The Effect of Risk Management on Performance of Investment Firms in Kenya

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Abstract

Several empirical studies that have examined the effect of risk management on firm's value but the findings are contradictory. Some studies have found a positive effect while others report a negative effect. Yet, others do not find any effect at all. Therefore, the objective of this study is to contribute to this ongoing debate by applying Systems theory and systems thing to examine the effect of risk management process on the value of investment firms in Kenya.

Using a descriptive research design, the study surveyed 26 investment firms at the Nairobi Securities Exchange to illuminate the nexus between risk management and firm value. The results showed that risk identification tools such as audit, examination of employee experience, SWOT analysis, interviews, focus groups, judgment, and process analysis have a significant influence on firm's performance. However, SWOT analysis and judgment have a statistically strong and negative influence on firm's performance. The results also indicated that risk analysis and assessment tools such as qualitative methods, evaluation of existing controls, and risk prioritization have a

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significant influence on firm's performance. However, risk prioritization has a statistically strong and negative influence on firm's performance.

The results also showed that use of quantitative methods and risk prioritization has no significant effect on firm's performance. This suggests that risk prioritization either has no effect or has a negative effect on firm's performance. The analysis further showed that risk monitoring has no statistically significant effect on financial performance. The organization of risk management has a statistically positive significant effect on financial performance. This is achieved by linking risk management and strategic objectives. The results further demonstrated that risk management tools have no statistically significant relationship with financial performance. Analysis of the effect of responsibility for risk management revealed that the role of the Board of Directors, the Director of Finance, the Internal Auditor, the Risk Manager and all staff have a statistically significant relationship with financial performance.

This relationship is the strongest when all staff members in the firm are involved in risk management but negative when only the Director of Finance is involved. Overall, the process of risk management has a statistically significant relationship with financial performance. Specifically, risk identification (especially the role of the Risk manager and the performance of the SWOT Analysis) and risk analysis as well as assessment (especially evaluation of existing controls and risk management responses) significantly affect the firm's financial performance. This relationship is the strongest and negative when SWOT analysis is applied in risk management.

Introduction

Risk Management refers to the process of identifying loss exposures faced by an organization and selecting the most appropriate techniques for treating these particular exposures effectively (Rejda, 2003). Risk and risk management have become common features of an organization in both

private and public sectors. There is a great deal of attention to risk in academic circle, in industry, in the profession and in the media (Scheytt *et. al*., 2006). Recent world events including the global financial crisis, the financial crisis facing the Euro zone, the Japanese earthquake and tsunami, the floods in Thailand and the Deepwater Horizon oil spill in the Gulf of Mexico have all reinforced as well as intensified interest in risk as well as risk management in the private and the public sectors (Scheytt *et. al*., 2006).

Neely, Gregory and Platts (2002) describe performance measurement as the process of quantifying action where measurement is the process of quantification and action correlates with performance. According to Atkinson and colleagues (1997), performance measurement should help the economic entity to understand and assess the value received from suppliers as well as employees, the value provided by stakeholders and effectiveness of processes implemented in the economic entity together with its strategic properties. Therefore, performance measurement plays the role of coordination, monitoring and diagnosis of an economic entity's activities.

The perception of risk management and organization practices is growing due to two main factors. First, an increased interest in corporate governance and a focus by Boards of Directors on identifying, assessing, treating and monitoring risks as well as evaluating effectiveness of management control to manage risks. Second, a trend towards world-wide government regulation utilizing risk-based regulatory approaches that focus on tighter internal control mechanisms, such as the Sarbanes-Oxley Act of 2002, COSO and the adoption of ISO 31000 as the international risk management standard. In addition, several other factors may be identified as motivating recent levels of interest in market risk. Foremost among these is the increased variety, complexity and volume of trade in financial instruments as well as derivatives (Frain and Meegan, 1996).

While most financial institutions are particularly proficient at measuring returns and constructing benchmarks to evaluate performance, it is argued that such expertise does not extend to measurement of risk (JP Morgan, 1996). However, it is a universally accepted precept of modern financial economics that efficient portfolios can yield higher returns only at the expense of higher risk. Therefore, performance analysis based solely on realized returns belies this very fundamental economic principle and is, therefore, incomplete. This study applied Systems Theory to analyze the effect of risk management on firm's performance. Systems theory provides a more comprehensive and realistic perspective to the problem of managing risk in firms to impact on firm's value than previous frameworks that have been suggested like contingency theory.

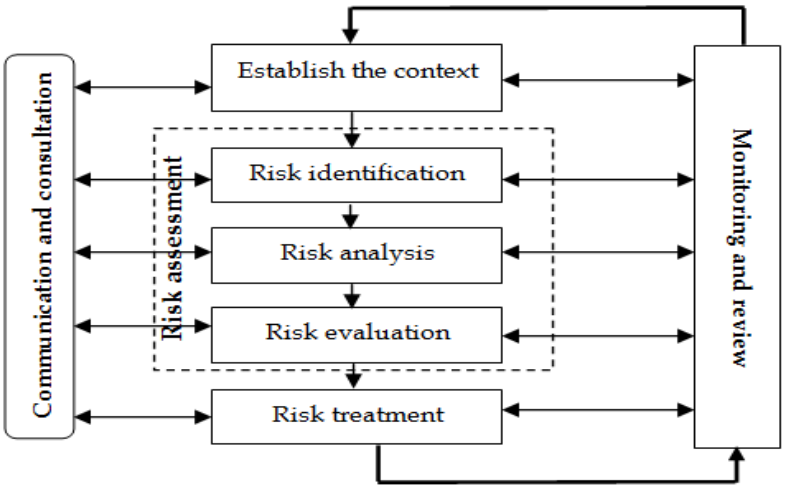
Risk Management Process

Schwalbe (2009) defines risk management within the context of a project as the art and science of identifying, analyzing and responding to risk throughout project duration with the aim of meeting project objectives. An increasingly popular and understandable way of measuring and managing risk is by using the Value at Risk method or VaR. VaR defines risk as the worst possible loss under normal market conditions for a given time horizon (Grinblatt and Titman, 2001). According to Biglova and colleagues (2004), this risk measurement technique is simple to handle since it provides a risk measure by a single variable.

According to Kritzman and Rich (2002), investors are generally exposed to far greater risks during the investment than on the actual end date. The most important risks are interest rate risk, foreign exchange rate risk, liquidity risk and commodity risk. Investors often measure the outcome, positive or negative, on the expiring date of the investment. Therefore, the focus should shift from the end period measurement and focus on the risk during the whole holding period so that losses during entire time would not affect

the terminal investment. This calls for a process view of risk management. The process view encompasses establishing the risk context, risk identification, risk analysis and evaluation, risk monitoring, risk reporting, risk control and review.

Figure 1. *Components of the Risk Management Process in the Firm*



Enterprise risk management consists of eight interrelated components that are derived from the way management runs an enterprise and are integrated with the management process (COSO, 2004:4). These components are internal environment and objective setting, risk identification, risk analysis and evaluation, risk treatment – risk response and control activities, and monitoring and review. They are presented below according to COSO (2004: 4).

The internal environment encompasses the tone of an organization, and sets the basis for how risk is viewed as well as addressed by an entity's people, including risk management philosophy and risk appetite, integrity

and ethical values together with the environment in which they operate. Objectives must exist before management can identify potential events affecting their achievement. Enterprise risk management ensures that management has instituted a process to set objectives and that the chosen objectives support as well as align with the entity's mission and are consistent with its risk appetite.

Risk identification involves isolating internal and external events affecting achievement of an entity's objectives, distinguishing between risks and opportunities. Opportunities are channeled back to management's strategy or objective-setting processes. Risk assessment involves analyzing risks, considering likelihood and impact as a basis for determining how they should be managed. Risks are assessed on an inherent and a residual basis. Risk response is the way management selects risk postures such as avoiding, accepting, reducing or sharing risk and developing a set of actions to align risks with the entity's risk tolerances and risk appetite.

Control activities involve the way policies and procedures are established as well as implemented to help ensure that risk responses are effectively carried out. In another vein, information and communication deal with how relevant information is identified, captured, and communicated in a form and timeframe that enable people to carry out their responsibilities. Effective communication also occurs in a broader sense, flowing down, across and up the entity. Lastly, the entire enterprise risk management endeavour is monitored and modifications are made as necessary. Monitoring is accomplished through ongoing management activities, separate evaluations or both.

However, it is important to note that Enterprise risk management is not strictly a serial process, where one component affects only the next. It is a multidirectional, iterative process in which almost any component can and influences on another (COSO, 2004: 4).

Risk analysis is an activity geared towards assessing and analyzing system risks. Risk analysis can be conducted on a scheduled, event-driven or as needed basis. Risk analysis can be implemented as an iterative process

where pieces of information collected and analyzed during previous assessments are fed forward into future risk analysis efforts (US Department of Homeland Security, 2005). According to Ritter (2005), Sensitivity Analysis seeks to place a value on the effect of change of a single variable within a project by analyzing that effect on the project plan. It is the simplest form of risk analysis and management. Uncertainty and risk are reflected by defining a likely range of variation for each component of the original base case estimate. In practice, such an analysis is only done for variables, which have a high impact on cost, time or economic return, and to which the project is the most sensitive. Another method of risk analysis is probability analysis, which overcomes limitations of sensitivity analysis by specifying a probability distribution for each variable, and then considering situations where any or all of these variables can be changed at the same time (Ritter, 2009).

