

The University of Southampton

Academic Year: 2013/2014

Faculty of Business & Law

Southampton Management School

MSc. Dissertation

An analysis of the role of insurance risk management in the minimization of catastrophic risks and disaster management

Ethics ID: 11219

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Presented for MSc. Risk Management

This project is entirely the original work of student registration number 25791745. Where material is obtained from published or unpublished works, this has been fully acknowledged by citation in the main text and inclusion in the list of references

Word Count: 14599 words

ABSTRACT

This project was selected to gain an insight into the current situation which exists within the Caribbean Region with regard to insurance risk management and catastrophic risks. Insurance is a form of risk transfer; part of the risk management process and there was need to gain some comprehension of the extent to which this approach is used.

An exploratory method of research was selected with triangulation employed. This involved the use of data collection methods such as semi-structured interviews and questionnaires. Data collected was analyzed using different approaches; statistical approaches for the quantitative data and the template analysis for qualitative data.

The results provided details of the present practices in risk management used by insurance companies for reduction of catastrophic risks. Themes were derived including perception of the risk posed by disasters, the risk management perspective and the effectiveness and adequacy of risk management approaches used in catastrophe management.

This research is specific to the Caribbean Region and is unique in the sense that insurance companies were approached to obtain the information. In the literature obtained by the researcher in previous reports, generalizations were made regarding the situation which exists. This project provides a better idea of what currently exists.

ACKNOWLEDGEMENTS

This study was successful with the encouragement and mentoring from many persons. I extend my gratitude to my dissertation supervisor, Dr. Ian Dawson, who provided his assistance and guidance in the dissertation process.

I am also appreciative of the encouragement and motivation received from my family in the United Kingdom and St. Lucia.

The research process was an educational experience and primary data for this project would not have been possible without the agreement and assistance from the many insurance managers who agreed to participate. Thus my sincere appreciation is also extended to them.

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CHAPTER 1 - INTRODUCTION

Management of risks is essential for the success of any business entity. Risks are varied and the purpose of risk management is to ultimately mitigate or eliminate the risks which can threaten the success, livelihood and prosperity of the business world and the public. Insurance companies are faced with a number of risks. A risk in the context of insurers' refers to 'an estimate of the probable loss expected from the effect of a given hazardous event' (USAID, 1996). Insurance companies are exposed to risks such as increased competition, loss of business and fraudulent claims. However, the main focus of this dissertation is an analysis of the impact and management of catastrophic risks on insurance companies.

Catastrophes can result in extreme losses for insurance companies including loss of profits and insolvencies. Reports internationally have indicated the increased costs associated with catastrophic losses in particular those associated with natural catastrophes and reputational risks. One example of a natural catastrophe which has affected insurance companies' viability includes floods in the UK recently which were expected to result in 'costs to insurers of more than one billion Sterling (BBC, 2014). Reputational risks pose a significant threat to insurers as was the case of Colonial Life Insurance Company (Trinidad) Ltd., which collapsed in 2009 due to its corporate governance issues. (Soverall W. & Persaud W. (2013) Furthermore, insurers' losses have been exacerbated by new and emerging risks such as climate change.

A case study approach of the Caribbean Region, a small insurance sector, was selected by the researcher, specifically to investigate the current practices which exist with regard to minimization of catastrophic risks. Natural catastrophes are viewed as one of the greatest risks for Caribbean insurers. Additionally, the researcher seeks to make comparisons and outline differences from the

Caribbean Region with disaster and catastrophe management approaches practiced worldwide.

1.1 - Reason for selection of topic

The researcher's decision to select this topic was due to previous work experience in the insurance industry; insurance expertise being gained over a 15 year period. The topic of risk management and its effects on insurance companies has not been fully explored and this research project offered the opportunity to investigate the situation which currently exists in the Region, in which the researcher was previously employed. The risk management concept was practiced at a minimal level in the insurance industry within the period employed and this warranted the need to investigate the general perception of risk management.

1.2 - Objectives of the dissertation

The dissertation aims to investigate the general approach to risk management among insurance companies within the region in particular with regard to catastrophic risks. Additionally, the researcher aims to clarify existing practices and methods of risk reduction within the small insurance market, through the collection of primary data. The risk management approaches unearthed through the research process will be compared with those viewed by researchers as operative in catastrophe or disaster risk management.

1.3- Methodology

The researcher has opted for the mixed methods approach to obtaining information relevant to the research question. This is an empirical research project which will use an exploratory approach to obtain data. The researcher has selected the epistemological methodology of realism; where a combination of both deductive and inductive approaches will be used and information cumulated by the use of both quantitative and qualitative research methods. The intention is to derive adequate and diverse information on the subject matter.

The research project will aim for a description of best practices for curtailment of catastrophic risks via various views in the literature review initially. Thereafter investigations on the current trends within the Caribbean insurance market will be undertaken and compared with those outlined in the literature review. The ultimate intention is to provide recommendations to insurers where necessary for future research use.

CHAPTER 2 – LITERATURE REVIEW

Section 2.1 - Introduction

The purpose of this chapter is to highlight the significance of insurance in the management of disasters or catastrophic risks as viewed by various researchers. Insurance is viewed as a significant element in the minimization of catastrophic risks.

The chapter is subdivided into four sections; each focused on a specific objective. Section 1 focuses on the definition of insurance and the role and benefits which insurance contributes to the financial sector and public at large. Section 2 highlights the challenges which the insurance sector is faced with; emphasis is placed on catastrophic risks.

This literature review highlights in Section 3, various researchers' views, on the effective practices which have been adopted by insurers to handle or minimize the impact of catastrophic risks. This is viewed from the perspective of insurers' own risks and the risks of policyholders.

As this research paper is based on a specific insurance market, i.e. the Caribbean region, Section 4 of this chapter highlights the nature of this insurance market, its challenges and practices which have been adopted to handle catastrophic risks.

2.1.1 - Overview

Many business enterprises including insurance companies attempt to establish effective risk management practices which would assist in reducing the impact of losses. Insurance entities aim to reduce potential liability and claims costs associated with their exposure to risks. Risks can be defined as 'uncertain events or sets of circumstances that should they occur can have an effect on the achievement of objectives' (Simon, Hillson & Newland (1997)). Risks can thus be viewed as hazards which can have an adverse effect on the livelihood of others. The risks insurers' are exposed to include fraud, reputational risks, corporate misconduct and governance issues, insurance regulation issues, insufficient capacity to cover its risks and catastrophic risks.

