

**EFFECTS OF EXPLORATION AND MINING RISKS ON THE
INSURANCE INDUSTRY IN KENYA**

BY

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

OCTOBER 2013

DECLARATION

I declare that this research project is my original work and has not been submitted for any degree course in this, or any other University

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

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AKNOWLEDGMENTS

My pursuit of the MBA programme would not have been possible without the encouragement, support and assistance of a large number of people, however space may not allow me to enumerate all of them but nevertheless I am extremely grateful.

Special thanks to my supervisor Madam Caren Angima for her tireless assistance and support on the project supervision, experience and initiatives which guided me throughout the entire research. I equally appreciate the instrumental moderation I received from Mr. Midikira Kibisu.

To East Africa Reinsurance Company Non-Life Technical departments, thanks for your support and encouragements

May God Bless you All.

DEDICATION

This work is dedicated to people who believe in hard work, pursuant of knowledge and are inspired by merit and selfless dedication to serve humankind, foremost amongst them is my late father Micah Mitoko who never lived long enough to see the fruits of his efforts, my dear old mother and my siblings for devoting all their resources to educate a poor boy who had nothing but dreams for a better tomorrow. I will always treasure old memories.

I also dedicate this work to my young family; my lovely wife Brenda, son Micah and daughter Ann for their forbearance during the entire period of this programme when I was unavailable at home. I love you all than you can never imagine!

ABSTARCT

Africa has considerable oil and gas resources that can help accelerate growth in the continent if used strategically. Although new reserves are being discovered progressively they are not equally distributed; indeed thirty eight out of fifty four African countries are currently net oil exporters (BP statistical review of world energy June 2013). Proper utilization of these resources therefore presents an opportunity to be pursued and an obstacle to be tackled by African continents including Kenya. Kenya recently joined the league of oil producing nations with its oil reserve in Northern frontiers meeting the benchmark for commercial exploitation but with these discoveries come insurable risks. The objectives of this study therefore was to establish the effects and benefits of mining and exploration risks on the insurance industry in Kenya and the challenges associated with handling these risks. This was an exploratory study hence survey method was used to identify these effects and challenges. The Target population included the 45 licensed insurance companies in Kenya, five reinsurance companies domiciled in Kenya, two direct insurance brokers and two reinsurance brokers. Primary data for the study was collected using self administered questionnaire and data analyzed using descriptive statistics such as frequencies, mean scores and cumulative frequencies Main finding of the study is that training and capacity building is fundamental to the insurance industry exploiting the vast potential of this resource otherwise fronting arrangements and capital flight to foreign insurance and reinsurance companies is inevitable. This is the first study on this subject and further research would is recommended as the country and the insurance industry start to realize the impact of oil and gas exploration and mining.

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LIST OF ABBREVIATIONS

AIBK: Association of Insurance Brokers of Kenya

AKI: Association of Kenya Insurers

AKR: Association of Kenya Reinsurers

BP: British Petroleum

BPD: Barrels Per Day

CAR: Contractors All Risks

EAR: Erection All Risks

E & P: Exploration and Production

GDP: Gross Domestic Product

IIK: Insurance Institute of Kenya

IRA: Insurance Regulatory Authority

ILARS: Institute of Loss Adjustors and Risk Surveyors

LPG: Liquefied Petroleum Gas

MIPAK: Medical Insurance Providers Association of Kenya

OESAI: Organization of Eastern and Central Africa Insurance

R& D: Research and Development

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Insurance is still in its infancy as a body of theory and as a result there are many contradictory definitions of risk as advanced by different scholars. One reason for these contradictions is that insurance theorists have attempted to borrow the definitions of risk used in other fields. A definition of risk that is suited for the economist, statistician, lawyer and the common man on the street may very well be worthless to the insurance expert. In its broadest context, the term risk includes all situations in which there is an exposure to adversity, Redja (2001). Risk is a condition, in which there is a possibility of an adverse deviation from a desired outcome that is expected or hoped for, Vaughan (1989). Although the insurance theorists have not agreed on a universal definition of risk, there are some common elements encompassing the definition: risk is the chance of a loss, the possibility of a loss, risk is uncertainty, risk is the dispersion of actual from expected result, risk is the probability of any outcome different from the one expected, Kaye (2001)

To the common person the term risk, peril and hazard may be used interchangeable but to the insurance expert these terms are clearly different and distinct from one another. A peril is a cause of the loss that occurs; we speak of the peril of a fire, storm, theft, death etc. Hazard on the other hand is a condition that may create or increase the chance of a loss arising from a given peril. Hazards may either be physical i.e. the material, structural or operational features of a business that may create or increase the opportunity for injury or damage, moral hazards that is the

tendencies individuals have that increases the chance of suffering a peril and morale hazard which stems from an individual mental state or attitude of a person which usually are not intentional. An example of morale hazard would include psychological breakdown which lead to an individual acting in a manner likely to cause accidents or harm.

Closely related to insurance and risks is the concept of risk management which is fundamental to the successes of any business enterprise and a basic expectation of the shareholders, regulators and the customers. In a challenging and changing business environment like insurance, organizations have unfinished agenda when it comes to effective risk managements frameworks. Companies have integrated an enterprise wide approach to managing the varied risks that they face and strategically used risk taking and management to strengthen their competitive position and create value, Rejda (2001)

1.1.1 Concept of Risk

Risk is not a new thing in our lives, when we talk about risks automatically we think about uncertainty about the outcome of a particular event whether it is in business or in personal life, for example if one invests money in the stock exchange, what is the risk (likelihood) that he will lose the money? Or if he goes rock-climbing, what is the risk that he will lose his life or suffer pain? Two factors are taken into account when evaluating risks; the probability of something happening that we do not want, and the consequences if it does. However, the risk of a loss is seemingly unavoidable or inherent in living e.g. a lightning strike, catching a disease but the less talked about are the risks associated with not taking risks, for example many people looking back on their lives wish they had taken more rather than less risks, or at least wish they had

been more wise in their selection of risks. Interestingly, people who survive a major encounter with the threat of death, often report increases in their quality of life, often including taking more risks to focus on what they genuinely feel is important in their lives

Muriithi & Onuongø (2011) classifies risks into four main categories; financial and non-financial risks, static and dynamic risks, fundamental and particular risks and pure and speculative risks. A blind date carries an element of risk but it has no financial consequence compared to the risk of losing money in a stock exchange. Dynamic risk are those resulting from changes in the economy like shift in consumer tastes, price level changes and technological changes etc. whilst static risks involve losses that would occur even if there were no changes in the economy. Fundamental risks involve losses that are impersonal in origin and consequence; these are group risks caused in most part by economic, social, political and natural phenomena. However particular risks involve losses that arise from individual events like burning of a house and robbery of a bank and unemployment. Lastly and most importantly is the distinction between pure and speculative risks.

Pure risk situations are those where there is a possibility of loss or no loss. There is no gain to the individual or the organization. Whereas speculative risks are those where there is a possibility of gain as well as loss and the element of gain is inherent or structured in such situations. Pure risks are generally insurable while speculative ones are not. The conceptual framework of the risk pooling (insurance) can be applied to the pure risks, while in cases of speculative risks this is not possible, speculative risk carry some inherent advantages to the individual, company or the society at large while pure risks like uninsured catastrophes may be highly damaging. Examples, in

pure risk a car may be involved in an accident or it may not and if the insurance policy is in place and the accident does not occur then there is no gain to the insured and in contrary if the accident occurs, the insurance company will indemnify the loss. In speculative risk, for example, if one invests in the stock market, they may either gain or lose. In summary, the existence of risk in an approximate static state causes an economic loss. The assumption of risk on the other hand is a source of gain to society and a part of the gain is obtained by the risk-takers as their special reward.

1.1.2 Mining and Exploration Risks

Mining and exploration risks are pure risks that are associated with the operations of exploiting valuable minerals from the earth layer. These are some of the new and emerging risks in the Kenyan market in view of the recent discovery of oil in Northern Kenya. Odjugo (2012) categorized mining and exploration risks into three major sectors: upstream, midstream and downstream operations.

The upstream oil sector also commonly known as the exploration and production (E&P) sector which involves searching for potential underground or underwater crude oil and natural gas fields, drilling of exploratory wells, and subsequently drilling and operating the wells that recover and bring the crude oil and/or raw natural gas to the surface. The risks associated with these operations are ðall riskö physical damage, liability to third party injury and death, pollution, well control delays and even death.