According to Schwalbe (2007), risk response and control involve reacting to identified and residual risks, carrying out risk response plans and evaluating effectiveness of the strategies throughout the project life. It also involves taking steps to enhance opportunities and reduce threats from meeting project objectives. Multiple risk control measures may be used to implement a given technique. Risk control goals are designed to support the risk management program goals, which, in turn, support the individual or organization's goals. To that end, risk control techniques must be effective and efficient, comply with legal requirements, assist in promoting life safety, and ensure that a business can retain continuity during and immediately following a loss (Schwalbe, 2007).

Firm's Performance

Accounting-based indicators are generally used to measure firm's performance (Sher & Yang, 2005, p. 5). Stock brokers as well as investors and financial analysts regularly use them to measure the firm's performance. Hence, these indicators have been considered as the most important criteria

to better measure firm's performance (Sher & Yang, 2005, p. 5). In addition, they are reliable, permitting objectivity when measuring and comparing the performance of different firms. However, other non-financial indicators such as customer profile, customer satisfaction, performance of a firm's employees, satisfaction of a firm ìs employees, quality of a firm ìs products and services are other indicators that are used to measure firm ìs performance (Kaplan and Norton, 1992). In this perspective, Kaplan and Norton (1996) developed a model known as the Kaplan and Norton ìs Balanced Scorecard (BSC) to measure firm ìs performance, incorporating financial and non-financial indicators.

The Financial Perspective advocates use of financial or accounting-based indicators such as Return on Capital Employed (ROCE), Return on Assets (ROA), Net Assets Value (NAV) and Earnings per Share (EPS) to measure firm's performance (Wood & Sangster, 2002). The financial perspective was adopted in this study. Net Asset Value (NAV) was utilized in the study because it represents the value of total equity or it may be divided by the number of shares outstanding held by investors thereby representing the net asset value per share. It is given by the value of a firm's assets less the value of its liabilities. This may also be the same as the book value or the equity value of a business.

Accounting-based indicators are useful tools to help determine whether or not a firm is performing satisfactorily when compared to its competitors. They are also used to measure the performance of a firm ìs management, to determine whether or not a firm may be worth an investment opportunity as well as to evaluate the firm's performance relative to its competitors (Wood & Sangster, 2002, p. 368). Moreover, accounting-based indicators have been considered useful in several other ways or for several other purposes. For instance, (1) they are useful when assessing the ability of a firm to pay its debts, (2) they are useful when evaluating a firm's managerial success and (3) they are useful when assessing a firm ìs ability to comply

with statutory regulations. Accounting-based indicators also permit the firm's performance to be measured generally in terms of its physical volume such as its revenue, its profits as well as its value added (Mahato, 2011, p. 54). Nonetheless, different groups of stakeholders use different categories of accounting-based indicators to measure firm ìs performance.

Risk Management Process and Financial Performance

An important and highly debated topic in corporate finance is whether or not active risk-management policies affect firm's value. Conceptually, the seminal work of Modigliani and Miller (1958) has long shown that in a frictionless setting, hedging is irrelevant for value. This invariance result, however, stands in sharp contrast to the prominence of risk management in practice, and rapid growth in financial innovation (Miller, 1986; Tufano, 2003). Studies on the relationship between risk management and financial performance of banks mostly have been conceptual in nature, often drawing a theoretical link between good risk management practices and improved bank performance. Schroeck (2002) as well as Nocco and Stulz (2006) stress the importance of good risk management practices to maximize firms' value. In particular, Nocco and Stulz (2006) suggest that an effective enterprise risk management (ERM) gives a long-run competitive advantage to the firm (or banks) compared to entities that manage and monitor risks individually.

Therefore, it is here suggested that companies manage risks strategically by viewing all risks together within a coordinated manner, that is, the process view of risk management. In relation to this, Stulz (1996) associated good risk management practices with elimination of costly lower-tail outcomes by proposing "full-cover" risk management compared to "selective" risk management. Stulz (1996) suggested that prudent risk management is important in reducing bankruptcy costs and taxes.

Finance theory suggests that risk management can increase the firm's value by addressing so called corporate "under investment problem." The basic idea is that by hedging financial risk with derivatives, companies reduce the variability of their cash flow thereby ensuring that they will have sufficient funds to undertake all promising projects. This idea was supported by a leading theoretical study by Froot, Scharfstein, and Stein (1993), which demonstrated that when costs of external capital include deadweight costs, companies that require outside financing will under-invest when internal operating cash flows are low.

One sure way for organizations to understand the value of the process view of risk management is to link it with their Performance Management System (PMS). Acharyya (2007) in a study of CFOs by IBM Global Business Services in 2008 revealed that only 29 percent of organizations aligned risk with performance. Therefore, there is still much room for improvement by aligning PMS with ERM in an organization. When ERM and PMS are linked, the value of an ERM framework can be effectively and efficiently understood within an organization. In other words, if ERM framework would be integrated with an organization's PMS, the ERM framework would definitely enhance shareholders' value. Only when organizations understand that ERM framework is adding value to the company, they would be motivated to invest more resources in ERM framework implementation in order to drive strategic decisions for meeting organizational objectives and maximizing long-term shareholder value (Acharyya, 2007).

Investment Industry in Kenya

The Nairobi Stock Exchange (NSE) was founded in 1954 and has become an essential market, playing a vital role in economic prosperity by fostering capital formation and sustaining economic growth. Stock markets are more

than a place to trade securities. They operate as a facilitator between savers and users of capital by means of pooling funds, sharing risk and transferring wealth. Stock markets are essential for economic growth because they facilitate flow of resources to the most productive investment opportunities. In other words, they help in terms of efficient allocation of credit in the economy. Demirguc-Kunt and Levine (1996a, b), Singh (1997) as well as Levine and Zervos (1998) found out that stock market growth plays an important role in predicating future economic growth in situations where the stock markets are active.

Individuals involved in investment banking in Kenya may do so via the Nairobi Stock Exchange (N.S.E). Players in the investment industry are governed by the NSE rules, Capital Markets Authority (CMA) rules, Central Bank of Kenya's Prudential Regulations, Retirement Benefits Authority (RBA) rules and the Insurance Act. The players include companies listed under the investment segment of the Main Market Segment and Growth and Enterprise Segment of the NSE, Institutional investors like pension funds, fund managers, insurance companies, high net worth investors and credit scoring companies. The stock exchange provides a platform for various players to perform effective risk management through use of tools such as Credit Scores, which tries to assist this decision by finding out what would have been the best rule to apply on a sample of previous applicants. This is the basis for credit scoring approach where a decision to accept or reject an application is made (Thomas *et. al*., 2002). Credit scoring allows for case by case risk management assessment when appraising a loan application. Therefore, it refers to use of statistical models to transform relevant data into numerical measures that guide credit decisions. It is referred to as the industrialization of trust (Anderson, 2007). Credit scoring has been championed, worldwide, to be a better means for evaluating a creditworthy borrower compared to traditional methods of risk assessment.

Use of derivatives in corporate risk management has grown rapidly in recent years, fueled, in part, by success of the financial industry in creating a variety of over-the-counter and exchange-traded products (Biglove *et. al*., 2004). A 1995 survey of major non-financial firms revealed that at least 70 percent were using some form of financial engineering to manage interest rate, foreign exchange or commodity price risk (Wharton-Chase, 1995). Although types of risks confronting managers vary across industries, there is substantial commonality in the underlying rationale for use of derivatives and financial engineering techniques that are employed.

Research Problem

Perhaps, the most important and highly debated issue in corporate finance is whether or not active risk-management policies affect the firm's value. Recall, Modigliani and Miller (1958) have long shown that in a frictionless setting, hedging is irrelevant for value. However, this argument stands in sharp contrast to prominence of risk management in practice and the rapid growth in financial innovation (Miller, 1986; Tufano, 2003). Studies on the relationship between risk management and financial performance of banks mostly have been conceptual in nature, often drawing the theoretical link between good risk management practices and improved bank performance. These studies emphasize on the importance of good risk management practices to maximize firms' value (Schroeck, 2002; Nocco and Stulz, 2006). In particular, Nocco and Stulz (2006) suggest that an effective enterprise risk management (ERM) gives a long-run competitive advantage to the firm (or banks) compared to firms that manage and monitor risks individually.

Finance theory suggests that businesses facing large exposures to interest rates, exchange rates or commodity price risk can increase their market values by using derivative securities to manage their risk exposures (Stultz,

1996). Such theories emphasize on the role of derivatives in reducing variability of business cash flows and subsequent reduction in costs associated with financial distress (Stultz, 1996). However, corporate use of derivatives does not seem to correspond closely to the theory and is criticized. Use of derivatives is not always beneficial. A hedged position can become un-hedged at the worst times, inflicting substantial losses on those who mistakenly believe that their risk exposure is covered (Rajan, 2006). At a minimum, whether or not hedging adds value appears to depend on types of risk to which a firm is exposed (Smithson *et. al*, 2005).