Catastrophic risks are viewed as one of the main challenges of the insurance industry. Catastrophes can be defined as 'low probability natural or man-made events that create shocks to existing social, economic and or environmental frameworks and have the potential of producing very significant human and or financial losses'.(Bank, 2005: 5). The Organisation of American States (OAS) 1996 report views catastrophes as 'major events which can cause damage to multiple interests'.

Catastrophes can be subdivided into natural and man-made disasters. Natural disasters are caused by forces or acts of nature and include hurricanes, earthquakes and storms. The latter can be defined as 'disaster events originating from human activities or forces' (Banks, 2005). Consequences of exposure to catastrophic risks include loss of profits due to increased liability and property insurance claims. 'Hurricane Andrew which affected Florida in 1992 caused insured losses of 15.5 billion' (Lecomte & Gahagan, (1998). Another consequence is insolvencies as was quoted by (King, 1993) who stated that 'nine property and casualty insurers became insolvent as a result of Hurricane Andrew'; an example was American Property and Casualty Company'.

In the risk management process, insurance is viewed as a form of risk transfer and sought by many to assist in reinstatement and recovery subsequent to losses. Insurance entities therefore seek to effect risk management practices which can assist in minimization of catastrophic risks. Traditional methods of risk management are practiced however, many innovative methods have emerged. This research paper is focused specifically on the effect of natural catastrophic risks on insurance companies and risk management approaches used to minimize those risks.

2.2 – Insurance defined

Insurance can be defined from many perspectives. Diacon & Carter (1992) defined insurance as ‘an arrangement by which one party (the insurer) promises to pay the other party (the insured) a sum of money if something happens, which causes the insured to suffer a financial loss’. Furthermore, Rejda & Mc Namara (2014) view insurance as ‘ the pooling of fortuitous losses by transfer of some risks to insurers, who agree to indemnify insureds for such losses, to provide other pecuniary benefits on their occurrence’.

The insurance process involves the establishment of a pool of risks. King (2013) states that ‘insurers who provide the insurance service are able to offer protection against financial loss by pooling the risks from a large group of independent and identically distributed risks’. ‘The insurer selects the pool of members, charges an appropriate premium and pays claims’ (Diacon & Carter, 1992). Thus, once funds are collected they can be used for the payment of insured losses.

2.2.1. - The role of insurance

- The role of insurance in the risk management process

Insurance undeniably plays a significant role in the risk management process. This is emphasized by Atkins & Bates (2008) who stated that the 'basic concept underlying insurance is that of risk transfer'. Parsons (2008) stated that 'insurance plays an important part in the management of risk and also helps to facilitate and support business activity'. A report conducted by Price Waterhouse Coopers in 2013 states that 'insurance allows both businesses and individuals to minimize the impact of financial losses resulting from the occurrence of future events'. Insurance can also be viewed as a form of 'reducing risk through risk management advice' (Bates et al, 2008).

Insurance contributes to loss reduction and provides policyholders with a sense of security that their losses will be indemnified. This was advocated by Banks (2005) who reiterated that the role of insurance extends to that of a 'pre-loss structure' and a form of loss financing'. In addition, Linnerooth-Bayer & Mechler (2009) state that insurance is beneficial as it 'provides post-disaster liquidity, reduces long term indirect losses which can be devastating to lives and livelihoods as the direct damages'. Banks (2005) supported the view by stating that insurance is one of the 'most important mechanisms for financing catastrophic losses' and that 'institutions that actively manage their catastrophic exposures generally turn directly to the insurance markets when they have implemented loss control measures'. (2005, P. 87). Kunreuther et al (2006) added that 'insurance has inherent qualities that promise to reduce future risks and provide compensation if a loss occurs'.

Insurance provides the assurance to businesses and individuals that their capacity can be increased. The idea of having some form of protection and indemnification for losses incurred in business can result in entities seeking to pursue objectives; albeit risky, confident that insurance can assist in the event of an unfortunate incident or event. Linnerooth et al (2009) emphasized that

'insurance removes the risks for businesses by allowing higher-profit and higher risk activities to be pursued'.

Other researchers have emphasized the benefits of insurance in the management of risks. Kunreuther & Freeman (2006) view insurance as 'beneficial in that it is an effective risk management tool'. Furthermore, the writers state that 'insurance possesses five attributes which makes it an 'effective risk management tool'. Those attributes include the role of insurance in 'variance reduction'; 'its ability to segregate risks, its encouragement of loss reduction measures and its ability to 'monitor and control behavior'.

The insurance process in its risk management role should therefore entail a process of effective identification of risks, a process of loss prevention as well as the some form of evaluation and monitoring. Policyholders should therefore be monitored by insurers to ensure that their risks are minimized. According to Kunreuther & et al (2006) 'insurers provide a valuable function by monitoring the activities of policyholders to verify that the insured operates in a manner consistent with underwriting standards'.

Other researchers have also contributed to the theory that insurance is beneficial in its role of risk management. For instance, Hoeppe & Gurenko (2006) views insurance as 'an important risk management tool as today, the insurance industry absorbs about 40% of catastrophic economic losses in industrialized countries'.

Insurance has played the role of providing some form of education in particular with regard to management of risks. This has taken the form of sponsoring of conferences, through publications on issues related to the provision of services and loss reduction'(OECD, 2011). Furthermore 'Programs sponsored by the insurance sector has improved hazard resistant construction practices in some countries' (OECD, 2011:42)

Alternatively, insurance may not always be viewed as propitious. For instance, insurance as a risk transfer mechanism is not always viable. Bates et al (2008) state that 'some risks are not insurable or not at a price that is likely to be acceptable'. Insurance cover may be restricted due to factors such as high risk locations and poor construction of buildings where property insurance is sought. Where cover is provided, the insurance premiums may be unaffordable due to the high rates offered by insurers.

Policy conditions such as deductibles may be construed as disadvantageous to policyholders. A deductible can be defined as 'a provision by which a specified amount is subtracted from the loss payment otherwise payable to the insured. (Redja et al,(2014). Bates et al (2008) view a deductible as 'imposing losses on the policyholder thereby disputing the role of insurance as a risk transfer mechanism'. In contrast, a deductible can be viewed as a 'form of 'risk retention' (Redja et al, 2014) as insurers can use this approach to minimize small claims and increase premium savings.