The midstream sector involves the transportation (by pipeline, rail, barge or truck), storage, and wholesale marketing of crude or refined petroleum products. Pipelines and other transport systems can be used to move crude oil from production sites to refineries and deliver the various refined products to downstream distributors. Natural

gas pipeline networks aggregate gas from natural gas purification plants and deliver it to downstream customers such as local utilities. The risks associated with this sector involve the Marine and land transit risk.

The downstream sector commonly referred to as the refining of petroleum crude oil and the processing and purifying of raw natural gas as well as the marketing and distribution of products derived from crude oil and natural gas. This sector touches consumers through products such as gasoline or petrol, kerosene, jet fuel, diesel oil, heating oil, fuel oils, lubricants, waxes, asphalt, natural gas, and liquefied petroleum gas (LPG) as well as hundreds of petrochemicals. Pure risks on this sector include fire and allied perils, liability and all risks physical damage i.e. Contractors All Risks (CAR) and Erection All Risks (EAR)

1.1.3 Risk Management

The overall objective of risk management is to maximize the value of the organization. This goal is equivalent to minimizing the cost of pure risks, since such cost reduces the value of organizations productive activities. Risk management is defined as the identification, analysis and controls of those risks which can threaten the operations, assets and other responsibilities of an organization; Kaye (2001). Risk management is broader than insurance in that it deals with both insurable and uninsurable risks and the choice of appropriate techniques for dealing with them. Risk management provides a clear and structured approach to identifying risks. Having a clear understanding of all risks allows an organization to measure and prioritize them and take the appropriate actions to reduce losses. Risk management has other benefits for an organization, including: Saving resources: Time, assets, income, property and people are all valuable resources that can be saved if fewer claims occur. Protecting

the reputation and public image of the organization, preventing or reducing legal liability and increasing the stability of operations, protecting people from harm, protecting the environment, enhancing the ability to prepare for various circumstances, reducing liabilities and assisting in clearly defining insurance needs, Salesio (2006)

Essential components of risk management include, risk capacity that is the maximum amount of risk that can be supported by a company, expressed as a sum of money and determined by available capital, earnings strength/stability, risk appetite which is the amount of risk that management are willing to take given risk capacity, strategic business objectives and culture. Risk appetite serves as an overall guide to resource and capital allocation and lastly risk limits which is the allocation of appetite (in metrics relevant to a specific risk) to business units and functions. It should however be pointed out that an effective risk management practice does not completely eliminate risks but it will have the positive effects of prevention and loss reduction, Muriithi & Onuonga (2011). It is important good risk management decision making to understand not just whether an incident may occur and damage the organization but also the precise significance of such damage to the organization. The processes by which risk can be identified includes; Identification of the risks, analysis of the risk and impact, control and transfer of any unacceptable risk, implementation of the decision and lastly evaluation and review. There are basically three fundamental rules of risk management according to Mehr & Robert (1963); do not risk more than you can afford to lose, consider the odds and do not risk a lot for a little.

There are several ways of dealing with risks and insurance is primarily the formal way of approaching risks. Vaughan (1989) outlines five different ways of handling risks;

avoidance, retention, reduction, transfer and insurance. In avoidance of risk, one refuses to accept the risk by keeping away from circumstances that would expose one to the risk, a good example is if one never buys a car they will never suffer a loss as a result of a stolen car. This however is a negative way of dealing with risks because economic developments can never take place without people taking risks. Risk can also be retained either intentionally or unintentionally by an individual or an organization. Intentional retention occurs when an individual or organization recognize the existence of the risk but decides to retain it and assume the consequences should a loss occur. Whilst on the other hand, unintentional risk retention takes place when people cannot recognize the existence of a risk situation. Risk reduction takes place when a loss is anticipated and steps taken to ensure that its frequency and severity is minimized. The consequences of risks can also be transferred from one party to another and this can be done through a properly worded contract document. Insurance and reinsurance are business forms of risk transfer mechanisms

The primary function of insurance is security, Kaye (2001). Insurance does not decrease the uncertainty for the individual, society or organization nor does it alter the probability of occurrence but insurance does reduce the probability of financial loss connected with the event. Many people consider an insurance contract as a waste of time unless a loss occurs and settlements made by the insurance company, some even feel that if they have not suffered a loss during the policy period then their premium should be refunded. Both viewpoints represent the essence of ignorance about insurance concepts. Insurance creates a common pool where the losses of the few are paid by contribution of the many. When many of those exposed to a risk are combined

and contribute money to make a financial pool, it becomes possible to predict the probability of a loss through the operation of the law of large numbers example.

Muriithi & Onuonga (2011) outlines the benefits of insurance in terms of economic and societal benefits. Economic benefits would include peace of mind whereby an individual or organization will be confident to invest or take commercially viable risks knowing so well that in the event of a loss, insurers will take them to the same position they were before the loss. Insurance offers protection especially on life assurance where the policyholder is assured that in case of either premature death or disability, the dependents of the policyholder will get lump sum/periodic payments. Life assurance policies also provide a mechanism through which policyholders can save through various forms of investments for example some of the life insurance policies can be used as a vehicle to save for education of children or old age. Insurance companies have at their disposal large sums of money which they can lend to government, commerce and industry and even to individuals, this arises because of the time lag between premiums collection and when claims start being paid. Socially, insurance create jobs opportunities in the society, IRA (2012) report indicate that the whole Kenya insurance sector employs about 1,500 people and also assist the government in provision of social security in old age.

1.1.4 The Insurance Industry in Kenya

The Insurance industry is part of the financial services sector in the country that are made up of banks, building societies, pension funds, fund management companies, stockbrokers, real estate companies, savings and credit societies. The product sold by

insurance industry is management of risk, an intangible product or service, Ogolla (2005).

The Insurance Industry in Kenya is governed by the Insurance Act and regulated by the Insurance Regulatory Authority (IRA). The role of the Authority according to the insurance Act cap 487 is to ensure effective administration, supervision, regulation and control of insurance and reinsurance business in Kenya. Apart from insurance and reinsurance companies, the industry has several players including insurance and reinsurance intermediaries (brokers and agents), medical insurance providers, insurance investigators, motor assessors, insurance surveyors, loss adjusters, claim settling agents, risk managers, policy holders and insurance beneficiaries. The industry currently has 45 registered insurance companies, IRA (2012). Despite the fact that insurance companies compete vigorously with each other, there are many areas in which the companies and other players in the industry co-operate. The most important co-operative bodies include; the association of Kenya Insurers (AKI), Association of Insurance brokers of Kenya (AIBK), Insurance Institute of Kenya (IIK), Association of Kenya reinsurers (AKR), Institute of loss Adjustors and Risk Surveyors (ILARS) and the Medical Insurance Providers Association of Kenya (MIPAK)

The industry has registered considerable progress in provision of insurance services to Kenyans in the post-colonial era. The growth in the industry has both been quantitative and qualitative with increases in the number of industry players and range of services offered. In spite of the significant growth in the industry, insurance penetration in Kenya still remains low with an estimated overall penetration level of 3%. The penetration levels are low compared to other countries in Africa such as

South Africa which has a penetration level of 9.94%. The low uptake of insurance in Kenya has been attributed to factors such as general lack of saving culture among Kenyans, low disposable incomes for the majority of Kenyans with close to 50% of Kenyans living below the poverty line and a perceived low credibility of the industry in the eyes of the public particularly with regard to settlement of claims. The growth of the industry has been further hampered by the collapse of some insurance companies.

AKI (2012) indicates that the insurance industry has shown some great prospect for development given the steady growth reported in the last few years, the new and emerging risks and robust regulations further increases this potential. In year 2012 for example, the insurance industry recorded a gross written premium of Ksh 108.6 billion compared to Ksh. 97.29 billion in 2011, representing a growth of 11.4%. The premium income reported under life insurance business amounted to Ksh 36.72 billion while general business premiums were Ksh 71.89 billion. The local reinsurance companies reported Ksh 10.40 billion in gross premiums representing a growth of by 20.6% from Ksh 8.63 billion reported in the same period of the previous year. Claims incurred under general insurance business amounted to Ksh 29.43 billion by 31st December 2012. These had increased by 17.5% from Ksh 25.05 billion recorded in the same period of the previous year. Claims and policyholders' benefits under life business amounted to Ksh 16.92 billion during the same period. These had decreased by 4.7% from Ksh 17.77 billion recorded in the previous year. The shareholders' funds amounted to Ksh 74.81 billion during the period under review. These had increased by 28.9% from Ksh 58.04 billion reported during the same period in the previous year. The shareholders' funds comprised of Ksh 22.91 billion

in paid up share capital, Ksh 29.45 billion in retained earnings whereas Ksh 22.45 billion were other reserves.