In Kenya, market risk exposure is a real issue. An examination of annual reports of companies listed at the NSE shows that a number of them have had their values eroded because of market risk (Mwangi, 2003; Diffu, 2011). Diffu (2011) in her study of the relationship between foreign exchange risk management and financial performance reports that Kenya Airways suffered losses at the end of 2009 due to failure to hedge its foreign exchange risk. Mwangi's (2003) survey on hedging practices against interest risks in commercial banks in Kenya revealed that all, except one bank, have a hedging program in place comprising Forward Rate Agreements (FRAs), Interest Rate Swaps, Cross Currency Swaps and Swap options. No bank in Kenya had either Floors and caps or Interest rate collars as hedging tools. It was further found out that in Kenya, the primary commercial motives that motivate banks to institute a hedging program are reduction of financial distress, increasing competitive advantage, increasing internal contracting capacity and the desire to comply with the corporate bank investment policy. Therefore, it is important to accumulate evidence that risk management increases firm's value.

Hoyt, Moore and Liebenberg (2008) examined the effect of ERM on firm's performance in the Insurance industry in the U.S. and found that ERM has got a positive effect on firm's value. Bertinetti, Cavezzali and Gardenal (2013) also showed that adoption of ERM has a positive impact

on firm's value among financial and non-financial firms in Europe. However, Pagach and Warr (2010) found that ERM has got no impact on firm's value. Sekerci (2011) analyzed the impact of ERM adoption on firm's value in NORDIC countries and found that ERM adds no value to the firms. Nickmanesh and co-workers (2013) found that ERM has a negative and statistically significant impact on firm's value in Malaysia. Logue (1995) and Chowdhry as well as Howe (1999) argued that operating exposure cannot be effectively managed using financial hedges. Instead, they (*ibid*.) suggested that long-term strategy adjustments (i.e., operational hedges) are the most effective ways of managing long-run operating exposure. Other studies like by Copeland and Joshi (1996) found that foreign exchange risk management programs may cause more harm than good. Their (*ibid*.) study of nearly two hundred large companies yielded enough evidence to cast serious doubt about economic benefits of foreign exchange hedging programs. Given scarce management time and substantial amount of capital currently devoted to hedging, it is clear that many programs diminish value instead of creating it (Copeland and Joshi, 1996). Fok and co-authors (1997) reported that although the primary purpose of hedging is to reduce earnings' volatility, it may also increase the firm's value. Their (*ibid*.) study showed that hedging reduces the probability of financial distress, agency costs of debt and costs of equity. Apparently, empirical evidence shows that the effect of risk management on firm's performance is mixed.

Therefore, it is argued that companies should manage risks strategically by viewing all risks together within a coordinated manner, that is, the process view of risk management. Indeed, empirical studies like that by Stulz (1996) associate good risk management practices with elimination of costly lower-tail outcomes by proposing "full-cover" risk management compared to "selective" risk management. Stulz (1996) also showed that prudent risks management is important in reducing bankruptcy costs and taxes. Thus, managing risk should not be limited solely to finding accurate tools and

generating precise results as being a significant step to risk management. But risk management should adopt a process view in order to incorporate the externalities of risk management techniques that are the fundamental reasons behind its positive effects (Millo & MacKenzie, 2009). All these techniques have one very important effect in common, to start the process of thinking about risk and risk management. Whereas previous studies in Kenya have enumerated various risk management strategies adopted by firms, no study has focused on the effect of the risk management process on firm's performance. Therefore, this study sought to answer the question, "What is the effect of risk management process on performance of investment firms in Kenya?"

Objective of the Study

The objective of the study was to determine the effect of risk management process on performance of investment firms in Kenya.

Theoretical Literature Review

This section presents theoretical literature on ERM theory that underpins this study. The theories were borrowed from Engineering discipline that studies safety and accidents in engineering situations (WZSETC, n.d). There are several major theories concerning cause(s) of accidents, each of which can be used to explain and predict risk within the firm. They include the following: The Domino Theory developed by H. W. Heinrich; Human Factors Theory; Accident/Incident Theory; Epidemiological Theory; Systems Theory; The Energy Release Theory developed by Dr. William Haddon, Juniour; Behaviour Theory; and the combined Theory of Accidents. Accident theories guide safety investigations (WZSETC, n.d). They describe the scope of an investigation.

Heinrich's Domino Theory

This theory was first put forward by H.W. Heinrich in 1932, as the first scientific approach to accident prevention (WZSETC, n.d). The Domino Theory was prominent from the 1950s to the 1980s and speculated that if one country in a region came under influence of communism then, the surrounding countries would follow in a domino effect. The Domino Theory was used by successive United States of America administrations during the Cold War to justify the need for American intervention around the world.

According to Heinrich, an "accident" is one factor in a sequence that may lead to an injury (WZSETC, n.d). Factors can be visualized as a series of dominoes standing on edge such that when one falls, linkage required for a chain reaction is completed. Each of the factors is dependent on the preceding factor. Heinrich's dominoes process can be summarized as follows (WZSETC, n.d):

1. A personal injury (the final domino) occurs only as a result of an accident;
2. An accident occurs only as a result of a personal or mechanical hazard;
3. Personal and mechanical hazards exist only through fault of careless persons or poorly designed or improperly maintained equipment;
4. Faults of persons are inherited or acquired as a result of their social environment or acquired by ancestry; and
5. The environment is where and how a person was raised as well as educated.

According to Heinrich's Domino Theory, the following are critical issues in accident prevention (WZSETC, n.d.): First, the factor preceding the accident (an unsafe act or mechanical or physical hazard) and it should

receive the most attention. Second, Heinrich felt that a person responsible at a company for loss control should be interested in all five factors, but should be concerned primarily with accidents and proximate causes of those accidents. Third, Heinrich also emphasized that accidents, not injuries or property damage, should be the point of attack. He viewed an accident as any unplanned, uncontrolled event that could result in personal injury or property damage. For example, if a person slips and falls, an injury may or may not result, but an accident has taken place.

Heinrich's Domino Theory proposes a corrective action sequence consisting of the 3Es – Engineering, Education and Enforcement (WZSETC, n.d). Engineering controls hazards through product design or process change. Education trains workers regarding all facets of safety. It also impresses on management the fact that attention to safety pays off. Enforcement insures that internal and external rules, regulations and standard operating procedures are followed by workers as well as management.

Human Factors Theory

Heinrich proposed his model in terms of a single domino leading to an accident. The premise here is that human errors cause accidents (WZSETC, n.d). The errors are categorized broadly as overload, inappropriate workers' response(s) and inappropriate activities.

Overload occurs when the work task is beyond the worker's capability (WZSETC, n.d). This includes physical and psychological factors. Overload is influenced by environmental factors, internal factors, and situational factors. Inappropriate workers' responses to hazards and safety measures (worker's fault) as well as to incompatible work station(s) (management, environment faults) lead to accidents. Inappropriate activities due to lack of training and misjudgment of risk also cause accidents. But the structure of this theory is still a cause/effect format (WZSETC, n.d).

Accident/Incident Theory

This theory is an extension of human factors theory. It introduces ergonomic traps, decision to err and systems failure as new elements (WZSETC, n.d). Ergonomic traps are incompatible work stations, tools or expectations. They result from management failure. Decision to err can be unconscious or conscious. Thus, it is caused by personal failure. Systems failure is consequence of management failure. This can arise from poor policies, lack or poor training or lack of education (WZSETC, n.d).

In this theory, overload, ergonomic traps or a decision to err lead to human errors (WZSETC, n.d). The decision to err may be conscious and based on logic or it may be unconscious. A variety of pressures such as deadlines, peer pressure and budget factors can lead to unsafe behaviours. Another factor that can influence such a decision is the "It won't happen to me" syndrome.

The systems failure component is an important contribution of Petersen's theory. First, it shows the potential for a causal relationship between management decisions or management behaviour and risk. Second, it establishes management's role in risk prevention as well as broader concepts of risk management and firm value(WZSETC, n.d).

The following are some examples of different ways that systems can fail, according to Petersen's theory (WZSETC, n.d): First, management does not establish a comprehensive safety policy. Second, responsibility and authority with regard to safety are not clearly defined. Third, safety procedures such as measurement, inspection, correction and investigation are ignored or given insufficient attention. Fourth, employees do not receive proper orientation. Lastly, employees are not given sufficient safety training.

Epidemiological Theory

Epidemiology is the study of the relationship between environmental factors and diseases. In this study, risk is viewed as an organizational malady or "disease." Therefore, this theory can be used to study causal factors in a

relationship between risk management and firm's performance (WZSETC, n.d). There are two key components in this theory relevant to the study of risk and risk management, predisposing characteristics and situational characteristics (WZSETC, n.d). Predisposition characteristics are tendencies that may predispose a worker to certain actions. Situational characteristics include peer pressure, poor attitude and risk taking. Together these characteristics can cause or prevent risks that a person predisposed to a given situation or condition may succumb to.