2.3 – Challenges facing the insurance industry

The insurance industry is faced with many challenges albeit the many benefits the sector has provided within the society. Moral hazard is a key element in insurance business and has become a challenge for insurers. A moral hazard can be defined as 'dishonesty or character defects in an individual that increase the frequency or severity of the loss'.(Redja et al (2014). Examples include 'fraudulent claims and overestimation of claims. Insurers may be faced with the challenge of the selection of good and honest customers, who are not likely to increase their losses. Kunreuther et al (2006) contends that 'providing insurance protection to an individual may lead that person to behave more carelessly than before he or she had coverage'. Redja et al view 'moral hazard as difficult to control' and perceive that insurers may attempt to control this issue through policy conditions such as 'exclusions' and 'deductibles'.

Insurers are also faced with the aspect of 'adverse selection'. This concept occurs 'when an insurer cannot distinguish between the probabilities of a loss for good and poor categories'. (Kunreuther et al (2006). 'Persons with a higher-than average chance of loss attempt to seek insurance at standard rates' (Redja et al, 2014). As Kunreuther et al (2006) stated, 'insurers are faced with increased expense to collect information to be able to distinguish between risks'. The eventual outcome of such uncertainty may be the unaffordability of insurance premiums as insurance premium rates may be increased. 'Like moral hazard, adverse selection may be curtailed through effective underwriting procedures and policy provisions'. (Redja et al, 2014).

On a global scale, the players of the insurance industry; namely insurers, intermediaries, brokers and loss adjustors, have been faced with many challenges. A Price Waterhouse Coopers (PWC) 2013 report for instance stated that the primary challenge faced by insurers in 2013 was 'insurance regulation in terms of its uncertainties, quality and costs'. The EU Solvency II Directive is an example of a regulation imposed on the insurance sector in Europe, which is viewed as 'loading the insurance industry with heavy costs' and 'distracting management from running profitable businesses' (PWC, 2013). The issues of cost and quality of service provided have contributed too much uncertainty in insurance regulation. The PWC 2013 report for instance emphasized that quality of regulation was varied with there being 'a failure of regulators to carry put sufficient cost/ benefit analysis before introducing burdensome new regulators'. In addition it was noted that there was a 'failure of some regulators to understand the economies and business model of insurance; (PWC report, 2013), thus adding to the challenge associated with insurance regulation.

Another threat or obstacle which had adverse effects on insurers' was an unpredictable macro-economic environment. This factor was emphasized in the PWC 2013 report which states that 'the uncertain state of the global economy is

having a major impact on all aspects of the insurance industry; growth aspects, investment returns and balance sheets'. The results of a survey undertaken in the Cyprus insurance industry were highlighted in this report with factors such as 'extremely limited opportunities for business growth', 'intense market competition', 'complete asset meltdown' and 'continued deteriorating results' were caused by the hard economic times (PWC , 2013).

In addition, the insurance industry is faced with additional threats such as poor 'business practices', 'reputational risks', 'poor corporate governance structure', 'reinsurers' defaulting, 'quality of risk management' and 'natural catastrophes' (PWC, 2013). Emphasis will however be placed on the latter threat as it is the main factor on which this research project is based.

2.3.1 -The catastrophe threat

A major threat to insurers' viability is the losses associated with catastrophes. Atkins & Bates (2008) identified catastrophe risks as 'a serious threat to the viability of non-life insurance industry and the society it serves'. Natural and man-made catastrophes have both resulted in exorbitant losses and claims for insurers. Natural disasters in particular have been exacerbated by the phenomenon of climate change resulting in increased intensity in natural catastrophes. Kunreuther, Michel-Kergen & Ranger (2011) reported that 'climate change and global warming have led to increased intensity in tropical and extra-tropical storms, changes in rainfall and changes in global ice and snow coverage as expansion of seas or rise in sea level'. Climate change can be viewed as contributing to increased risk and thus claims.

Natural disasters caused by forces of nature such as hurricanes, earthquakes and storms have adversely affected the insurance industry. For instance, in the Caribbean region, 'Hurricane Hugo which struck the South Carolina in 1989 exceeded US\$4 billion; Hurricane Andrew which

struck the Florida coast in 1992 caused insured damage of US\$23.7 billion' (Kunreuther, 1998). In addition, 'in the United States, a Northridge earthquake which occurred in 1994 resulted in losses of 19.6 billion' (Kunreuther, 1998).

2.4 – Risk management/ disaster approaches to mitigate catastrophic risks

Section 2.4.1- Risk management approaches

This section focuses on the various strategies which have been adopted by private insurers in their attempts to minimize risks. The large losses which have been incurred by the private insurance industry due to natural disasters warrants the need to investigate the risk and disaster management approaches which have been adopted to handle those threats. The risk and disaster management approaches involve reducing exposure to risks and vulnerabilities.

Banks (2005) stated that 'natural catastrophes will occur regardless of attempts at intervention' and 'can only be managed to a limited degree'. He added that there is need to 'turn to the management of vulnerabilities and the transfer and reduction of losses'. This is possible through risk management approaches.

Risk management approaches adopted by insurers to mitigate the risks associated with catastrophic risks have been investigated and revealed by several researchers. The risk management approaches can be viewed from two perspectives; approaches to minimize insurers' internal losses associated with catastrophes and those of an external nature focused on policy actions involving clients or policyholders.

2.4.2 - Internal approaches to risk management

The most suitable risk management approach for catastrophic losses internally can be viewed from a risk management matrix (see Appendix 10), which classifies exposures and risk management techniques based on frequency and severity of losses. Insurance is viewed according to this matrix as best suited for

low frequency and high severity losses' such as natural disasters. (Redja et al, 2014). High severity implies that 'catastrophic potential is present' and low severity 'the purchase of insurance is feasible' (Redja et al, 2014).

Reinsurance can be viewed as a form of loss financing and risk transfer and is 'a form of insurance whereby an insurance company can transfer to another company all or part of its liabilities in respect of claims arising under the contracts of insurance that it writes' (Diacon & Carter, 1992). This approach is beneficial in managing the risks associated with increased claims costs which can ultimately lead to insolvencies. Additionally, reinsurance can result in 'increased underwriting capacity for insurers or the insurers' ability to write new business', the stabilization of profits especially with regard to poor loss experience' and the provision of protection against catastrophic loss' (Rejda & Mcnamara (2014). The latter benefit can be illustrated with regard to Hurricane Katrina which occurred in 2005 causing insured property losses amounting to\$41 billion; reinsurers paid a large part of the loss resulting in reduced losses for primary insurers' (Rejda et al, 2014:130).