1.2 Research Problem

The term emerging risks is not standardized in the parlance of insurers and as such it does not necessarily have a direct meaning. What can be said about these risks, as the name suggests, is that their potential consequence may be of exceptionally severe in nature, and thus there is an explicit need to manage them, Esperant (2012). Moreover, they are risks that are not fully understood or well known at the time being, but may become important in the future. Unlike other risks they do not have any track record so loss estimates in both likelihood and impact are hard to calculate. In general insurance, such risk would include risks of travel, business interruption, livestock insurances and oil and gas exploration risks. For example, the eruption of a volcano in Iceland in April 2010 presented an unprecedented prolonged disruption to international air travel because of the spread of the resultant volcano ash cloud over much of Europe and due to the closure of the airspace costs were incurred by both airlines and passengers and whilst volcanic eruptions is typically not a specific insured risk under most travel insurances policies, a number of claims by individual policyholders for delay and travel cancelations were paid. This illustrates the importance for insurers to monitor such emerging risks and reach strategic decisions on the provision of insurance cover, Rosamundet (2009)

In 2012, test results from the Ngamia-1 in Kenya boosted the country's hopes of striking commercially viable oil reserves as explorers prepare to conduct further studies within the same basin. British exploration firm Tullow oil and its partner Africa oil indicated that tests on the first conduit of the Ngamia-1 well produced 281

barrels per day (bpd) when aided by advanced pumping equipment. The results from the first flow test at Ngamia are also very encouraging and prove the first potentially commercial flow from the Lower Lokhone reservoir section. Analysts say that the discovery of oil flows in multiple wells within a common basin would help give an indication on Kenya's chances of declaring the commercial viability of its oil reserves, Daily Nation (23rd July 2013). With the new discoveries come the challenges of insurance and risk managements.

A key concern regarding the exploitation and control of oil and gas resources is that the governments especially on the African oil and gas producing countries receive an inadequate share of the large rents and benefits of exploration and production of the reserves either directly through capital injection into the economy or through the provision of auxiliary services like insurance, Dudley (2012). This may stem from a number of reasons including contracts and regimes that are not designed to extract maximum profits for the locals, policies that are designed primarily to promote and attract investments and have not evolved with changing global dynamics and national interests, Louis (2009). Lately, there has been quite a lot of activity in terms of discussions, consultations, seminars and workshops facilitated by IRA, the government and the ministry of energy with a view to discussing the economic impact of oil and gas mining and exploration in Kenya to the local insurance industry. This study therefore sought answers to the effects and benefits that may accrue to the local insurance industry from the oil and gas exploration in Kenya.

Studies on the Insurance industry in Kenya have addressed various aspects: A survey of fire rating practices in Kenya insurance market, Githiga (2004); Application of porters generic strategies by insurance companies in Kenya, Ogolla (2005); strategic

responses by life insurance companies in Kenya to changes in the environment, Wairegi (2004), Risk and return of investment held by Insurance Companies, Maina (2003); Responses by reinsurance companies in Kenya to changes in the environment: A case study of Kenya Re, Mwarania (2003). Risk Mitigation Strategies adopted by Insurers in Kenya, Salesio (2006). All of these studies have focused on specific aspects of the insurance company operations but none has addressed the subject of risk management and the emerging risks with specific reference to oil and gas exploration and mining. This study therefore sought to fill this gap by answering the following research question: "what are the effects of exploration and mining risks on the insurance industry in Kenya?"

1.3 Research Objectives

The objectives of the study were to:-

- i. Establish the effects of mining and exploration risks on the insurance industry in Kenya.
- ii. Find out the challenges associated with handling these emerging risks.

1.4 Value of the Study

The study is important because the findings will benefit the Insurance industry in Kenya seeking to enhance their premium growth by tapping into this new development of oil and gas exploration and mining which is an emerging insurable risk to the local insurance industry. The market is currently grappling with ideas of how to tackle the issue and the research will offer insights on how these issues can be handled.

The government and policy makers will benefit from the findings when making legislation, signing up mining and exploration contracts taking into account interests of the local insurance companies. The office of the Insurance Regulatory Authority which is responsible for the regulation of insurance services will use the findings to make recommendations to the government on the best approaches in handling these risks.

To the academicians and scholars, it will serve as a "ground breaker" for future research especially on the field of oil and gas exploration and mining and the relationship to insurance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In ensuring that the researcher remained well versed and more focused on the research area, relevant literature was reviewed. Key elements reviewed included the theoretical foundation of risk and insurance, classification of risk with specific emphasis on the emerging insurable risks and lastly the broad challenges in handling these risks.

2.2 Theoretical Foundations

Asmussen (2000) records that modern life is characterized by risks of different kinds, some threatening all persons while others are restricted to the owners of property, motor cars, while still others are typical for some individuals or for special occupations. The corresponding accidents, losses or claims will occur suddenly and unexpectedly and may involve considerable financial loss. It is quite evident that modern life is a fit subject for risk theory, and that some results in the pure mathematic theory might have applications in the study of problems in real life. In practice, risk theory can be identified with insurance risk theory or with the application of the theory of probability on insurance risk problems. Risk theory is a theory of decision-making under probabilistic uncertainty. From mathematical point of view it is a branch of probability theory, while its applications cover all aspects of life. Financial applications are most advanced, including banking, insurance, managing market and credit risks, investments and business risks. To name just a few, there are also applications to managing risks of health hazard, environment pollution, engineering and ecological risks.

Risk theory therefore is essentially a branch of probability theory, devoted to decision-making under probabilistic uncertainty. Basic concepts of the theory are: risk, risk measure, risk price, and individual attitude to risk. The figure below presents a simplified scheme of decision making.

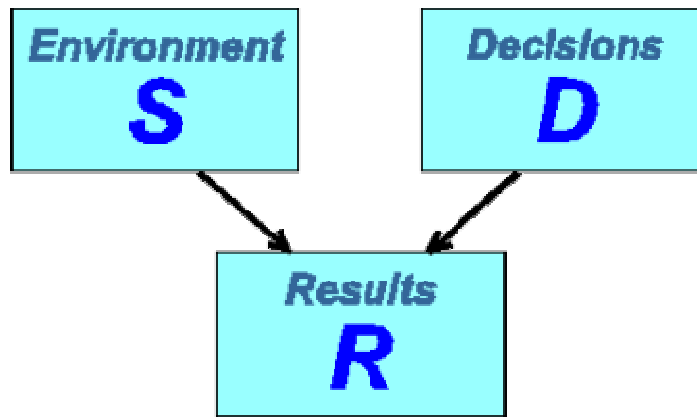


Fig 1: Risk Theory Concept (Source, Cramer 2000)

Here S is a set on environment states, D is a set of possible decisions, R is a set of achievable results. Result is influenced by both decision and environment state. Thus, a mathematical model of the object just described is a mapping $M: S \times D \rightarrow R$, that for an environment state s and decision d calculates the result $r = M(s,d)$. In the framework of risk theory the uncertainty is described by a probabilistic model, that is, by a probability distribution on S . Together with the mapping M this distribution for each decision d from D induces a distribution on R . Thus for each decision there is a probability distribution on R , so making the best decision mean choosing the "best" distribution on R among those available.

The theory and mathematical approach to risk and insurance has been and until recently confined primarily to European Actuaries in view of its complexity and insufficient need for such services given low insurance penetrating in other

continents. The foundation of the modern risk and insurance theory goes back to the works of Filip Lundberg and Harald Cramer. The Poisson process was proposed by Filip Lundberg in 1903 and In 1930 Harald Cramer extended the Lundberg's work for modeling the ruin of an insurance company as a first passage time problem. In risk theory there are two basic models for the amount of loss in an insurance collective, the individual model and the collective model, Martin (1986). Both these models are described as here below.