In summary, traditional chain-of-events accident causality models explain risks in terms of multiple events, sequenced as forward chain over time. Events linked together by direct relationships ignore indirect relationships. Events almost always involve component failure, human error or energy-related events. Causality models form the basis for most safety-engineering and reliability engineering analyses and/or designs and can be a good basis for studying the effect of risk management on firm's performance.

The main limitations of event-chain causality models are as follows (WZSETC, n.d): First, they neglect social and organizational factors. Second, they do not adequately account for human error. Third, one cannot simply and effectively model human behaviour by decomposing it into individual decisions and actions. One cannot study human error in isolation from physical and social context; value system in which behaviours take place; and dynamic work process. Fourth, they neglect adaptation. Fifth, major accidents involve systematic migration of organizational behaviour to higher levels of risk.

Systems Theory

A *system* is a group of regularly interacting and interrelated components that together form a unified whole. This definition is the basis for the systems theory of accident causation. Thes theory views a situation in which an accident may occur as a system comprised of the following components:

person (host), machine (agency), and environment. The likelihood of an accident occurring is determined by how these components interact. Changes in patterns of interaction can increase or reduce the probability of an accident (WZSETC, n.d). For example, an experienced employee who operates a numerically controlled five axis machining centre in a shop environment may take a two-week vacation. Here, temporary replacement may be less experienced. This change in one component of the system (person/host) increases the probability of an accident. Such a simple example is easily understood. However, not all changes in patterns of interaction are this simple. Some are so subtle that their analysis may require a team of people, each with a different type of expertise.

Primary components of the systems model are the person/machine/environment, information, decisions, risks and the task to be performed (WZSETC, n.d). Each of the components has a bearing on the probability that an accident will occur. As this model shows, even as a person interacts with a machine within an environment, three activities take place between the system and the task to be performed. Every time a task must be performed, there is the risk that an accident may occur. Sometimes, the risks are great, at other times, they are small. This is where information collection and decision-making come in (WZSETC, n.d).

Based on information that has been collected by observing and mentally noting the current circumstances, the person weighs risks and decides whether or not to perform the task under existing circumstances (WZSETC, n.d). For example, say, a machine operator is working on a rush order that is behind schedule. An important safety device has malfunctioned on his machine. Simply taking it off will interrupt work for only five minutes, but it will also increase the probability of an accident (WZSETC, n.d).

However, replacing it could take up to an hour. Should the operator remove the safety guard and proceed with the task or take the time to replace it? The operator and his supervisor may assess the situation (collect

information), weigh the risks, and make a decision to proceed. If their information was right and their assessment of the risks accurate, the task will probably be accomplished without an accident (WZSETC, n.d). However, the environment in which the machine operator is working is unusually hectic and pressure to complete the order that is already behind schedule is intense. These factors are **stressors** that can cloud judgment of those collecting information, weighing risks and making the decision (WZSETC, n.d). When stressors are introduced, the likelihood of an accident increases. Similarly, the presence of stressors in the risk management function within the firm can cause costly risk mistakes to be made by the firm's employees.

Therefore, the following five factors should be considered before beginning the process of collecting information, weighing risks and making the decision (WZSETC, n.d): First, job requirements; Second, workers' abilities and limitations to do the job; Third, gain if the task is successfully accomplished; Fourth, loss if the task is attempted but fails; and lastly, loss if the task is not attempted.

These factors can help a person achieve a proper perspective before performing the mentioned tasks. It is particularly important to consider these factors when stressors such as noise, time constraints or pressure from a supervisor may tend to cloud one's judgment (WZSETC, n.d).

Haddon's Energy Release Theory

Willam Haddon, a medical doctor and the administrator of NHTSA at one point in time, in 1966, helped to impose the following regulations for new cars: First, seat belts for all occupants; Second, an energy-absorbing steering column; Third, a penetration-resistant windshield; Fourth, dual braking systems; Fifth, a padded instrument panel; and Lastly, all measures that correspond with the energy and barrier concept.

The systems theory approach, in contrast to energy release theory, treats the driver as a passive responder in his/her environment (WZSETC, n.d). Evidence is that s/he is in fact an active participant, regulating his/her level of preferred risk (WZSETC, n.d). Risk compensation/behavioural adaptation of operators within a system may take advantage of safety measures in other ways rather than to increase safety. Two basic forms of compensation to road safety measures are increased speed and reduced attention (WZSETC, n.d).

> " … more efficient brakes on an automobile will not in themselves make driving the automobile any safer. Better brakes will reduce the absolute size of the minimum stopping zone, it is true, but the driver soon learns this new zone and .. he allows only the same relative margin between field and zone as before." (Gibson and Crooks, 1938).

The presented driver's behaviour is typical of employees in the risk management function and indeed, the entire staff of the firm. Therefore, this theory can help to illuminate the effect of ERM on firm's performance.

The Behavioural Theory of Accident Causation

The behavioural theory of accident causation and prevention is often referred to as behaviour-based safety [(BBS) WZSETC, n.d]. BBS has both proponents and critics. One of the most prominent proponents of BBS is E. Scott Geller, a senior partner of Safety Performance Solutions, Inc. and a professor of psychology (WZSETC, n.d). It is appropriate that Geller is a professional psychologist because BBS is an application of behavioural theories from the field of psychology to the field of occupational safety.

According to Geller, there are seven basic principles of BBS(WZSETC, n.d): First, intervention focused on an employee's behaviour; Second, identification of external factors that will help understand and improve

employee's behavior (from the perspective of safety in the workplace); Third, direct behaviour with activators or events antecedent to the desired behaviour and motivation of the employee to behave as desired with incentives as well as rewards that will follow the desired behavior; Fourth, focus on positive consequences that will result from the desired behaviour as a way to motivate employees; Fifth, application of the scientific method to improve attempts at behavioural interventions; Sixth, use of theory to integrate information rather than to limit possibilities; and lastly, planned interventions with the feelings and attitudes of the individual employee in mind.

Psychologists recognize BBS as an innovative and practical application of standard behavioural theory to the field of risk management (WZSETC, n.d). These theories are relevant in any situation in which certain types of human behaviours are desired while others are to be avoided like in the domain of risk and risk management. Positive reinforcement in form of incentives and rewards is used to promote the desired (safe or less risky) behaviours and to discourage undesirable(unsafe or risky) behaviours.

Proponents of BBS use the "ABC" model to summarize the concept of understanding human behaviour and developing appropriate interventions when the behaviour is undesirable (risky). Geller (1999) explained the model as follows:

> "Behavior-based safety trainers and consultants teach the ABC model (or three-term contingency)as a framework to understand and analyze behavior or to develop interventions for improving behavior. As given in BBS principle 3 . . . the 'A' stands for *activators* or *antecedent* events that precede *behavior* ('B') and 'C' refers to the *consequences* following behavior or produced by it. Activators direct behavior, whereas consequences motivate behavior."

Two other proponents of BBS, Bruce Fern and Lori Alzamora, propose

expansion of the ABC model to ABCO (Fern and Alzamora, 1999). The "O" stands for outcomes. They (*ibid*.) explain the addition as follows:

> '*Outcome'* refers to the longer-term results of engaging in safe or unsafe behavior. For example, an antecedent of a sign requiring employees to wear safety goggles could produce the behavior of putting on the goggles, the consequence of avoiding an eye injury, and the outcome of being able to continue working and enjoying time with the family. On the other hand, the consequence of not wearing goggles could be an eye injury with a potential outcome of blindness, time off the job, and a reduced quality of life. Failure to address the issue of outcomes represents a lost opportunity to give employees a good reason for engaging in safe behaviors."

As noted earlier, there is a direct link between accidents and risky behaviour. Therefore, in order to manage risk well and improve organizational performance, there is need to focus on the ABCO.

Combination Theory of Accident Causation

There is often a degree of difference between any theory of accident causation and reality. The various models presented with their corresponding theories in this study attempt to explain why accidents or risky events occur. For some accidents or risks, a given model may be very accurate. For others, it may be less so. Often the cause of an accident or risky event cannot be adequately explained by just one model or theory. Thus, according to the Combination Theory, the actual cause may combine parts of several different models. Risk management personnel and other staff in general, should use these theories as appropriate, both for accident or risk prevention and accident or risk event investigation. However, they should avoid the tendency to try to apply one model to all accidents or risky events (WZSETC, n.d).

Empirical Studies on Risk Management and Firm's Performance

After almost two decades since the inception of BSC by Kaplan and Norton (1992), many companies all around the world have adopted it as a PMS tool. On the other hand, ERM is a relatively new concept and still not many companies have adopted this framework. In fact, adoption of ERM is still a voluntary concept among firms. An empirical study by Liebenberg and Hoyt (2003) identified only 26 firms in the US that have adopted ERM from 1997 to 2001 and even the most recent study of Pagach and Warr (2011) detected only 138 firms in the US, which have adopted ERM framework from 1999 to 2005.