However, there are some constraints to the provision of reinsurance namely the possibility of default of reinsurers and the strict conditions which are imposed on insurers in order to obtain the reinsurance protection. Despite those onerous conditions, reinsurance can surely be viewed as beneficial to loss reduction.

Another traditional risk management mechanism includes providing catastrophe insurance cover through property and casualty (P&C) cover, liability, business interruption and workmen's compensation. Those policies result in a 'partial transfer of risks'. (Banks, 2005: 90). Banks further added that 'a policy may be deemed to provide catastrophic cover if it provides for indemnification when a specific named catastrophe event occurs'. Catastrophes are known

to result in extensive damage to property and thus customers can rely on policies such as the P&C cover to 'provide post-loss financing for any physical property that is damaged or destroyed by a catastrophic peril'(Banks, 2005).

Alternative forms of risks transfer have become predominant in management of risks. This involves the securitization of risks or the transfer of risks to the capital markets. Redja et (2014) contend that this is an effective form of risk management as it allows for 'the increase in capacity for insurers and reinsurers'. Examples of risk securitization are insurance options such as weather derivatives and catastrophe bonds. Catastrophe bonds 'allow an issuing institution to transfer catastrophic exposures via investors thereby creating capital relief and additional risk capacity' (Banks, 2005). Mechler et al (2009) suggest the use of catastrophe bonds as another novel insurance mechanism and defined it as 'an instrument whereby disaster risks are securitized in the financial markets' This form of risk management was utilized by USAA Insurance company in 1997 to protect a company against catastrophic hurricane losses; (Redja et al, 2014).

Weather derivatives or options are another valuable option particularly for consumers exposed to 'weather related risk'. They 'provide payment if a specified weather contingency such as rainfall occurs below a specified level' (Redja et al, 2014).

A catastrophe model is a new and innovative approach to monitoring catastrophe risks. It provides projections of likely results of the occurrence of a catastrophic event such as hurricanes and earthquakes. Redja et al(2012) state that this approach is used by many private insurers in their risk management programs for instance 'in the USA, an insurance company with hurricane exposure on the Gulf Coast may use this concept to estimate aggregate losses from this event'.

The alternative risk transfer mechanisms can be viewed as beneficial especially in covering risks not possible through reinsurance and insurance. However there are many challenges with use of those methods including 'regulatory disparities' such as 'favoritism of reinsurance over the use of catastrophe bonds' and 'structural flaws' in terms of factors such as complexity and prices (Banks, 2005).

Some insurers may opt to offer parametric insurance or micro insurance to its customers however this is most often a government initiative. Insurers are more inclined to offer traditional insurance policies as was outlined earlier. According to Linnerooth et al (2009) this is form of 'index insurance which is novel and made possible by new developments in modeling risks and financial transactions'. This type of insurance covers 'perils like flood and other hazards because of the systematic nature of the risks' (Mechler et al, 2006). Furthermore, the 'intent of micro-insurance is to service low income markets by offering limited coverage and greatly reducing transaction costs'

Other mechanisms which can assist in minimizing risks are those specific to the location of risks. Those include surveys on the property to be insured; the use of risk or hazard mapping and Global Positioning system (GPS). Hazard maps for instance provide information on the probability or magnitude of a loss and areas most prone to catastrophes. The maps assist in better underwriting practices, to determine insurability and to apply suitable premiums. In Germany, hazard maps are produced by the German Insurance Association to determine in which areas and under what conditions buildings can be insured' (Moel, Alphen & Aerts, 2008).

Enterprise Risk Management (ERM) is an approach which can be established internally to assist in the curtailment of catastrophic risks. ERM is 'a comprehensive risk management program that addresses an organization's pure, speculative, strategic and operational risks' (Redja et al, 2014). This type of risk management policy can assist in the curtailment of catastrophic risks in light of

their increased intensity due to climate change. Bank (2005) views ERM as a technique of 'catastrophe risk management which would allow a firm to increase enterprise value' (Banks, 2005). Redja et al (2005) emphasized that ERM programs are specifically designed to address all problems faced by organizations including emerging risks such as climate change, which can lead to increased exposure to catastrophes. Furthermore' the ERM approach can be used by insurers to reduce the climate change risks through techniques such as to 'encourage the construction of energy efficient buildings' and 'provide premium credits for structures with superior loss control' (Redja et al, 2005).

2.4.3 - External risk management approaches to mitigation of catastrophic risks

External or outward facing approaches to risk management include forms of policy action or mechanisms which encourage policyholders' to minimize their risks. Those include partial insurance such as deductibles, policy caps and co-insurance and incentives to improve the risks such as premium discounts for improvements in property.

Inherent in traditional insurance policies are mechanisms which can assist insurers to reduce their losses. Those include 'deductibles, exclusions to reduce instances of moral hazards and caps'. Those can be viewed as providing partial insurance (Banks (2005:91). Deductibles or excesses for instance are an efficient form of risk control as insurers may seek to transfer those small losses onto their clients. The Organisation of American States (1996) report states that deductibles and excesses are applied in particular to property insurances most likely to be affected by catastrophes. The Lloyds report (2011) states that; 'the imposition of deductibles, excesses, can assist in managing risks efficiently'. Kunreuther et al (2006) emphasized that ' a sufficiently large deductible can act as an incentive for the insureds to continue to behave carefully after purchasing

coverage because they will be forced to cover a significant portion of the loss themselves and should be introduced as part of the insurance contract’.

Exclusions in policies can minimize insurers’ risks as policyholders will be unable to claim for losses attributable to those specific exceptions. This can reduce claims costs and as Banks (2005) stated exclusions can ‘limit the payout on certain claims’. In addition, policy caps ‘limit the insurer’s settlement liability’ to the policyholder. The policyholder would thus be responsible for any losses which exceed the policy cap.

Coinsurance is also used to assist in the mitigation of risks and can benefit both the insurer and policyholder. Kunreuther et al (2006) suggest that ‘with coinsurance the insured and insurer share the loss together’. They further added that ‘this type of risk-sharing arrangement encourages safer behavior because those insured want to avoid having to pay for some of the losses’. This was further endorsed by Banks (2005; 89) who stated that ‘risk transfer can also be limited through coinsurance features where the cedant and insurer share in a certain amount of losses’.

Insurers may offer reduced rates or discounts on insurance premiums for improvements in building structures; through retrofitting of buildings to withstand natural catastrophes such as hurricanes. Linnerooth-Bayer & Mechler (2009) support this view stating that ‘while insurance does not directly prevent losses, well-structured contracts can provide incentives for loss reduction’. An example is ‘in Istanbul apartment owners pay less for insurance if they retrofit their buildings’.