2.2.1 The Individual Risk Model

In this model we consider a (large) number of individual policies for instance we can think of whole life assurances that are in effect during, let's say, one financial year. For each of the policies there is a (small) probability p_i that a loss occurs, and a probability $q_i = 1 - p_i$ that no loss occurs. If a loss occurs the amount x_i is paid to the policyholder, where x_i is specified in the agreement. The losses are assumed to be independent. Let $\{M_i\}$ be independent Bernoulli variables with $P(M_i = 1) = 1 - P(M_i = 0) = p_i$. Then the individual amount of loss can be written as $x_i M_i$ and the total loss is given by $X := \sum_i x_i M_i$. Since the total loss is a sum of independent random variables, it is natural to define its distribution via the generating function $E[e^{-X}]$, which is the product of the individual generating functions, that is,

$$E(e^{-X}) = \prod_i (E e^{-x_i M_i})$$

2.2.2 The collective risk model

In the individual risk model for a portfolio of whole life assurances, the collective is changed over time as more and more policyholders die. However, for moderate times

and large collectives this effect can often be neglected. A natural approximation then is to consider a collective that is stationary in time in the sense that $F(dx)$ are constant and the number of losses in a time interval of length t is Poisson distributed with expected value t , the number of losses in disjoint time intervals being independent. The total loss process $S(t)$ in the interval $(0, t]$ motivated by this observation. Assume that the losses occur at time points T_1, T_2, \dots that constitute a Poisson process in time, that is, the increments $Y_k := T_k - T_{k-1}$ are independent and exponentially distributed with density $e^{-y} dy$. At each time of loss T_k , an amount of damage $X_k > 0$ is generated. The variables $\{X_k\}$ are assumed to be independent with distribution $F(dx)$ and the total loss in $(0, t]$ is given by $S(t) := \sum_{T_k \in (0,t]} X_k$. To specify the distribution of $S(t)$, let $N(t)$ denote the number of losses in the interval $(0, t]$. We then have $S(t) = \sum_{k=1}^{N(t)} X_k$. The process $\{N(t)\}_{t>0}$ is a Poisson process with independent increments in disjoint intervals and hence the increments of $S(t)$ that is, the sums of the amounts of loss in disjoint intervals: Thus,

$$P(N(t) = n) = \frac{t^n}{n!} e^{-t},$$

In summary it is noteworthy to mention that insurance does not prevent losses nor does it reduce the cost of losses to the individual or the society and as a matter of fact it may have the opposite effect of causing losses and may even increase the cost of losses. The existence of insurances may encourage fraud especially from the policyholders and in addition people are generally less careful and may exert less effort to prevent losses that they might if it were not for the existence of insurance contract.

2.3 Classification of Risks

Risk classification refers to the use of observable characteristics by insurers to group risks with similar expected claims, compute the corresponding premiums, and thereby reduce asymmetric information. Risk classification can be used to mitigate adverse selection and improve insurance market efficiency, but it may have undesirable equity or efficiency consequences, Rejda (2012). With regards insurability, there are basically two categories of risks; Speculative or dynamic risks and pure or static risks. Speculative (dynamic) risk is a situation in which either profit or loss is possible. Examples of speculative risks are betting on a horse race, investing in stocks/bonds. The second category of risk is known as pure or static risk. Pure (static) risk is a situation in which there are only the possibilities of loss or no loss, as oppose to loss or profit with speculative risk. The only outcome of pure risks are adverse (in a loss) or neutral (with no loss), never beneficial. Examples of pure risks include premature death, medical expenses, and damage to property due to fire, lightning, or flood.

While it may be theoretically possible to insure all risks, some are not insurable at any reasonable price and insurers may not be willing to accept all risks that people and society may wish to transfer to them. To be considered therefore for insurance purposes, insurers consider four basic characteristics of a risk; There must be sufficiently large number of homogenous exposure units to make the losses reasonably predictable, the loss produced by the risk must be finite and measurable i.e. the insurance company must be able to tell when a loss has taken place and attach a value to the loss. The loss must be fortuitous or accidental i.e. it is something that may or may not happen and also inevitable losses as wear, tear and depreciation are not insurable. There must be insurable interest in the risk that is legally recognized

relationship between the insured and the subject matter of insurance such that if the subject matter is damaged or lost, the insured will suffer a financial loss. This rule out the possibility of insuring property belonging to other people or causing damage to property belonging to others in order to benefit from the contract of insurance. Equally important is that contracts of insurance must not be contrary to what the society considers as moral and unjust. It is therefore not acceptable to insure against the risk of criminal venture going wrong like the ðlossö if the police caught up with thieves and deprive them of stolen goods, Charles (1985)

Insurance act CAP 487 has grouped insurances in Kenya into thirteen classes of general insurance and four of long term business. The general insurances classes comprises of Aviation, Marine Cargo & Hull, Engineering, Fire Domestic, Fire, Industrial, Liability, Motor Private, Motor commercial, Personal Accident, Theft, Work Injury Benefits, Medical and lastly Miscellaneous accident classes. Long term business classes are ordinary life, superannuation, and industrial life and bond investments.

2.4 Mining Risks and Insurance

The oil and gas exploration and mining risk is insurable under the Engineering policy. Insurance Act cap 487 defines Engineering insurance as the business of effecting and carrying out contracts of insurance of various perils arising out of plant and machinery, such as explosion and collapse of boilers, breakdown of electrical or mechanical plants and lifts and cranes and the resultant damage to the insured surrounding property and liability to third parties arising there from. It includes

contracts of insurance in respect of contract work covering damage to property on site however caused and third party liability arising there from.

Classes falling under the broad spectrum of engineering policies include boiler and pressure vessel, engine plant, electrical plant (lifts and cranes, computers, generators, transformers, turbines and switchbox) and contractors all risk. Boiler and pressure steam plants are insured against explosion and collapse resulting from normal wear and tear, slowly developing deformations, cracks, fractures and joint failures, overheating of tubes and damage to surrounding property. Engine plant is covered against the risk of mechanical breakdown and may be extended to include damage to bearings by breakage or overheating. Electrical plants are covered against electrical and mechanical breakdown, damage to bearing by breakage or overheating and damage by extraneous damage. CAR is defined as insurance in respect of contact works covering damage to property on site howsoever caused and third party liability arising there from. It therefore provides cover to business people who are classified as contractors. It is an 'all risk' policy and can cover all types of contractors be they builders, civil engineers, electrical contractors, oil and gas exploration and mining etc.

According to the business report for mining and Minerals 2013, other risks that affect mining and exploration operations and likely not to be insurable include; Climate change risks that have increased the sensitivity of projects for regulators, external stakeholders and employees. Weather, in the form of wind, floods or drought, is a key operational risk for mining and metal companies too. How mining and metals operations adapt to extreme weather events arising from climate change will become increasingly important to protecting value; Regulations can facilitate or restrict

business operations; mining and metals companies are increasingly required to navigate a barrage of new legislation around resource nationalism, employment and migration and environmental compliance. Additional challenges include, but are not limited to, increased regulatory and reporting requirements relating to land access, permitting, environmental approvals, fraud and corruption, conflict free mineral independent verification, and disclosure of government payments. Companies are also investing a lot of time and capital in maintaining their reputations as good corporate citizens by being transparent and adhering to regulatory requirements. Furthermore, the risks and costs associated with regulatory compliance have increased

2.5 Challenges in Handling these Risks

According to Salesio (2006), business risks appear in a bewildering variety of guises- credit risk, financial risks, operational risks, reputation risks etc. A business can only adjust to risks through a variety of convectional mechanisms and strategies but still there are no certainties. Risk managers are constantly obliged to consolidate reliable risk profiles and there are hardly refined mitigating processes suiting every rate of change within the environment, Ridley (1999).

The other challenge is of understanding the potential risks associated with new products in a given business line which is heightened when firms attempt to see how those risks intersect with the risks from its other business lines e.g a firm may be hedging its risks or enhancing diversification by offering new products but at the same time adding to risks it already has.

Furthermore, an institution has to pay attention to the behaviors and performance of its risk mitigants, whose appropriateness and applicability may also vary with changes in the market. The bottom-line for today's insurance institutions particularly the largest and most complex ones is that they must continue to monitor very carefully the embedded risks of their products and services, pay close attention to subtle changes in business practices that could affect the risks related to a given product and fully understand how the risks in all their business lines intersect and combine to affect the risk profile of the consolidated entity, Ridley (1999)

According to the Kenya Insurer, a Journal of the association of Kenya Insurers vol 9 No.8 (2013) the general challenges of Insurance Industry includes Competition; The 45 licensed insurance companies compete for a limited market characterized by low insurance penetration. The cut throat competition has subsequently led to some unprofessional conducts like rate cutting, lack of underwriting practices and procedures; legislative and taxation changes for example increase in the minimum capital requirements for insurers, increase in the solvency margin for long term insurers and the introduction of 'cash and carry' concept have increased the cost of doing business; Many insurers are also facing skills shortages which has led to inadequate underwriting skills and expertise. The primary focus of most insurance companies is often short-term demands rather than securing the talent need to meet longer term strategic objectives. Looking ahead, demographic shifts, evolving aspirations and accelerating globalization are set to transform the shape of the labor market and could make it even harder for insurers to attract and retain good people.