Another example involves survey results of the Economist Intelligence Unit, which discovered that only 41 percent of companies in Europe, North America and Asia have adopted some form of ERM. As scholars have tried to find the reason behind low adoption rates of ERM, they cite some common barriers and challenges such as resistance of board of directors or senior executives. Another challenge to successful implementation of ERM is improper understanding of top-down approach that should be taken for this purpose (Tax Management Inc., 2011). However, as Beasley and colleagues (2006) suggested, BSC can serve as an infrastructure for ERM adoption. Therefore, challenges such as board of directors' resistance and requirement of a top-down approach can be solved and organizations would find it easier to implement an effective ERM framework. Meanwhile, there are already some organizations that have integrated their ERM framework with BSC. Examples include Bank of Tokyo-Mitsubishi and Tesco PLC (Nagumo, 2005;Woods, 2007). Also, Mobil, Chrysler and the US Army have associated their scorecards with risk management (Olson & Wu, 2010, p. 185). It is expected that integrating the two management tools would enhance organizational performance to higher levels than practicing two frameworks in parallel without any linkage.

As suggested by Pagach and Warr (2007), Enterprise Risk Management creates the firm's value if it reduces negative net cash flows and firms will not suffer losses while selecting a single project. Studies from Hoyt and Liebenberg (2008, 2011) found that Enterprise Risk Management was positive and significant at 1 percent level. Empirical results support that Enterprise Risk Management would increase firm's value by 3.6 percent (Hoyt and Liebenberg, 2011) and 17 percent (Hoyt and Liebenberg, 2011). The study suggests that if the company practices Enterprise Risk Management, the company's value is 3.6 percent (to 17 percent) higher than companies that do not practice Enterprise Risk Management. Therefore, it is argued that Enterprise Risk Management is one of factors that can add value to a firm.

Waweru and Kisaka (2012) argued that larger organizations were more likely to be complex operations and therefore, be more exposed to threatening events. ERM has the potential to provide an organization with competitive advantages that can be used by large firms to initiate strategies that can build synergies that can translate to cost advantages, differentiation and focus (Woon *et. al*., 2011). Yazid and co-authors (2012) explained the importance of managing assets categorized into tangible and intangible assets because they are extremely useful in supporting ERM activities that could provide overall benefits to concerned firms. In support to this, Hoyt and Liebenberg (2008) justify why large firms are more likely to engage in ERM, apart from being complex and face a wider array of risks; they have the institutional size to support administrative cost(s) of ERM program. Gordon, Loeb and Tseng (2009) also suggest that there is a positive relation between size of a firm and its need for an ERM system.

Management Failures and Accident Causation

One of the leading causes of accidents in the workplace is failure of management to do its part to ensure a risk-free work environment

(WZSETC, n.d). Different levels of management have different levels of responsibility. The level of management with the most direct, hands-on, day-to-day responsibility for workplace risk management is the supervisory level. Supervisors play a critical role in making sure that employees work in a safe and healthy environment (WZSETC, n.d).

Role of the Supervisor in Workplace Safety and Health

Risk management professionals cannot do their jobs effectively without full cooperation and day-to-day assistance of first-line supervisors (WZSETC, n.d). Supervisors and risk management professionals must be partners when it comes to providing a safe and healthy workplace for employees. Supervisors should be assigned responsibility for the work environment and for the risk management in their units. Risk management professionals should be readily available to help supervisors fulfill this responsibility (WZSETC, n.d).

Key responsibilities of supervisors relating to risk management include the following (WZSETC, n.d): First, orienting new employees to the safe way to do their jobs; Second, ensuring that new and experienced employees receive the safety as well as health training; Third, they are needed on a continual basis; Fourth, monitoring employees' performance and enforcing safety rules as well as regulations; Fifth, assisting safety and health professionals in conducting accident investigations; Sixth, assisting safety and health professionals in developing accident reports; Seventh, keeping up-to-date on safety issues; and eighth, setting up a positive example for employees that says 'the safe way is the right way.'

Typical Management Failures that Cause Risky Events

Management failures represent a major cause of risky events on the job (WZSETC, n.d). If management is serious about providing a good risk

management work environment for employees, it must (1) show employees that good risk management work practices are expected by including such practices in job descriptions, monitoring employees' work practices as well as setting up an example of risk management practices; (2) provide training in how to work safely, including orientation training for new employees as well as ongoing updated training for experienced employees; (3) include risk management practices as criteria in periodic performance appraisals of employees; and (4) reinforce risk management practices by rewarding as well as recognizing employees who use them (WZSETC, n.d). Common examples of management failures include the following:

> *Poor housekeeping or improper use of tools, equipment or facilities.* Management either has not developed the necessary requirements or has but does not enforce them. The management failure, in this case, could be lack of safety procedures (failure to let employees know expectations), lack of training (failure to give employees knowledge and skills they need to work safely) or failure to properly supervise [(failure to monitor employee actions) WZSETC, n.d].

Pressure to meet deadlines. Sometimes management has developed a good risk management policy, established good risk management procedures, built risk management expectations into job descriptions including performance appraisals and provided necessary training only to put all this aside when a rush order comes in. This may be the most problematic of many different types of management failures that can occur because it can undermine all organization's safety and health efforts. When management allows risk management procedures to be ignored or worse yet, encourages them to be ignored to speed up production in the short run, employees soon get the message that risk management practices are important only when there is no rush. This is an example of management failing to set the proper example (WZSETC, n.d).

Empirical Literature Review on Risk Management and Firm's Performance in Kenya

Despite the fact that majority (94%) of commercial banks and financial institutions in Kenya had developed ERM framework according to CBK guidelines of 2005, 32 (74%) of the institutions had challenges due to weak ERM system and such pattern increased risk affecting the firms (CBK, 2010). The main causes of increase in risk were complexity, unpredictability, evolving risks and globalization of trading activities (PWC, 2012).

According to the Deloitte ERM survey report of 2012 for financial service industry, risk governance was identified to be critical in risk management. However, findings from the report showed that a few (29%) number of institutions had instituted proper governance models to oversee risk management (Deloitte, 2012). A weak ERM has affected performance of Kenya as a country in terms of competiveness (KIPPRA, 2009). Kenya was ranked in position eighty six (86) in terms of GDP among two hundred and seven (207) countries, while in attractiveness as a business destination, it was ranked at number seventy two (72) out of one hundred and seventy eight (178) countries. In comparison with Singapore, Taiwan and Malaysia, which were ranked in position six (6), eight (8) and nine (9), respectively (KIPPRA, 2009). According to Deloitte and Touche survey report of 2012, 85 percent of respondents felt that ERM was adding value to their businesses since it reduces volatility and enhances liquidity problem. However, it is not known what stage(s) in ERM are critical to improved firm's performance.

Therefore, enterprise risk management in Kenya is weak. According to a survey done by PricewaterhouseCoopers (PwC) in Kenya in 2011 on risk, 81 percent of Chief Executive Officers (CEOs) interviewed from various firms felt that risk to their organizations was increasing and traditional

risks were evolving (PWC, 2012). Waweru and Kisaka (2011) examined the state of ERM in Kenya and found out that there was a positive relationship between the firm's size on ERM and financial performance of listed firms in Kenya. According to Deloitte and Touche (2012), traditional risks such as operational, regulatory and market were rated at 95 percent, 89 percent and 83 percent, respectively, as key risks affecting firms in Kenya. It means that ERM framework in Kenya is ineffective or inadequate.

Research Methodology

Research Design

This study applied a descriptive research design. Descriptive research is an investigation in which quantitative data are collected and analysed in order to describe specific phenomenon in its current trends, current events and linkages between different factors at the current time (Mugenda and Mugenda, 2003). Descriptive study was undertaken in order to describe the effect of the ERM on performance of investment firms in Kenya.

Population of the Study

The population of the study consisted 20 investment firms as listed in the Nairobi Stock Exchange (N.S.E) website as well as 5 firms listed under the Investment category and 1 firm listed under the Investment Services category of the Nairobi Stock Exchange. The target was 26 investment firms recognized by the N.S.E and C.M.A because they are answerable to shareholders and are better placed to evaluate benefits of risk management approaches.

The study targeted the Chief Risk Officers (CRO) of the targeted firms. In absence of a CRO, the questionnaires were sent to heads of Internal Audit or Chief Financial Officer. The study covered years from 2010 to

2014. Since the population was not large, a census survey was conducted where questionnaires were circulated to all 26 firms.

Data Collection Methods

This study employed both primary and secondary data. The study used both close-ended questionnaires and open-ended questionnaires. Open-ended questionnaires let respondents' thoughts roam freely. Ideas are generated from respondents in their own language and expressed spontaneously, which are worthwhile as a basis for new hypothesis. That took care of the qualitative part of the research where the study sought to find out respondents' opinions and attitudes on risk management as well as tools in their organizations. Open-ended questionnaires required probing that called for self-administered questionnaires presented by interviewer. The method ensures high response rate and gives the benefit of clarifying questions that are unclear (Paton, 2002).