This can be further emphasized through the use of insurance education. ‘Promoting awareness and education of natural catastrophe risks and in particular , risk reduction measures can encourage voluntary risk reduction activities as well as strengthen public support for compulsory risk reduction

measures such as land planning, building codes and insurance schemes'. (OECD,2011). This insurance education can take many forms including broadcasting over the media, conferences and use of paraphernalia. This approach has been successful in some insurance markets; for instance Aksigorta, an insurance provider in Turkey has created a training centre to train persons for the next generation to prepare for fire and earthquake hazards. (OECD, 2011). Similarly 'the Insurance Bureau of Canada provides free resources for the public and has a website to raise awareness of natural hazards and risk reduction measures'. (Obonsawin, 2007).

2.5 – The Caribbean Insurance Industry – Composition and Practices

Section 2.5.1- The Caribbean region defined and potential threats

The Caribbean region is comprised of a chain of islands surrounded by the Caribbean Sea and Atlantic Ocean and located between North and South American continents. The climate of the region is 'tropical' characterized by dry and wet weather year round. In the last six months annually the islands are exposed to a range of perils in particular hurricanes and storms. 'Hurricanes are a major threat to the region; with most storms forming in the Inter-tropical Convergence Zone when westerly trade winds converge with air flowing from the Equator to the north'(Banks, 2005).

The islands are also exposed to earthquakes, volcanic eruptions and flooding. Islands such as St Lucia, Barbados, Jamaica and the Bahamas have been adversely affected by hurricanes; Haiti and Martinique by earthquakes and Monserrat by volcanic eruptions. An IMF report of 2013 states that 'the Caribbean region has been exposed to 187 natural disasters since the 1960s and the region has experienced losses equivalent to 1% of GDP on average annually'.

2.5.2 - Caribbean insurance industry – Composition

The region is known to have a financial services sector which is robust particularly in the area of banking and insurance. The Caribbean insurance industry is comprised of many players; locally registered companies formed and operating and regulated by insurance regulators, regional insurance companies, which are registered in the home country and some foreign companies regulated outside the Caribbean Region (Pollner, 2001). Regional insurance companies are most predominant and offer insurance services to a large percentage of low to medium class policyholders. Those large insurers are domiciled in the more developed islands of the Caribbean, particularly Trinidad and Barbados and have expanded through the establishment of small branches and subsidiaries in the other less developed islands. Examples of insurance companies include SAGICOR general insurance, United Insurance Co. Ltd and NEM (WI) Insurance Ltd.

The larger insurance markets are known to be part of broader commercial groups and engaged in diverse types of business. According to the OAS report of 1996, for those insurance companies 'the thrust for increasing insurance policy production is motivated by gaining 'cross sales' growth in related services such as insurance agency brokerage, claims adjusting, mortgage, real estate and bank operations'.

The other notable players of the industry are insurance brokers and consultants whose responsibility include representation of clients through the selection of comparable rates within the insurance market, risk management advice and services, claims management and servicing of accounts. In certain territories insurance brokers are known to dominate the market and insurance companies profits are therefore reduced in order to pay the broker fees and commissions for business generated to them.

2.5.3 - Insurance practice in the Caribbean

Information regarding insurance and risk management practice within insurance companies in the Caribbean is limited requiring some investigating into what actually exists. However from the literature obtained, it was noted that insurers possess a diverse portfolio of general insurance products namely motor, property and casualty, liability and pecuniary and life insurance policies. The most profitable class of insurances within the portfolio is property insurances. However property insurances are not compulsory by insurance regulation and are usually sort where there are lending institution requirements (Auffret, 2003).

Catastrophe insurance is available for private homes, 'hotels, tourism-related properties, large and commercial risks such as large and medium-size private industrial and commercial businesses' (Auffret, 2003).

The demand for catastrophe insurance is high due to the frequency of those events however consumers are faced with possible declination of risks by insurers especially in high risk areas such as low lying areas or those near the sea coasts. Auffret (2003) stated that 'dwellings constructed in hazard-prone, low-lying coastal areas, deep river basin and valleys and along steep slopes are generally not insured'. For example a large segment of the population in Barbados, Jamaica and Trinidad & Tobago lives in vulnerable, uninsurable properties which can easily be dislodged in the event of flooding or strong winds'.

2.5.4 - Challenges facing the insurance industry

The Caribbean insurance industry is faced with many challenges and there is a demand for innovative practices (IMF, 2013). One of the major challenges is the effects from catastrophes. Risks are generally transferred by Caribbean insurers via reinsurance however this can be a challenge for the insurers. OAS (1996) report states that 'the availability of reinsurance affects the profitability of

Caribbean insurance companies, as it governs the ability to write policies and thus generate subsequent income from reinsurance commissions’.

Another significant risk which has been a challenge to this sector is that of reputational and corporate governance issues. The demise of Colonial Life Insurance Company Financial Insurance (CLICO) subsidiaries and British American Insurance Co, (BIACO) in 2009 were due to ‘ a weak insurance regulatory environment’ and the sale of ‘poor investment’, ‘ and poor corporate governance structure’ (IMF, 2013). This can be viewed as a major risk as it can ultimately affect the reputation of the company and result in reluctance on the part of consumers to purchase insurance.

2.5.5 - Known disaster and risk management practices adopted in the Caribbean

The risk management practices adopted within the region based on the literature obtained is that of traditional insurance policies and reinsurance. Insurers transfer a proportion of their risks via proportional and non-proportional reinsurance and enjoy the benefits of a ‘balance of portfolios’ and ‘diversifying of its exposure’ (Banks, 2005). However, this concept can be disadvantageous with respect to the dictation of specific rates by reinsurers thus resulting in little control in what premium rates can be offered to consumers (OAS, 1996). Furthermore the report states that ‘to shelter a major portion of its risk exposure in the Caribbean, the reinsurance industry has forcibly introduced a combination of deductibles and "average" clauses on claims resulting from damage caused by natural events’. ‘The deductible clauses customarily require self-insurance for the first 2% of the full insurable value of the property’. Additionally, ‘the average clause is applied where there is under insurance of the values of properties’. Policyholders are most affected by those policy conditions as their losses are not minimized instead they have to retain a proportion of the risks.