Lastly, In view of relatively minimal shareholders funds to support the emerging risks exposures, the companies are constrained to take on mega risk which may put strain on their available funds and free reserves. The emerging risks of the technological age are relatively new concepts that do not have statistical information that allows the measurement of the risk-adjusted premium, Esperant (2012),

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter discusses the research design applied to this study and the rationale for the choice, the population of interest, data collection methods, tools and the data analysis techniques that were geared towards meeting the objectives of the study.

3.2 Research Design

This study was an exploratory cross sectional survey that interrogated cross sectional data collected from the field. The choice of the methodology was informed by the recent discovery of oil and gas in northern Kenya. This provided the researcher with an opportunity to interrogate the effects and benefits for the local insurance industry.

Exploratory studies tend towards loose structures with the objective of discovering future research tasks; the immediate purpose of the exploration is usually to develop hypothesis or question for future research, Cooper (2006). Exploratory study is a valuable means of finding out what is happening; to seek new insights; to ask questions and assess phenomena in a new light, Saunders (2007). The major emphasis in such studies is on the discovery of ideas and insights. The method was specifically chosen because the area of investigation is new and vague and the research is aimed at shedding light about the current dilemma facing the insurance industry in Kenya.

3.3 Target Population

The target populations for the research were all 45 insurance companies, the five reinsurance companies, three large reinsurance brokers, and three large direct insurance brokers. These are basically the underwriters and intermediaries of the insurance business.

3.4 Sample Size

The segment of the population selected to represent the target population as a whole were twenty non-life insurance companies who basically underwrite the risks, Six reinsurance companies who offer capacity in terms of reinsurance protection, Two direct reinsurance brokers who plays the intermediary role and two direct insurance brokers who sources for the primary business. The companies that did not participate in the exercise were not particularly unique hence they were adequately represented by the 30 respondents.

3.5 Data Collection

The data collection tool for primary data was a structured questionnaire to enable quantitative analysis of the collected data. The questions included descriptive items for straight forward questions, ordered and multiple choice questions. The questionnaire was sent to respondents through email and mail surveys (drop and pick method). The distribution of the questionnaire targeted at least one respondent per company. The respondents were either the underwriting managers, businesses development manager or reinsurance managers whose responsibilities include risk analysis and acceptances. In total, there were 30 respondents to this study.

3.6 Data Analysis

The study being a cross - sectional survey was aimed at eliciting responses on the current state and future benefits of oil and gas exploration in Kenya. This is best done using both quantitative and qualitative statistics. Once the completed questionnaires were received back, they were checked for accuracy, completeness and consistency to address the initial proposition of the study. The analysis was done using descriptive statistic, the central tendencies specifically mode, mean and median to give commonality of response. Percentages and proportions were used to display the data. Charts and graphs were also developed to give a visual representation of data.

CHAPTER FOUR

DATA ANALYSIS, RESULTS & DISCUSSIONS

4.1 Introduction

Data analysis and interpretation is considered very important step and is the heart of a research work. This chapter therefore presents the data analysis and findings of the study based on the questionnaire completed by the respondents and the interpretation of that data with a view to arriving at empirical solution to the research problem. This process involved organizing the data for analysis (data preparation), describing the data and interpreting the data (assessing the findings against the adopted evaluation criteria).

4.2 Response Rate

The response rate achieved was 91% which is a good representative proportion of the population. For the purpose of answering the research question, the data was summarized and tabulated using frequencies and percentages, mean score and standard deviations were computed using Microsoft excel computer software. The study had two objectives; the first objective sought to establish the effect of mining and exploration risks on the insurance industry in Kenya and the second objective was to find out the challenges associated with handling these emerging risk and in particular oil and gas mining and exploration.

4.3 Profile of respondents

Respondents profile data helps paint a more accurate picture of the group of persons who attended to the questionnaire with a view to answering the research problem posed by the study. The respondents of this study were underwriting managers, underwriters, reinsurance accountants and reinsurance officers in their various organizations as tabulated here below.

Table 1: Profile of respondents

	Frequency	Percent
Managers	12	40%
Underwriters	6	20%
Reinsurance Accountants	5	17%
Reinsurance Officer	7	23%
Total	30	100%

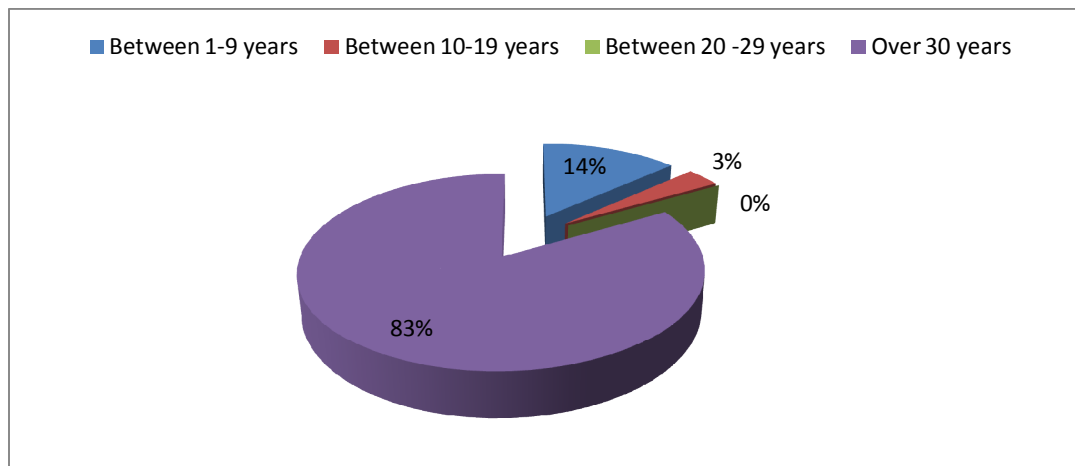
Source: Questionnaire

It was noted that 40% of the respondents were underwriting managers, 20% were underwriters especially from the reinsurance companies, a position equivalent to managers in direct insurance companies, 17% were reinsurance accountants and lastly 23% of the respondents were reinsurance officers. The profile of respondents is considered satisfactory given that these people are the primary decision makers on underwriting and reinsurance related matters. They assess a risk according to the likelihood of a claim being made by weighing up a number of factors and asking for detailed information from prospective clients (policyholders) subsequently their aim is to minimize losses for their company and help to make a profit.

4.3.1 Underwriting Experience in the Kenyan Insurance Industry

Underwriting experience is one of the most important characteristics in understanding their view about the research problem. Age indicates level of maturity in business and becomes more important in examining the response. The respondents were to indicate the duration their firms had been in the insurance business in Kenya and this indicated as here below:

Chart 1: Age of the Company



Source: Questionnaire

The findings indicated that the companies were established on dates ranging from 1960 to 2012. The date of establishment is either when a company was first incorporated or the date of formation of a new company as a result of a merger or acquisition, a trend which is common in the industry. The respondent companies therefore have a long history of existence and are therefore well established in the Kenya economy.

Table 2: Age of the company

Class	Frequency(f)	Class Interval(x)	Cumulative Frequency(CF)
1 - 9	5	5.00	5
10 - 19	2	14.50	7
20 - 29	1	24.50	8
30 - 49	9	39.50	17
over 50	13	25.00	30
Total	30	108.5	

Source: Questionnaire

It is evident from the table that the average age of the insurance companies in Kenya companies is 25 years with a corresponding standard deviation of about 4.9 years. The range of the age was found to be 97 years starting from 1 to 98 years. If we consider the quartile value, nearly 28 percent are below 28 years of age, whereas one-fourth of respondents are above 46 years of age, to be more specific a large number of respondents companies are 40 years of age in the sample. The interesting feature of this data is that the companies are mature underwriters to participate on the emerging insurable risks in the local industry.

4.3.2 Classes of business transacted

The respondents were to indicate the range of general insurance business transacted by their firms in five categories namely fire and allied perils, Motor insurances, Aviation, Oil and gas others. The response was tabulated here below.