The questionnaire also had close-ended questions were accompanied by a list of possible choices that respondents select answers that best described the situation. The questions were clearly posed and did not require extended writing. Research assistants were involved in data collection from various organizations. Secondary data were used to review documented and relevant information concerning effects of risk management on performance of investment firms.

Data Validity

Joppe (2000) described validity as whether research truly measures that was intended to measure or how truthful the research results would. To enhance validity of the instrument, a pilot study was done in order to assess clarity of items in the questionnaire and those found to be inadequate, they were modified for improvement. In addition, the self-administered

questionnaire was validated using content validity, which is a process of logical analysis that involves careful and critical examination of items in the questionnaire. In order to achieve criterion validity of the instrument, all team members involved in the research were given an equal chance to score well. In order to achieve construct validity of the instrument, the research team was encouraged to check for variances in results. Subsequently, they were required to keep on asking themselves reasons for the observed variances.

Triangulation was used to check for validity because it is defined as a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study (Creswell & Miller, 2000, p. 126). For instance, size of the organization was confirmed by comparing responses in the questionnaire to secondary data obtained from firms' financial statements.

Reliability of the Instrument

According to Mugenda and Mugenda (1999), reliability of an instrument is the degree to which a research instrument yields consistent results or data after repeated trials. In order to test reliability of the instrument, a pilot study was conducted involving 4 respondents who were not sampled for the study to test the reliability of the instrument to be used. In this study, reliability was improved via minimizing external sources of variation like boredom, fatigue or poor logistics and standardizing the conditions (improving the equivalence aspect) whereby measurements were done by carefully designing directions for measurement or measurement guide.

Data Analysis Plan

Data were analysed using descriptive statistics such as mean, standard deviation, frequencies and percentages. Quantitative data were presented in tables to allow for comparison. Descriptive analysis was used to determine frequencies in central tendencies (highlighting mean, median and

mode) as well as standard deviation to determine average distribution of each score from the mean. Both descriptive and inferential statistics were employed to determine the effect of ERM on firm's performance.

Conceptual Model

The study applied the conceptual model of the form:

$$Y = f(X_1, X_2, X_3, X_4, X_5) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where:
Y = Performance of Investment firms
X_1 = Risk Identification process
X_2 = Risk Analysis and Assessment process
X_3 = Risk Monitoring process
X_4 = Organisation Risk Management
X_5 = Risk Management tool used in ERM

Y is the dependent variable and represents performance as measured by Net Asset Value, which shows business efficiency. A high NAV shows that business resources are used efficiently. Net Asset Value is determined by subtracting total firm's assets by the firm's liabilities. X_1, X_2, X_3, X_4 and X_5 are independent variables and represented risk identification, risk analysis, risk assessment, risk monitoring, risk management and risk management tools, respectively.

Analytical Model

The following regression equation was tested:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_t \qquad (2)$$

Where:
á = constant
$\hat{a}_1$, $\hat{a}_2$, $\hat{a}_3$, $\hat{a}_4$ = the coefficients of the independent variables that were determined
å = any other variable that can contribute to information asymmetry

The R^2 statistic was used to determine the model's goodness of fit. The *t*-statistics and *F*- statistics at 5 percent level were used to determine strength of relationships between variables in the model. A positive correlation coefficient means that the two variables move in the same direction. The analysis was done using Statistical Package for Social Sciences (SPSS Version 20 and Eviews 7.2) software to code, enter and compute measurements of the multiple suggestions and recommendations on the topic under study. Then results were presented in tables and graphs regressions.

Results and Discussion

Summary Statistics

This section provides the description of collected and analyzed data.

Response Rate

Out of the targeted 26 investment firms, only 19 (73%) of the targeted population responded. The response rate was deemed appropriate and consistent with Dillman (1991); Groves and colleagues (2000); and Groves, Presser and Dipko (2004) who indicate that surveys enjoy higher response rates when their contents are seen relevant to respondents' own experiences and values.

Risk Identification

Some (37%) of the respondents had an asset base of over 5 billion Kenyan shillings (Ksh.). Similarly, 37 percent had an asset base less than 1 billion Ksh. The least number (21%) of the respondents had an asset base of 1 to 5 billion Ksh.

Results showed that some firms distributed responsibility for identifying risk first, evenly between Risk Managers, Audit Managers, and the Board of Directors. Next in rank involved the CEO of the firm. Furthermore, information obtained through risk identification tools was considered important by 90 percent of respondents. Moreover, all surveyed firms, except two, had a documented risk management policy.

The most popular tool for risk identification is the audit or physical inspection. This is followed by SWOT analysis. The survey is the least popular technique for risk identification. Responses indicated that 90 percent use audits to identify risks, 21 percent rely on brainstorming to identify risks, while 16 percent of the firms rely on examination of local as well as overseas experience and use of interviews to identify risks. In addition, 26 percent of firms rely on SWOT analysis, judgment and past organizational experience to identify risks. Also 21 percent of firms rely on operational modeling to identify risks, while 32 percent rely on scenario analysis and process analysis to identify risks facing firms, while the least number (5%) of firms 5rely on surveys to identify risks.

Risk Analysis and Assessment

All firms use both qualitative and quantitative techniques for risk assessment. Majority (79%) of the respondents agreed that their firms widely used qualitative analysis to assess risk levels within firms. A further 11 percent respondents agreed that somewhat their firms utilize qualitative analysis, while 11 percent of firms did not use qualitative analysis in their risk

assessments. Moreover, 47 percent of respondents agreed that their firms always use quantitative analysis, whereas 53 percent agreed that, to some extent, their firms utilize quantitative analysis in assessing their risk levels. Also, all firms agreed that they always perform risk assessments and prioritize their management.

Majority (74%) of respondents strongly agreed that existing controls and risk management responses were effective. While 21 percent of respondents were neutral on whether or not existing controls and risk management responses were effective, while only 5 percent of respondents strongly disagreed on effectiveness of existing controls and risk management responses. Results further indicated that 47 percent strongly agreed that they conducted assessment of costs and benefits of addressing risks, whereas a similar number of respondents were neutral on its usage in risk analysis. Only 5 percent strongly do not conduct a cost-benefit analysis. Firms also prioritize risks and select those needing active management. Majority (79%) of respondents (79%) strongly that they prioritize risks and manage only selected ones. Whereas 16 percent were neutral, only 5 percent strongly did not prioritize risks within their firms. Furthermore, prioritizing risk treatment at times of resource constraints was viewed by 47 percent of respondents as vital for responding to analyzed risks within the firm, whereas 42 percent somewhat agreed on prioritizing risks and 11 percent disagreed.

Risk Monitoring

Results indicated that firms monitored their risks both in short-term and long-term. A good number (42%) of firms reviewed their risks daily, whereas 32 percent reviewed risks over 2 years and only 26 percent reviewed their risk between 1 and 2 years.

Risk monitoring proved vital for risk management and control purposes because74 percent firms rely on identification of risks as soon as possible,

63 percent rely on risk audits in their risk monitoring and 53 percent rely on checking operating volumes. Furthermore, results from the study revealed that 47 percent rely on investigating other risks, while only 32 percent decide on where and how to handle risk as a method of risk monitoring.

Risk audits are the most popular tools for monitoring risk. The results showed that 42 percent firms rely on variance and trend analysis always, while 53 percent somewhat use variance as well as trend analysis. In addition, it was revealed that only 5 percent did not use risk audits and 42 percent respondents always used work performance monitoring.

Organization Risk Management

Performance benchmarks, appropriate use of recording tools, and linkage between risks and corporate objectives are the most popular components of risk management among firms. All respondents indicated that effective risk management is crucial to achievement of organizational goals. Consequently, management, to a large extent, developed links between strategic objectives and risk management.

Risk Management Tools

The results showed that the most important risk management tool is sensitivity analysis followed by VaR. Hedging risk is third in rank. There was a strong relationship between risk management and the tool used to manage risk. There was also a very strong relationship between ERM and firms' performance.

Use of value at risk as a risk management tool was viewed by 47 percent of firms an effective method, 26 percent had a neutral opinion, 16 percent saw it as ineffective method and 5 percent viewed it an inapplicable tool at their firms. With regard to sensitivity analysis, 63 percent of

respondents were of the view that it was an effective method, 26 percent said it was a neutral method and 5 percent were of the view that it was an ineffective, inapplicable and not in place at their firms.

Hedging instruments were viewed by 32 percent respondents effective risk management tools, whereas 26 percent and 5 percent of respondents viewed them neutral and not applicable tools, respectively. A further 11 percent did not have them in their firms. Then 32 percent respondents rated international standards as a risk management tool, whereas 16 percent were of a neutral opinion concerning their effectiveness. Moreover, 11 percent viewed them ineffective tools and 21 percent firms did not have them. Interest rate risk management was viewed by 58 percent of respondents as an effective risk management tool, while 5 percent viewed it as a neutral method. A further 5 percent viewed it as ineffective method and 11 percent viewed it as an inapplicable method. Also 11 percent did not have the tool.

