence from four international audit firms. *The International Journal of Accounting*, 40(4),303-323.
- Rejda, E., G. (2003), "Principles of Risk management and Insurances", New York, Pearson Education Inc.
- Searle, I. (2008). *Enterprise Risk Management*. London: Spiramus Press.,
- Shojai, S. (1999). *Determinants of banks operational risk and losses: A Global Perspective (2nd)*. New York, USA: Praeger Publishers.
- Smaga, P. (2014). The concept of systemic risk. *Economic and Social Research Council , Special Paper Series (5)*, 1-26.
- Sorescu, A. B., and Spanjol, J. (2008). Innovation's Effect on Firm Value and Risk: Insights from Consumer Packaged Goods. *Journal of Marketing , 72 (2)*, 114-132.
- Tseng, C. (2007). *Internal Control, Enterprise Risk Management, and Firm Performance*. Unpublished PhD Dissertation. Department of Accounting and Information Assurance. Robert H. Smith School of Business.
- Vafeas, N., and Waegelein, J. F.(2007). The association between audit committees, compensation incentives, and corporate audit fees. *Review of Quantitative Finance and Accounting*, 28(3),241-255.

## APPENDICES

### APPENDIX I: Data collection instrument

Name of Firm:

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cost of Insurance															
Cost of Security															
Cost of Audit															
Liquidity															
Financial Performance( Net Income/Total Assets)															

## APPENDIX II: Research Population

### Manufacturing Firms listed at the NSE

1. British Oxygen Company Kenya Ltd
2. British American Tobacco Kenya Ltd
3. Carbacid Investments Ltd
4. East African Breweries Ltd
5. Mumias Sugar Company Ltd
6. Unga Group Ltd
7. Eveready East Africa Ltd
8. Kenya Orchards Ltd
9. A.Baumann Company Ltd
10. Flame Tree Group Holdings Ltd

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