Table: 3 Range of business

Class of Business	Frequency	Percent
Fire & Perils	30	100%
Motor Insurance	30	100%
Aviation	5	17%
Oil and gas	2	7%
Others(agriculture, livestock, micro-insurance)	1	3%

Source: Questionnaire

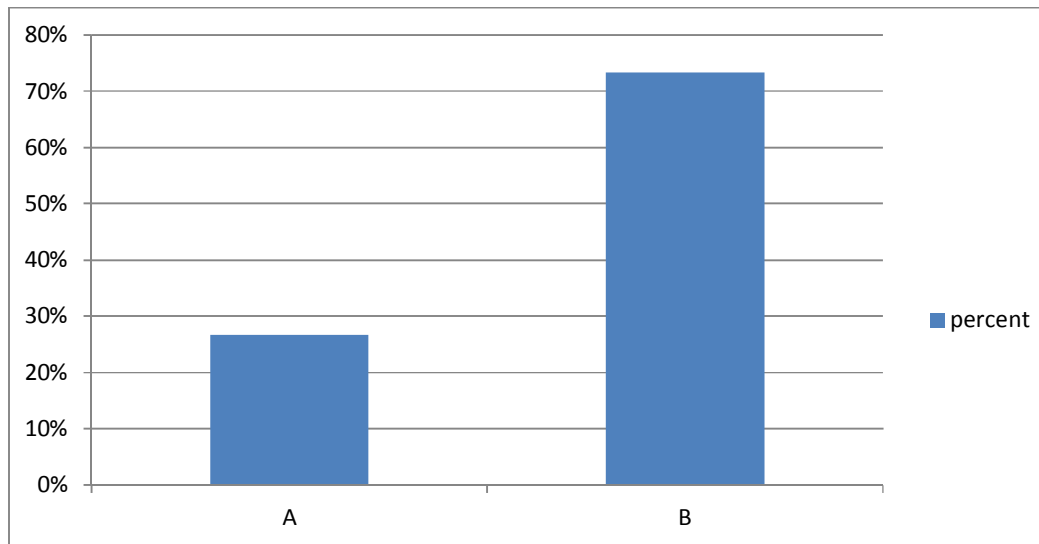
All the respondents indicated that they currently underwrite fire and motor business, 17% underwrites aviation business and only 7% are currently involved in oil and gas businesses. It was noted that only two reinsurance companies are currently involved in oil and gas risk underwriting, a local reinsurer does this on accommodation basis to their net account and another through their head office in Nigeria therefore the capacity to underwrite the risks is provided by their parent companies that are not domiciled in Kenya. From the above, it shows that the market still lacks capacity for oil and gas risks. The other businesses transacted by the market that were not listed in the questionnaire included agriculture, livestock and micro insurance.

4.4 Local Insurance Capacity to Underwrite Oil and Gas Risks

Capacity in insurance or reinsurance terms means the percentage of surplus or the Kenya shillings amount of exposure that an insurer or reinsurer is willing to place at risk. Capacity may apply to a single risk, a program, a line of business, or an entire book of business (Glossary of reinsurance terms). Issues considered under capacity in the questionnaire included the local risk appetite to underwrite oil and gas, government support to the local insurance industry in ensuring that these risks are localized, can the formation of a market pool assist building capacity? And lastly the benefits and envisaged growth level if the risks were retained locally.

Respondents were given a dichotomous question of generally a "yes/no" and an open-ended question which seek to explore the qualitative in-depth aspects of the industry financial capacity to underwrite oil and gas risks. The responses are tabulated below.

Graph 1: Local Insurance Capacity to Underwrite Oil and Gas Risks



Key: A-YES B-NO

Source: Questionnaire

74% of the respondents believe that the local insurance industry lacks the financial capacity to underwrite the risks while 26% were of the opinion the industry has the capacity to underwrite the risks. Those who answered to the affirmative were largely from the broking firms and their responses may have been guided by the fact that brokers do not carry any risk.

4.4.1 Local Reinsurance Capacity

This section of the questionnaire received very brief and incomplete responses from the respondents. It solicited responses on the individual companies underwriting capacity of oil and gas, fronting arrangements, automatic treaty programmes and for the brokers if they are currently involved in placements of this risk. 100% of the insurance companies indicated that they currently do not have reinsurance treaties in place to cover the risk and are neither underwriting nor fronting the business. 40% of the reinsurance companies indicated that they are currently involved in oil and gas risks although not in Kenya. 50% of the both the direct and reinsurance brokers indicated that they are currently placing oil and gas risks although not emanating from Kenya. Noteworthy is the fact that none of the local Kenyan Reinsurance Companies is involved in Oil and gas reinsurance placements. Both the local and foreign reinsurance companies operating in Kenya indicated that they would lead programmes of oil and gas risks but on condition that they get adequate retrocession protection. From the above analysis, it is clear that the local market lacks both reinsurance treaties and retrocession programmes to enable them underwrite oil and gas risks.

4.5 Government Support to the Industry in Underwriting Oil and Gas

About 9% of the respondents did not read or understand the question very well as they enumerated the general support the government would offer oil and gas explorers whilst not relating the same to insurance. Some of the reasons they gave included licensing oil fields, allocating land for exploration, building infrastructure to the mining areas, providing security to the explorers and giving subsidies to explorers. Whist these are justifiable options, they are not related to insurances.

However, 79% of the respondents related the question to insurance and gave the following responses; the government in conjunction with IRA is offering trainings and seminars to the market to bridge the knowledge gap and revamp expertise in this area, legislation and specifically in crafting of oil bill that emphasizes on the local content insurances, expertise and bringing in experts. Their responses tabulated as below

Table 4: Government Support to Local Insurance Industry

	frequency	Percentage
Education and Training	13	57%
Legislation	9	39%
Importing expertise	1	4%
Total	23	100%

Source: Researcher

From the 79% of those who answered the question correctly, 57% believe that the government is doing enough in terms of education and training the local insurance market, 39% are of the opinion that parliament will or is in the process of enacting

legislation to protect the market and only 1% believe that the government is importing talent to train the market. 12% of the respondents felt that the government has not done much to support the local insurance industry on this matter. They outlined that since the explorations and mining operations started in northern Kenya, none of these activities is insured locally. One respondent gave an interesting assertion that is worth mentioning that the contract papers signed by the government under the Ministry of Energy with Tullow Oil (explorers in Northern Kenya) gave them exclusive rights for five years to place their insurances with their captive company or within their master insurance policy with total disregard to the local insurance Industry. The study was unable to prove this statement and therefore treated it as a rumor, but may be a good area for future research. The implication of this to the local insurance industry is that they have been denied revenue in terms of insurance premiums and commissions in terms of fronting fee.

4.6 Market Pool a Panacea to Local Capacity

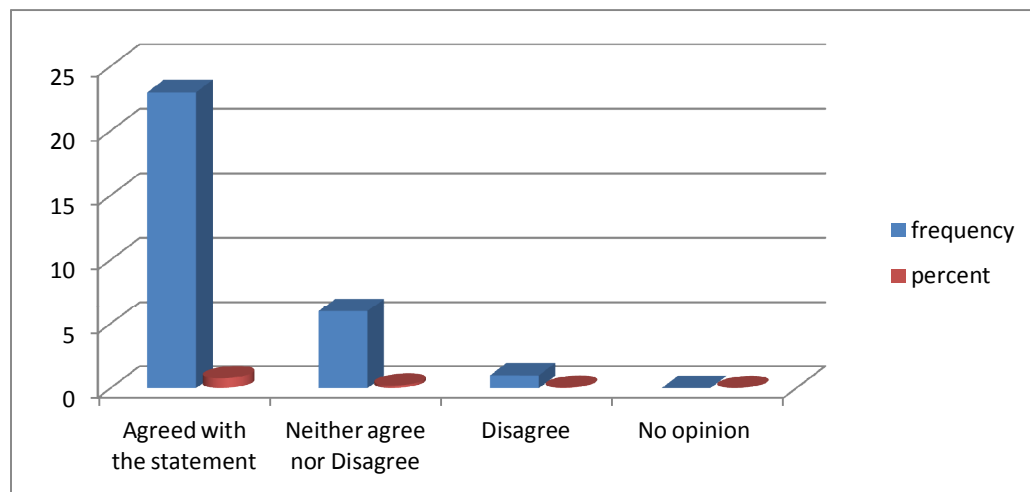
Pooling is a commonly utilized tactic for high risk insurance management. With an insurance pool, when a policyholder makes a claim the payout comes from the collective assets held in the pool, not from the individual company's own coffers. The process of pooling distributes the risks of coverage, with most pools being designed to grow over time as the client list grows and companies contribute additional funds, so that they can weather even the largest of claims. In recognition for the services they provide, insurance pools are sometimes offered special incentives by the government which make it advantageous to pool assets. Respondents were asked their opinion on whether putting in place a market pool will ensure retention of oil and gas risks in the local market. Their responses are summarized below.

Table 5: Local pool solution to Industry capacity

	frequency	percent
Agreed with the statement	23	77%
Neither agree nor Disagree	6	20%
Disagree	1	3%
No opinion	0	0%
Total	30	100%

Source: Research

Graph 2: Local pool solution to Industry capacity



Source: Researcher

From the findings, 77% of the respondents indicated that putting in place an oil pool would help the industry build capacity to underwrite the risks, 20% are in the middle and neither agree or disagree with the statement and only 3% disagreeing with the proposal. It clear from above that putting an oil pool is key to the market retaining the risk.