Effect of Market Risk Management Tools on Firms' Performance of Investment

This section presents results of tests of effect of risk management on value of investment firms based on the regression model.

Table 4.11: *Effect Risk Identification Tools on Financial Performance of Investment Firms*

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
Audit or Physical Inspection	1.990195	0.219254	9.077135	0.0000***
Brainstorming	0.574625	0.424979	1.352127	0.2133
Examination of Experience	0.977195	0.427157	2.287671	0.0515**
SWOT Analysis	-0.651682	0.182877	-3.563506	0.0074***
Interviews/Focus Group Discussion	1.889182	0.640453	2.949760	0.0184**
Judgment	-2.195372	0.885852	-2.478261	0.0382**
Survey/Questionnaire	0.101283	1.087478	0.093136	0.9281
Scenario Analysis	0.606061	0.497443	1.218353	0.2578
Operational Modeling	0.379512	0.463499	0.818798	0.4366
Organizational Experience	-0.671000	0.518297	-1.294625	0.2316
Process Analysis	1.143433	0.483634	2.364253	0.0457**

Note: **Significant at 5 percent level ***Significant at 1 percent level

Source: *Author's Computation*

Table 4.11 shows that the calculated coefficient of determination R^2 is 76 percent, while the adjusted R^2 is 46 percent. This implies that identified variables explain only 46 percent of total variation in firms' performance. Therefore, the model fairly fits the data. The results in Table 4.11 show that risk identification tools such as audit, examination of experience, SWOT analysis, interviews and focus groups, judgment, and process analysis have a significant influence on firms' performance. However, SWOT Analysis and judgment have a strong negative influence on firms' performance.

Table 4.12: *Effect of Risk Analysis on Financial Performance of Investment Firms*

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
Use of Qualitative Methods	0.396277	0.180583	2.194438	0.0470**
Use of Quantitative Methods	-0.087258	0.193817	-0.450207	0.6600
Evaluation of Existing Controls	1.904692	0.730342	2.607947	0.0217**
Cost-Benefit Analysis	-0.324177	0.449140	-0.721772	0.4832
Risk Prioritization	-1.433801	0.692921	-2.069213	0.0590**
Risk Treatment Prioritization	0.039774	0.459901	0.086484	0.9324

Note: **Significant at 5 percent level Source: Author's Computation

Table 4.12 shows that the computed coefficient of determination, R^2, is 33 percent, while the adjusted R^2 is 7 percent. It means that the identified variables explain only 7 percent of the total variation in firms' performance. Therefore, the model does not fairly fit the data. The results in Table 4.12 indicate that risk analysis and assessment tools such as qualitative methods, evaluation of existing controls including risk prioritization have a significant influence on firms' performance. However, risk prioritization has a strong negative influence on firms' performance. Use of quantitative methods and risk prioritization have no significant effect on firms' performance.

Table 4.13 shows that coefficient of determination, R^2, is 74 percent, while the adjusted R^2 is -11 percent. This means that identified variables do not explain any variation in firms' financial performance. A negative adjusted R^2 is an indication of nonlinear relationships between variables. Therefore, the model fits the data very well. Table 4.13 shows that risk monitoring has no statistically significant relationship with financial performance.

Table 4.13: *Effect of Risk Monitoring on Financial Performance*

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
Risk Monitoring Time Horizon				
Daily	-0.454907	0.983030	-0.462760	0.6676
1 to 2 years	0.908203	0.812407	1.117915	0.3262
Over 2 years	-0.126620	0.884985	-0.143076	0.8931
Risk Monitoring Activities				
Risk Identification	0.267517	1.135546	0.235585	0.8253
Risk Handling	-0.597216	1.179820	-0.506192	0.6393
Investigation of other risks	-0.700325	1.269006	-0.551869	0.6104
Checking Operating Volumes	1.827856	1.414585	1.292151	0.2659
Risk Audits	-0.533264	1.245588	-0.428123	0.6906
Risk Monitoring Tools				
Variance and Trent Analysis	-0.319957	0.278068	-1.150642	0.3140
Work Performance Indication	-0.051295	0.488235	-0.105061	0.9214
Risk Register	-0.000287	0.207922	-0.001383	0.9990
Approved Change Requests	0.109836	0.173728	0.632229	0.5616
Risk Audits	1.466092	1.185044	1.237163	0.2837
Risk Reassessment	-0.728283	1.357964	-0.536305	0.6202

Source: Author's Computation

Table 4.14 shows that the computed coefficient of determination, R^2, is 98 percent, while the adjusted R^2 is 97 percent. It means that identified variables explain almost all variations in firms' financial performance. Therefore, the model fits the data very well. Moreover, Table 4.14 shows that risk management has a statistically significant relationship with financial performance. This is indicated by linking risk management and strategic objectives to risk management. The remaining components of risk management were not significant at 10 percent level.

Table 4.14: *Effect of Risk Management Components on Financial Performance*

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
Sponsorship	0.230426	0.282452	0.815806	0.4274
Ownership of risk management	-0.049975	0.368030	-0.135790	0.8938
Organizational risk culture	-1.256294	0.947760	-1.325539	0.2048
Effective communication	-0.075680	0.716654	-0.105601	0.9173
Link with mission and objectives	1.300930	0.869013	1.497020	0.1551
Understanding of risk management	0.537730	0.616389	0.872387	0.3967
Specification of risk environment	-0.363478	0.508932	-0.714197	0.4861
Determining the risk appetite	0.471507	0.338525	1.392828	0.1840
Selecting risk evaluation criteria	0.274746	0.690067	0.398144	0.6961
Effective risk management	-0.131026	0.304180	-0.430750	0.6721
Linking risk management and strategic objectives	0.629246	0.333578	1.886356	0.0764

Source: Author's Computation

Table 4.15: *Effect of Risk Management Tools on Financial Performance*

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
Value at Risk	0.324421	0.334077	0.971097	0.3507
Sensitivity analysis	0.030896	0.406384	0.076026	0.9407
Hedging (with derivatives)	0.184518	0.185118	0.996757	0.3386
International standards (Basel I, II, and III)	-0.054910	0.255557	-0.214864	0.8335
Interest rate risk management	-0.088471	0.168336	-0.525560	0.6088
Usefulness of risk management information	-0.202282	0.678937	-0.297940	0.7708
Relationship between tools and performance	0.310281	0.627743	0.494281	0.6300

Source: Author's Computation

Results of coefficient of determination, R^2, are 18 percent, while the adjusted R^2 is -22 percent. This means that identified variables do not explain any variation in firms' financial performance. A negative adjusted R^2 is an indication of nonlinear relationships between variables. Therefore, the model does not fit the data very well. Table 4.15 shows that risk

management tools have no statistically significant relationship with financial performance.

Table 4.16: *Effect of Responsibility for Risk Management on Financial Performance*

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
Chief Executive Officer	0.698068	0.618655	1.128363	0.2812
Board/Executive Management Team	1.963768	0.493916	3.975919	0.0018***
Director of Finance	-2.967391	0.933226	-3.179713	0.0079***
Internal Auditor	0.955314	0.216548	4.411554	0.0008***
Risk Manager	1.446860	0.447865	3.230570	0.0072***
Line Manager	0.951691	0.795734	1.195991	0.2548
All Staff	2.333333	0.547036	4.265410	0.0011***

Note: ***Significant at 1 percent level Source: Author's Computation

In Table 4.16, the computed R^2 is 26 percent, while the adjusted R^2 is -11 percent. This means that identified variables do not explain any variation in firms' financial performance. However, a negative adjusted R^2 is an indication of nonlinear relationships between variables. Therefore, the model does not fit the data very well. In addition, Table 4.16 shows that the role of the Board of Directors, the Director of Finance, the Internal Auditor, the Risk Manager and all staff have a statistically significant relationship with financial performance. This relationship is the strongest when all staff members in the firm are involved in risk management but negative when only the Director of Finance is involved.

Table 4.17: *Effect of Risk Management on Financial Performance among Investment Firms*

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
Role of the Board	0.541818	0.483382	1.120890	0.2826
Role of the Internal Auditor	0.369991	0.215978	1.713096	0.1104
Role of the Risk Manager	0.703381	0.405422	1.734934	0.1064*
SWOT Analysis	-0.517648	0.229075	-2.259734	0.0417*
Evaluation of Existing Controls	1.178509	0.670317	1.758138	0.1022*
Prioritizing and Active Management	-0.797320	0.659527	-1.208927	0.2482

Note: *Significant at 10 percent level Source: Author's Computation

Table 4.17 shows overall results of the effect of risk management on firms' performance using only variables that were statistically significant in previous analyses. The computed R^2 is 30 percent, while the adjusted R^2 is 3.5 percent. This means that identified variables explain 4 percent of variation in firms' financial performance. Therefore, the model does not fit the data very well. Furthermore, Table 4.17 shows that risk management level has a statistically significant relationship with financial performance. Specifically, risk identification (especially the role of the Risk manager and performance of the SWOT Analysis) and risk analysis as well as assessment (especially the evaluation of existing controls and risk management responses) significantly affect firms' financial. This relationship is the strongest and negative when SWOT analysis is applied in risk management.