Disaster management is also handled in the Caribbean by the government through reliance on regional insurance pools such as the Caribbean Insurance Catastrophic Risk Insurance Facility (CCRIF) and disaster management agencies. The governments of the region depend on the CCRIF to pay in the event of a catastrophe occurring; this facility offers parametric insurance cover. The CCRIF 'provides its members with access to affordable and effective coverage against natural disasters' (The World Bank, 2012). Disaster management agencies provide effective guidance and tools to handle emergencies occurring as a result of catastrophes.

Risk management within the region has been viewed as lacking. Auffret (2003) for instance contends that the 'insurance market for catastrophic risks within the region remains a 'thin' market characterized by high prices and low transfer of risks. In addition, the region is characterized by a high degree of economic volatility'.

2.6 – Research Objectives

One of the objectives of the research is to determine what the present risk management practices are in the Caribbean Region and whether those practices are effective. This can be ascertained through insurers' views on the effects of catastrophic risks and the appropriate risk management mechanisms which have been practiced to minimize those risks.

The focus of this research will be on the regional insurance companies which have been established and operate solely within the region; with an emphasis on the non-life or general insurance practices. As the property insurance portfolio is most affected by catastrophic risks, the study will focus on this class of insurance. As the region is comprised of several islands the researcher aims to target insurers in three specific islands within the region with the view that they will each provide diverse opinions of the catastrophe or disaster risk

management practices. The researcher aims to use this in keeping with the realism epistemological methodology perspective.

The information derived on the current and effective practices within the region will be analyzed and comparisons made with those which are viewed as best practice on a global scale. The results of these analyses if not already practiced can certainly contribute to a more effective risk management approach to insurers in the pursuit of mitigation of catastrophic losses. Thus, the intention is to provide some form of recommendation to the Caribbean insurance market, particularly insurers on the best practices to minimize catastrophic risks and to reduce the financial burden associated with such risks.

CHAPTER 3 – RESEARCH METHODOLOGY

This chapter focuses on the analysis of the most appropriate and effective research methodology for this research project. This analysis can be assisted with the use of a research onion created by Saunders, Lewis & Thornhill (2012).

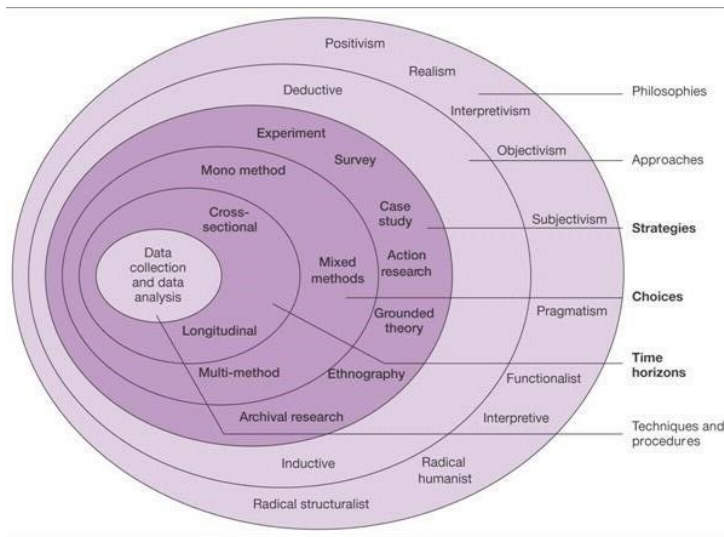


Figure 1: Research Onion

The research onion depicts the entire research process in the form of layers; the layers outline the research methodology, research options and strategies, research paradigms and data collection methods. The chapter is comprised of 5 sections each focused on a specific aspect of the research onion.

3.1 – Research philosophy/ perspectives

Saunders et al (2012:128) states that the research philosophy adopted can be viewed as ‘assumptions about the way in which you view the world’.

Furthermore, ‘the philosophy adopted is influenced most likely by practical considerations’ and ‘helps to justify the methodological choice, strategy and the methods employed’.

This section focuses on the research philosophy, which can take three forms for the purpose of any business and management research project; namely ontology, epistemology and axiology. The methodology selected has a direct effect on the research methods adopted by the researcher. Ontology for instance is focused on 'the nature of reality' and seeks to determine the truth which exists. This concept can be viewed from the objectivism and subjectivism perspectives. The former concept implies that 'the things such as social entities exist as a meaningful reality external to those social actors concerned with their existence;' (Crotty, 2008). Subjectivism in contrast implies that 'social phenomenon is created from the perceptions and consequent actions of social actors' (Saunders et al, 2012:132). The researcher is most concerned with obtaining the truth and not simply making generalizations or assumptions. In the context of this project, subjectivism or constructionism is relevant to the study in light of the concept that subjectivism, 'the culture of organization is created and re-created through a complex array of phenomena which includes social interactions' (Saunders et al, 2012:132) Thus, In the context of research question, with the analysis to be undertaken on risk management approaches within insurance companies, the practices are guided by the input of several factors and elements and are thus not fixated.

Epistemology concerns 'what constitutes acceptable knowledge in the field of study'(Saunders et al, 2012:132). It is concerned with determining the most appropriate method of the nature of the world. This can be viewed from the positivism and interpretivism perspectives which take into consideration 'resources' and 'feelings' research approaches, respectively. Saunders et al (2012:134) However, the philosophical stance most appropriate for this research paper is realism. 'The philosophy of realism is that there is a reality quite independent of the mind' (Saunders et al (2012:136). Furthermore realism assumes a scientific approach to the development of knowledge; underpins the collection of data and the understanding of those data'. Sayers (2000) stated that

realism is ;' compatible with a wide range of research methods including quantitative and qualitative'. Olsen (2004) states that realism is 'plural with respect to methodology and theories and therefore offers a good platform for integrated mixed methods research'.

Critical realism is most appropriate for this study in view of Bhaskar (1989) approach that 'we can identify what we cannot see through practical and theoretical processes of the social sciences'. The researcher viewed this approach as relevant as the research can be viewed from various perspectives 'multi-study', each level having the capacity to change an understanding of what is studied' (Saunders et al, 2012:137).

The axiology perspective takes into account the impact of values on judgments in the research process. Heron (1996) contends that ' researchers demonstrate axiological skill by being able to articulate their values as a basis for making judgments about what research they are conducting and how they go about doing it'. This implies that one's values can dictate the approach the research process may follow, that is, with regard to the topic selected and the analysis and interpretation of results. The values of the researcher may have had an impact on the selection of the topic due to past work experience in the insurance sector and the desire to explore the topic and its relevance to the sector.