4.7 Oil and Gas Risks Contribution to Auxiliary Insurances

The respondents were to indicate on a scale 0%-15% the envisaged growth of other auxiliary classes of insurance in the next five years if the oil and gas reserves in Kenya become commercially viable. Responses were tabulated below:

Table 6: Growth of other classes of Insurance

	frequency	Percent
0% - 5%	9	30%
6% - 9%	12	40%
10% - 15%	5	17%
over 15%	4	13%
Total	30	100%

Source: Researcher

40% of the respondents believe that other related insurances will grow by between 6% to 9%, 30% are of the opinion that the growth in other classes of insurance would be between 0% to 5% and 17% of the respondent indicated that the growth would be 10% to 15% and lastly 13% believe that the growth would be over 15%. From the above responses, a mean of 6.6 is computed indicated that average market growth would be about 10%. This implies therefore that the impact of oil and gas mining and exploration in Kenya will be felt in the insurance industry in terms of increase of auxiliary insurance products by a margin of about 10%. According to IRA (2012) the industry grew by 11.4% in year 2012 from a premium of Ksh 97.49 billion in 2010 to Ksh 108.61 in 2012. It can therefore be reasoned that the industry will grow by a margin of 10% in terms on new businesses other than the oil and gas premiums.

4.8 Challenges in Insuring Oil and Gas Risks

Oil and gas mining and exploration are emerging risks in the local Insurance industry and are bound to have challenges. This section of the questionnaire had open ended questions in which the respondents were requested to enumerate the challenges that they would face in underwriting oil and gas risks. Some of the reasons given included the following; lack of local expertise that is the absence of human skill or knowledge in the oil and gas insurance which encompasses both underwriting and claims specialists, engineering expertise, risk consulting expertise, lack of both insurance and reinsurance capacity , lack of statistics for rating and lastly the potential of large claims.

The responses tabulated here below:

Table 7: Challenges to Local Insurance Industry

	Frequency	percent
lack of local expertise	30	48%
lack of Insurance capacity	14	23%
lack of reinsurance capacity	9	15%
lack of statistics for rating	1	2%
large claims	2	3%
High risk exposures	2	3%

Source: Researcher

From the above, the three most identified challenges to the industry in offering insurance cover to oil and gas risks are; lack of expertise (48%), lack of insurance capacity (23%) and lack of reinsurance capacity (15%). From the above it can be deduced that the industry lacks knowledge and experience in the oil and gas sector to

deliver specialist insurance services, backed up by major capacity to manage energy risks.

4.9 Potential Impact of Oil and Gas Exploration and Mining Risks

Although the question was specific to the Insurance industry, some respondents outlined the general impact of oil and gas mining and exploration to the economy which included hazards typically associated with such operations including fire, explosion, blowouts, sour gas releases and spills, damage to oil and natural gas wells, property and the environment degradation and general economic growth of the country. Most of these risks enumerated above are not insurable and this clearly indicates that the industry is yet to fully understand the risk.

60% of respondents indicated that with the discovery of oil and gas, insurance penetration will increase although none indicated the anticipated numerical figure for the increase; Insurance penetration rate indicates the level of development of insurance sector in a country. Penetration rate is measured as the ratio of premium underwritten in a particular year to the Gross Domestic Product (GDP). 20% of respondents indicated that there will be opportunity for the creation of specialized underwriters or underwriting agencies specifically for oil and gas risks, however 30% were not sure of the impact but only indicated the general growth on the insurance industry.

In conclusion, it is clear that positive effects of oil and gas exploration in Kenya will be felt by the insurance industry in terms of increased insurance penetration and increase of auxiliary insurances by about 10%.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarized the whole research process. It provides a brief summary of the findings, conclusion recommendations, limitations of the study and and recommendations for future research.

5.1.1 Summary of Findings

The study revealed that the insurances of oil and gas activities in Kenya are currently not placed or fronted through a local insurance, reinsurance or broking company. The study was however unable to discover the markets where these risks are placed or get empirical evidence of the placement details but can only speculate that these risks are placed outside the country without involvement of the local players, this is in contravention of the Insurance Act that stipulates that local insurance risks must be placed with local players or dispensation received from IRA upon confirmation of no objection from the industry players.

Another significant finding that emerged from this study is that the local insurance industry lacks the technical expertise to underwrite oil and gas risks. The industry still lacks oil and gas underwriters, risk surveyors, claim and loss adjustors hence there will still be strong reliance on external technical expertise in this area. There is therefore a need for players in the market to understand the intricacies of oil and gas insurance to be able to play a role in the sector.

The study also revealed that underwriting capacity both at insurance and reinsurance levels is a great setback to the industry. Capacity in this context means the supply of insurance available to meet demand and would depend on an insurance/reinsurance company financial ability to accept risks. For an individual insurer, this is the maximum amount of risk it can underwrite based on its financial condition. The adequacy of an insurer's capital relative to its exposure to loss is an important measure of solvency. Local capacity must therefore be build to absorb these risks but regrettably the global reinsurance companies with huge capacities with capacities required are foreign owned.

Another important finding is that the governments needs to do more in terms of technical capacity building and enacting appropriate legislation to protect the local insurance industry. Oil and gas legislation is likely to include a number of profit-maximizing measures including new taxes, a minimum stake in projects and local content provision laws. By so doing premium will be retained in the local market. Since it is unlikely that a clear regulatory framework will be in place soon existing investors will become increasingly dependent on political influencers, or industry gatekeepers. These are well-connected business stakeholders or policy-makers that wield considerable influence over energy sector licensing, regulations, and policy.

The study also revealed that the local insurance industry will experience the impact of oil and gas mining and explorations at least in terms of increased insurance penetration and increased businesses from auxiliary insurance products related to oil and gas risks.

5.1.2 Conclusion

This study was an exploratory qualitative inquiry into the effects of mining and exploration risks to the local insurance industry. The purpose of the inquiry was to develop a coherent theory, grounded in empirical data; however it became clear that the insurance industry in Kenya would still need to do more in capacity building supported by the government if the local content objective in oil and gas is to be realized. As now, the oil and gas insurance business is a situation that is skewed in favor of foreigners, which is exacerbated by acute shortage of technical expertise and financial capacity on the part of underwriters to undertake insurance in the sector. The oil and gas explorers must also be encouraged and persuaded to train Kenyans on the underwriting aspects of oil and gas business.

The Implication of the results is that more needs to be done in terms of government support to the local insurance industry through the Insurance Regulatory Authority (AKI) and to ensure that foreign oil and gas explorers comply with the local content directive.

5.2 Recommendation

The local insurance industry and the government through the local regulator IRA should come up with a local content policy in oil and gas business to boost premium income and build capacity in the insurance industry like other sectors. Unfortunately, it is only the insurance industry that has not benefited much from the local content policy; this may be attributed to the selfishness of some operators and lack of knowledge of the insurance scheme. Parliament should therefore facilitate the passage of the local content bill and its immediate implementation. Mwakali & Byaruhanga

(2005) define local content as the competitive and gainful participation of citizens and the private sector in an economic activity. Local Content leads to value addition, skills and knowledge development and retention, enhancement to the economic multipliers, the prerequisites for economic growth and improvement in the citizens welfare. Local Content development should be pursued under a framework of sustainable environment management practices. It is promoted through supplies of goods and services inputs, raw materials, financial services, skills, logistics, security and other requirements of an economic activity, in this case the petroleum industry. However, what is crucial is that there should be industrial value addition to the domestic economy and improvement in citizens' welfare and sustainable environment management practices. The petroleum industry is a high technology and capital intensive activity and its local content is usually developed through anticipation along the supply and value chain. It is therefore important that the non-oil sector which supplies goods and services provides skills, financial services, technology, logistics, security, raw materials, food, R&D services and other inputs to the oil and gas sector.

Consolidation or formation of pools would improve the synergies of underwriters as they would have not only a large pool of personnel to draw from but also invest some of their funds in training. According to Paine (2004), a risk pool is one of the forms of risk management mostly practiced by insurance companies whereby they came together to provide protection to insurance companies against catastrophic risks such as floods, earthquakes, emerging risk like oil and gas etc. The term is also used to describe the pooling of similar risks that underlies the concept of insurance. While risk pooling is necessary for insurance to work, not all risks can be effectively pooled.

In particular, it is difficult to pool dissimilar risks in a voluntary insurance market, unless there is a subsidy available to encourage participation.