Test of Model Goodness of Fit

A goodness-of-fit test is used to test the hypothesis that an observed frequency distribution fits (or conforms to) some claimed distribution.

Effect of Risk Management on the Performance of Investment Firms

Table 4.18: *Results of Model's Goodness of Fit Test*

Parameters	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.883[a]	.780	.621	1.391

Source: Author's Computation

The R^2 is a measure of goodness of fit of risk management variables in explaining variations in performance of investment firms. The model shows that predictor variables (Risk Management tools, Risk Monitoring, Risk analysis and assessment, Risk Identification) explain 78 percent of the variation in performance of investment firms as seen in the R square value (0.78). It means that other variables not included in the study account for a 22 percent variability in performance. Thus, the variables collectively, are good explanatory variables of performance of investment firms in Kenya.

Results of ANOVA

Table 4.19: *Results of ANOVA for Effect of Risk Management on Firm's Value*

Parameters	Sum of Squares	Df	Mean Square	F	Sig.
Regression	59.540	1	59.540	5.027	.021[a]
Residual	347.710	6	11.843		
Total	407.249	7			

Source: Author's Computation

Obtained significance value was .021, which is less than 0.025 at 5 percent level in a 2-tailed test. Therefore, this indicates that the model is statistically significant in predicting the relationship between risk management tools and performance of investment firms. Findings also indicate that the calculated F value is 5.027, which is greater than the F critical at 5 percent significance (3.23) level. Thus, this shows that the overall model was statistically significant.

Discussion of Results

The regression analysis showed that risk-specific factors are not only related to profitability of firms, but also they significantly influence on profitability of investment firms in Kenya. The analysis revealed that risk identification is the most robust and important factor influencing on firms' performance. The results showed that a 1 percent increase in risk identification could result in 0.550 percent increase in profitability. This was statistically significant at 5 percent confidence level. These results are consistent with studies that indicate that risk managers have an important role in implementation of risk management in institutions. Liebenberg and Hoyt (2003) studied determinants of ERM as evidenced by appointment of a Chief Risk Officer and observed that though there was an absent explicit disclosure for ERM implementation, appointment of a CRO can be taken as a strong signal of ERM implementation in the companies. Beasley and colleagues (2005) also investigated whether or not presence of a CRO is positively associated with deployment of ERM. The study found that presence of a CRO/Risk champion in senior management significantly increases the entity's stage in ERM implementation.

This study also found that proper risk management generates a significant positive contribution to the firm's value. Results showed that 1 percent increase in risk management could result in 0.636 percent increase in

profitability. This was statistically significant at 5 percent confidence level. The findings contradict results from studies undertaken by Modigliani and Miller (1958), Sharpe (1964), Lintner (1965), Nain (2004), Lookman (2004) as well as Jin and Jorion (2005). The mentioned studies concluded that implementation of risk management strategies is irrelevant to the firm's value. However, research findings from this study are consistent with literature review that indicates that there is a significant relationship between level of ERM implementation and the company's value (Hoyt *et. al*., 2008; Beasley *et. al*., 2005; Kleffner *et. al*., 2003). This is evidenced by results from the regression model with a positive and statistically significant coefficient for the ERM implementation level. Lam and Kawamoto (1997) as well as Meulbroek (2002) also found that Enterprise Risk management makes risk management part of the company's overall strategy and enables companies to make better risk adjusted decisions that maximize shareholder value. As discussed by Hoyte and colleagues (2008), firms that engage in ERM are able to better understand the aggregate risk inherent in different business activities. Findings from this study suggest that companies with their primary focus on adding shareholder wealth should implement ERM because it contributes to the company's market value.

The positive effect of risk analysis and assessment means that proper risk analysis impact on investment firms' performance. This is achieved through identifying and mitigating effects of risks before they occur. This saves the firm a lot of scarce resources that can be profitably invested elsewhere. The results are consistent with results from works of Hermann (1996, p.42) as well as Liekweg and Weber (2000, p.285) who argued that the aim of the risk evaluation is to determine the degree of identified risks and quantify their financial impact on the company. Therefore, it is necessary to analyse the way the risk could affect the business. Management should cluster/categorise the identified risk based on the field of risk, for example, whether they are market or financial risks. Clustering allows the

company to later analyse whether or not some of the risks are related and whether or not some offset each other (e.g., in and outflows in a foreign currency). Furthermore, clustering assists to identify the main risks to the firm. This helps future analysis and focus of risk management endeavour (Nassauer & Pausenberger, 2000, p.269).

Next, influence of different risks and their potential harm to the company needs to be evaluated. This requires identification of costs to the company in case the risk occurs as well as the probability of occurrence (Scheve, 2005, p.46). With the help of those values, expected damages of risk positions can be calculated and single risks can be evaluated (Hermann, 1996, p.43; Scheve, 2005, p.74). Thereafter, management should assess the impact of the risk that should be compared with the maximum tolerated loss and be defined in the risk strategy. At least positions exceeding the tolerated loss or threaten business continuity need to be assessed in the third phase of risk management (Wesel, 2010, p.295).

In summary, risk identification (especially the role of the risk manager and performance of the SWOT Analysis) and risk analysis as well as assessment (especially the evaluation of existing controls and risk management responses) significantly affect the firm's financial performance.

Summary

Results from this study established that risk identification has positive and significant effect on performance of investment firms in Kenya. The study also found that risk analysis and assessment have a positive effect on performance of investment firms in Kenya.

Findings from this study further revealed that risk monitoring can be used to make sure that risk management practices are in line and proper risk monitoring that also help firm's management to discover mistake(s) at an early stage. Therefore, adduced evidence indicates that risk monitoring has a positive impact on performance of Investment Firms in Kenya.

The study further ascertained that determining strategy first will ensure that responses are aimed at the same goal, and avoid nugatory effort. Thus, the study concludes that risk planning had a positive impact on performance of Investment Firms in Kenya. Results from the study largely confirm what has appeared in previous literature. Waweru and Kisaka (2011) examined the state of ERM in Kenya and found out that there was a positive relationship between firm's size on ERM and financial performance of listed firms in Kenya. Finally, the study highlighted the pre-eminent role that organizational culture, monitoring as well as executive sponsorship, support and focus play in the firm's risk management function.

Conclusion

Findings from the study was revealed that Risk Management tools (Organizational risk management, Risk Identification, Risk Analysis and Assessment and Risk Monitoring) result in 0.78 increase in performance of investment firms. Thus, it can be said that proper risk management within an organizational enhances the firm's performance. It can also be noted that gradually, incorporating a risk management policy within the organization controls will enhance the same organizational performance. It can also be noted that organizations with a structured responsibility chain with regard to risk management will enhance their overall performance. This was supported by respondents who identified that their organizations have more than one individual in-charge of risk identification and management.

Prioritization and active selection of risks that need active management was also identified crucial for firms because this impacts positively (0.709) on performance as indicated by the strong relationship between risk analysis and assessment elements as well as performance of investment firms. Similarly, firms should strengthen their qualitative analysis measures in risk analysis and assessment owing to the strong relationship (0.716) between qualitative analysis and performance of investment firms.

Risk identification was also highlighted playing a key role in enhancing performance of investment firms and it was identified by majority of respondents. Hence, risk identification can essentially be said to be the key starting point of any risk management program because firms cannot manage what is unknown. On the other hand, once identified, risks must be prioritized, actively managed and the firm using this knowledge for future avoidance of risk.

The study also concludes that operating a risk register within a firm is key to improving the risk management undertakings of the firm and ultimately, the performance of the overall firm. A good risk register will support the firm's staff in undertaking efficient risk audits, which are key to identification, analysis and assessment stages that are crucial to effective risk management facing the firm.

Limitations of the Study

Key limitation experienced during the study was unresponsive firms. Some firms did not respond to the questionnaire, sighting various company prohibitions that restricted potential respondents from responding to the questionnaire. However, 19 firms, representing 73 percent response rate, responded to the questionnaire and hence, results can be said to be representative of the population of sampled firms.

Recommendations from the Study

The study noted that most investment firms do not incorporate international standards as part of their risk management strategies. With the recent financial crises, it is imperative that investment firms should incorporate new and existing regulations especially the Basel Accord to protect investors' wealth and incorporate proper risk management ideals in organizational processes including practices. Therefore, this study recommends that firms

need to make adjustments to their structures to incorporate the Basel requirements since they help to cushion firms during turbulent economic times and thus, can act as a risk management tool.

The study also recommends that the Capital Markets Authority should ensure that all players in the market align their risk management policy to their organizational culture make certain that all employees are aware of risk management policies. The study further recommends that N.S.E and C.MA impress upon market players to have active teams within their structures to support the risk identification functions, which are key to developing and implementing an essential risk management policy. Furthermore, the study recommends setting up key performance indicators by firms that can be used to gauge performance of risk management policies.

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