3.12 – Research Paradigm

A research paradigm can be defined as 'a way of examining social phenomenon from which particular understandings of the phenomenon can be gained and explanations attempted' (Saunders et al, (2012:140). Concurrent paradigm triangulation is applicable as it 'allows the employment of both qualitative and quantitative paradigm to investigate the same phenomenon' (Sarantakos, 2005:48). In this instance 'one methodology is given more weight than the other' In this instance, qualitative methodology was prioritized to obtain most of the data

required for the research question; through the use of semi-structured interviews. To meet the quantitative methodology approach, a short questionnaire was created and information collected. This was viewed as beneficial as 'aspects that are equally valuable and findings which complement each other can produce a more dynamic and complete picture' of the situation which exists' (Sarantakos, 2005:48).

3.13 – Research Approach

The research onion deduced by Saunders et al, depict the use of research approaches to assist in the research process. There are three main types of research approaches; namely deductive, inductive and abductive approaches. The researcher has adopted the inductive approach to research as this was apt in obtaining research on a topic which has limited information in the Caribbean context. This approach is beneficial to the researcher in a number of ways; as it provides the avenue to generalize and 'establish different views on phenomena (Easterby-Smith et al, 2008); 'allows the drawing of generalizable inferences from observations' (Bryman, 2006)' the establishment of patterns, trends and theories from the collection of data; a small sample size is appropriate and would provide adequate data taking into consideration the time factor'.

3.2 – Research Design

3.2.1 - Research Methodology

The research design can be viewed from four layers in the research onion; research strategies, methodological choices, time horizon and data techniques and procedures. Saunders et al (2012:159) contend that ' the research design will contain clear objectives derived from the research question' and will assist in specifying factors such as the data collection methods and possible 'ethical issues and constraints';.

3.2.2 - Methodological choice

The methodological choice ranges from quantitative, qualitative or a mixed or multiple methods research strategy. The mixed methods approach was selected. The researcher was enticed to select this option in view of the potential benefits for the research process. For instance, Bryman (2006) advocates that this option is increasingly used 'within business and management research' mainly since it can 'overcome weaknesses associated with using only one method as well as provides a scope for a richer approach to data collection, analysis and interpretation'. (Tashakkori & Teddlie (1998) contend that the mixed method strategy is 'entirely practical and applicable to many researchers' and 'it allows the researcher to use the results of the study to create positive movements in the researcher's own specific area of interest'.

3.2.3 - Time horizon

The time horizon according to Saunders et al (2012:190) can be of two forms; cross sectional and longitudinal. A cross sectional approach was deemed more appropriate for this research project. This design was defined as 'the study of a particular phenomenon at a particular time' (Saunders et al, 2012:130). Similarly Bryman (2006:44) reiterated this approach as a 'collection of data on more than one case at a single point in time'. This can be beneficial as 'variables can be analyzed to determine whether there are any 'patterns of association' (Bryman, 2006:44).

3.2.4 - Data collection techniques

The innermost layer of Saunders et al research onion depicts the use of data collection methods. The researcher focused on obtaining primary data as this would provide details relevant to the research question. However, there was a review of existing reports and published data which constitutes secondary data. The information from those sources however was limited.

The researcher opted to use more than one form of primary data collection in efforts to answer the research question. An interviewer-completed questionnaire was selected to collect quantitative data and eliminated the possible constraints of questionnaires not being returned. The information was retrieved and recorded in a timely manner.

The research project prioritized the use of qualitative research and thus more emphasis was placed in obtaining data via semi-structured interviews. Bryman (2006:196) describes this type of interview as 'the context in which the interviewer has a series of questions in the general form of an interview but is able to vary the sequence of questions'. In addition, this method of data collection was appropriate as it allowed for the use of 'open questions to discover what is happening and gain insights about the topic of interest'; provides a rich and detailed data set'. (Saunders et al, 2012:378). Thus the semi-structured interview was the appropriate method used specifically to obtain qualitative data from experts in the subject matter.

3.2.5 - Research Strategy

A research strategy can be defined as a 'plan of how a researcher will go about answering a research question'(Saunders et al, 2012:173). Denzin & Lincoln (2005) define this concept as 'a methodological link between the philosophy and subsequent choice of methods to collect and analyze data'. The research strategy forms part of the research onion and is significant in the research process. A case study approach was selected and the unit of analysis was the Caribbean insurance industry. A case study approach was viewed as beneficial to this research process as it allowed for the 'exploration of the research topic within a number of 'real life contexts (Saunders et al, 2012:179). Thus, managers of the various companies were approached to obtain details relevant to the research question. Eisenhardt & Graebner (2007) contend that the case study

approach helps to 'gain a rich understanding of the context of research and the processes enacted'.

3.3 – Sampling Method

The unit of analysis is the Caribbean insurers however the entire population of insurers could not be approached with the limited time constraints. Thus a sample of insurers was selected. Sampling is an effective approach particularly in the data analysis process. Barnett (2012) emphasized that 'using the sampling methods makes possible higher accuracy than a census'. (Saunders et al, 2012:261). A purposive sampling method; a non-probability sampling approach was most relevant to the research process. The researcher selected specifically the heterogeneous or maximum variation purposive sampling method which is valuable due to its 'use of judgment in the choice of participants with sufficiently diverse characteristics to provide the maximum variation possible in the data collected' (Saunders et al, 2012:287). A sample size of six insurers from the Caribbean region was selected to undertake data collection methods.

3.4 – Reliability and validity

Reliability and validity are two important concepts in the data collection methods of the research process. Reliability refers to whether 'data collection techniques and analytic procedures would produce consistent findings if they were repeated on a separate occasion by a different researcher' (Saunders et al, (2012:192). This concept is important in the research process to avoid the possibility of 'false assumptions'. Reliability would be most effective with some aspect of validity. The questionnaire utilized provided no threats to the research process and could be viewed as an apt test of reliability as anonymity was indicated from inception to the participants. In addition researcher error was reduced as the questions were asked on more than occasion to clarify terms in the statements. Validity measures 'the quality of good research' (Saunders et al, 2012:193). The concept of internal validity was most appropriate in this research project as the data

collected allowed for the establishment of a 'causal relationship' as identified by Saunders et al (2012:193). This was undertaken in both the qualitative and quantitative analysis processes. The research project was not subject to threats of internal validity such as 'past or recent events', 'instrumentation' and 'maturation'. (Saunders et al, 2012:193).