As the industry builds capacity for the risks, fronting would be the immediate but not lasting solution to reasonably recoup some of the premiums being paid to foreign underwriters. Fronting is the process by which a primary insurer cedes all or virtually all of the insurance risk of loss to a reinsurer who also controls the underwriting and/or claim handling process either directly or through a managing partner. The fronting process has been existence for well over 100 years but it does give the appearance of behind-the-scenes backdoor dealing. Sometimes it looks like the unlicensed insurer is just trying to pull a fast one on the state regulators. In the current economic global unrest these fronting transactions are coming under more scrutiny. Fronting is a troublesome practice for both the industry and the regulators, it presents both business opportunities and problems for participants. In view of the fact that the Kenyan Industry still lack the underwriting capacity, portions of the oil and gas risks may be fronted to well rated securities.

5.3 Limitation of the Study

The study had various limitations foremost was the sensitivity and complexity of the subject. Oil and gas has just been discovered in Kenya and from the foregoing, none of these risks are currently insured locally. Some inconsistencies were detected in the responses but not to an extent of invalidating the study generalizations.

On the data collection method; some questions were not appropriate for a mailed questionnaire but would have been better handled through a structured one-to-one interview to facilitate probing.

Prior research studies on a problem helps lay a foundation for understanding the research problem however this was the first study done on the subject but this limitation can serve as an important opportunity for further research.

Confidentiality and attitude of the respondents towards the researcher posed a challenge especially from the reinsurance companies who viewed the research as a way to collect information for competitive advantage for example; the reinsurance companies were not cooperative in giving information about their capacities on oil and gas risks. The researcher handled the problem by carrying an introduction letter from the University and assured them that the information they give would be treated confidentially and would be used purely for academic purposes only. Lastly time limit to conduct the research was equally a limitation.

5.4 Suggestions for Further Research

The study dealt with the general effects of Mining and exploration risks to the insurance industry in Kenya thus proving a base for enhanced research on the individual effects and factors that would affect underwriting of these risks.

The study also investigated the general challenges of underwriting these emerging risks. In order to achieve a clearer understanding, an in-depth study on the individual challenges may be carried out and this may be extended to other areas of emerging risks like aviation, agriculture & livestock and micro insurance within the context of Kenya Insurance Industry. Finally a comparative analysis could be conducted between the Kenya Insurance Industry and other countries on the basis of these findings. Such analysis would be important in making local Kenyan practices keep pace with what is happening in other countries.

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APPENDICE 1: LETTER TO THE RESPONDENTS

University of Nairobi,

August 2013

Dear Sir/Madam,

I am a postgraduate student pursuing a Master in Business Administration (MBA) course at the School of Business, University of Nairobi. Prior to fulfillment of this course, one is required to conduct a management research project based on real management problems facing Kenyan firms. In this regard, I am conducting a research on **“The Effect of exploration and Mining Risks on the Insurance Industry in Kenya”**

You have been selected to form part of this study and to this end, I kindly request for your assistance in completing the attached questionnaire.

The information and data provided will be treated with confidentiality, used solely for academic purposes and the name of the firm will not appear in the final report.

Thank you for your time and consideration. A copy of the final research report can be availed to you upon request.

Sincerely,

David Mitoko (MBA Student)

APPENDIX II: QUESTIONNAIRE

SECTION A: COMPANY PROFILE

1. Name of the company.....
2. Respondent job title in the company.....
3. How long has the company been operating in Kenya.....
4. What class of insurance business is the company licensed to transact? (tick as appropriate)
- a. Non life business only []
 - b. Life Insurance []
 - c. Composite business []
 - d. Reinsurance Business []
 - e. Insurance/Reinsurance broking []
5. Please tick the classes of general insurance businesses that your company transacts
- a. Fire and allied perils []
 - b. Motor Insurance []
 - c. Aviation []
 - d. Oil and gas []
 - e. Others []
- Specify í ..

SECTION B: INSURANCE CAPACITY

1. In your assessment, can the local insurance industry comfortably insure all the risks associated with oil and gas mining and exploration risks in Kenya?
- a. Yes []
 - b. No []

Explain your answer í

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2. Explain in what ways is the government supporting the insurance industry in oil and gas exploration in northern Kenya?

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3. Putting in place an oil and gas pool to cater for the new risks will help retain it in the local market

- a. I agree with this statement []
- b. I neither agree nor disagree with this statement []
- c. I disagree with this statement []
- d. I do not have an opinion on this matter []

4. The local insurance industry is going to benefit from oil exploration and mining in Kenya. Kindly give the ways in which you believe these benefits will be felt.

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5. Oil and gas will definitely open up other types of risks to the local market. How big do you envisage the growth of insurance (including penetration) to be in the next five years?

- a. 0% to 5% []
- b. 5% to 10% []
- c. 10% to 15% []
- d. Greater than 15% []

SECTION C: REINSURANCE CAPACITY

1. a) Do you underwrite oil and gas exploration and mining risks in Kenya?

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b) If yes, what is your capacity, kindly specify net retention, treaty & fac re

Retention Kshí .

Treaty Ksh í

c) If no, do you front the businesses.....

d) If a broker, do you place any oil and gas business?

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e) In Yes, to which company do you place the business? í í í í í í í í
f) If No, why?.....

2. a) Is mining/explorations risk covered under your automatic treaty arrangements.....

b) If No, kindly give reason.....

3. a) If you are a reinsurance company, would you lead a reinsurance treaty program on exploration and mining risks?.....

b) If no, kindly specify why.....

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SECTION D: CHALLENGES

1. List at least five challenges that you would face if you underwrite oil and gas exploration and mining risks.

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2. What do you think would be the potential impact of oil and gas exploration in northern Kenya to the local insurance Industry?

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SECTION E: RECOMMENDATIONS

3. What would you recommend to the local Insurance Industry to address the issue of Oil and Gas Insurance?.

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Thank you!

APPENDIX 3:

LIST OF REGISTERED INSURANCE COMPANIES IN KENYA

1. AAR Insurance Company Ltd
2. Africa Merchant Assurance Ltd
3. AIG Kenya Insurance Company Ltd
4. APA Insurance Company Ltd
5. Apollo Life Insurance Ltd
6. British American Insurance Company Ltd
7. Cannon Assurance Company Ltd
8. Capex Life Assurance Company Ltd
9. CFC Life Assurance Ltd
10. CIC General Insurance Company Ltd
11. CIC Life Assurance Company Ltd
12. Corporate Insurance Company Ltd
13. Directline Assurance Company Ltd
14. Fidelity Shield Insurance Company Ltd
15. First Assurance Company Ltd
16. GA Insurance Company Ltd
17. Gateway Insurance Company Ltd
18. Geminia Insurance Company Ltd
19. Heritage Insurance Company Ltd
20. ICEA Lion General Insurance Company
21. ICEA Lion Life Assurance Company
22. Intra Africa Assurance Company Ltd

23. Invesco Assurance Company Ltd
24. Jubilee Insurance Company Ltd
25. Kenindia Assurance Company Ltd
26. Kenya Orient Insurance Company Ltd
27. Kenyan Alliance Insurance Company Ltd
28. Madison Insurance Company Ltd
29. Mayfair Insurance Company Ltd
30. Mercantile Insurance Company Ltd
31. Metropolitan Life Assurance Company Ltd
32. Monarch Insurance Company Ltd
33. Occidental Insurance Company Ltd
34. Old Mutual Life Assurance Company Ltd
35. Pacis Insurance Company Ltd
36. Pan Africa Life Assurance Company Ltd
37. Phoenix of E. A. Assurance Company Ltd
38. Pioneer Life Assurance Company Ltd
39. Real Insurance Company Ltd
40. Resolution Insurance Co. Ltd
41. Shield Assurance Company Ltd
42. Takaful Insurance of Africa Ltd
43. Tausi Assurance Company Ltd
44. Trident Insurance Company Ltd
34. UAP Insurance Company Ltd

APPENDIX 4

LIST OF REGISTERED REINSURANCE COMPANIES IN KENYA

1. Kenya Reinsurance Corporation
2. Continental Reinsurance Company
3. PTA (ZEP) Reinsurance Company
4. Africa Reinsurance Company
5. East Africa Reinsurance Company

APPENDIX 5

LIST OF REGISTERED REINSURANCE BROKERS IN KENYA

1. First Reinsurance Brokers
2. Afro-Asian Reinsurance Brokers

APPENDIX 6

LIST OF REGISTERED INSURANCE BROKERS IN KENYA

1. AON Minet Insurance Brokers
2. Pacific Insurance Brokers
3. Prime Mover Insurance Brokers