3.5 - Ethical considerations

The potential ethical issues of this research project are those associated with the data collection methods. The issues of confidentiality and anonymity associated with data collection were eliminated with the use of a number of documents approved by the ERGO department of the University of Southampton.

The information included in the documentation illustrated the privacy of the information obtained, the ability to withdraw from the data collection method if the respondent deemed necessary and the appropriate storage of the data collected.

The documents used for this purpose were the debriefing statements (Appendix 6) which provided details on the research project and the intended use of the data collected and the use of consent forms (Appendices 3-5) for individuals and the companies approached with details of the participants decision to participate being on a voluntary and not a compulsory basis. The Data Protection Act stated in the consent forms informed participants of the obligation to ensure confidentiality and proper storage of the data collected.

3.6 - Summary

This chapter focused on the appropriate research methodology to select for the research project based on the use of a research onion. The researcher selected elements such as the epistemologist realism philosophy with the use of

triangulation methods of data collection. A purposive sampling technique was selected with a case study research strategy employed.

CHAPTER 4 – RESULTS AND FINDINGS

This chapter provides details of the data collected from questionnaires and semi-structured interviews. The results of the questionnaires will be interpreted quantitatively with data from the semi-structured interviews analyzed qualitatively.

4.1 – Quantitative Analysis

Quantitative analysis techniques allows for the ‘exploration, presentation, and examination of trends and relationships in raw data’ (Saunders et al, 2012:472). This is necessary as once quantitative data is collected it can convey little information. The techniques used to analyze quantitative data include charts, graphs and statistics.

The researcher obtained raw data from a short questionnaire, comprised of eight (8) questions arranged in the Likert scale format. This data could be classified as ranked or ordinal data; a form of categorical data. The data was coded prior to collection of data and this made the analysis of data easier for the researcher. In essence the question focused on ranking from a ‘strongly agree’ viewpoint to ‘strongly disagree’. The questionnaire focused on obtaining information specific to the insurers’ opinions of risk management and the importance of such policies in minimizing catastrophic risks.

The data was analyzed in several ways; using frequencies portrayed with the use of tables and charts and the use of descriptive statistics; to specify the number of cases and frequency of responses to the various statements specified in the questionnaires. The researcher used those approaches to derive any trends, relationships and differences between variables. The SPSS statistical data program was used to analyze the data. The advantage of the use of this electronic method of processing was ‘faster data processing’, relatively

inexpensive data processing and analysis', 'high reliability' and 'accuracy of computations' (Sorantakos, 2005:363).

4.1.1- Frequency tables and charts

Frequency tables were selected to 'summarize the number of cases in each category' (Saunders et al, 2012:488). The advantage of use of the frequency tables was 'to produce a count and percentage of the number of cases that fall within each category, with the corresponding count and percentage displayed next to each category in the variable' (Sorantakos, 2005:269). The questionnaire was comprised of eight questions each representing a variable whereas the responses represented the various categories.

The researcher analyzed the data based on two elements relevant to the research objective; the importance of establishing risk management policies in insurance companies for catastrophe risks as opposed to no policies and insurers' views on catastrophes and disaster risk management. Five of the eight questions were focused on the first perspective with the additional three on disaster risk management.

Element1: The role of risk management approaches in insurance companies

Table 1: A risk management policy is crucial for handling catastrophic risks in an insurance company

	Frequency	Percentage	Valid %	Cumulative %
Valid				
Strongly Agree	4	66.7	66.7	66.7
Agree	2	33.3	33.3	100.00
Total	6	100.00	100.00	

This frequency table depicts insurers' views on the importance of risk management in handling catastrophic losses. The results clearly indicate a general consensus with the statement as 66.7% or 4 of the six respondents

strongly agreed with the statement and two or (33.7%) selecting the 'agree' option.

Table 2: Standard insurance practice has been effective in handling catastrophic risks

	Frequency	%	Valid %	Cumulative %%
Valid				
Strongly Agree	1	16.7	16.7	16.67
Agree	1	16.7	16.7	33.30
Disagree	4	66.7	66.7	100.00
Total	6	100	100	

This table depicts diverse views of the statement albeit the majority of respondents, that is, four (4) of the six (6) respondents disagreed that standard insurance practice has been adequate to handle catastrophic risks. This response may be attributable to many factors including the assumption that approaches currently used by those insurers are insufficient and require more effective approaches to handling risks. Furthermore, risk management policies may be viewed by most respondents as enhancing insurance practice. 33.7% agreed with the statement implying that standard insurance practice was adequate.

Table 3: An insurance company can be viable with the absence of a well-defined risk management program

	Frequency	%	Valid %	Cumulative %
Valid				
Agree	2	33.3	33.3	33.3
Disagree	4	66.7	66.7	100.00
Total	6	100	100	

The feedback from respondents illustrated in the captioned table indicates that a large percentage of the sample was in favor of the well-defined risk management policy for an insurance company's viability. Thus, 66.7% disagreed with the notion that insurance companies can be successful with the absence of a risk management policy. Alternatively 33.3% or two of the interviewees agreed with the statement.

Table 4: A clearly defined risk management process inculcated within insurance practice is necessary to minimize risks

	Frequency	%	Valid %	Cumulative %
Valid				
Agree	4	66.7	66.7	66.7
Disagree	2	33.3	33.3	100.00
Total	6	100.00	100.00	

This table emphasizes the view that a risk management policy is imperative for minimization of risks as 66.67% of the respondents agreed to the statement . This implies an interest and a view of the importance of the establishment of a risk management policy. Two insurers or (33.3%) of the sample however failed to agree with this assumption.

Table 5: There is a need for implementation of a risk management policy as standard insurance practice is inadequate to handle adverse risks

	Frequency	Percent	Valid %	Cumulative %
Valid				
Strongly agree	2	33.3	33.3	33.3
Agree	3	50.00	50.00	83.3
Neutral	1	16.7	16.7	100.00
Total	6	100	100.00	

The general view of the insurers interviewed is that risk management is required for the mitigation of adverse risks. This is illustrated in the results stated above with 83.3% of the sample and thus 5 out of 6 respondents agreeing to this notion.

Element 2: The effect of catastrophes on insurance practice and risk management policies.

Table 6: Disaster or catastrophic risks are not a major problem for an insurance company's viability

	Frequency	Percent	Valid %	Cumulative %
Neutral	1	16.7	16.7	16.7
Disagree	1	16.7	16.7	33.3
Agree	4	66.7	66.7	100
Total	6	100.00	100	

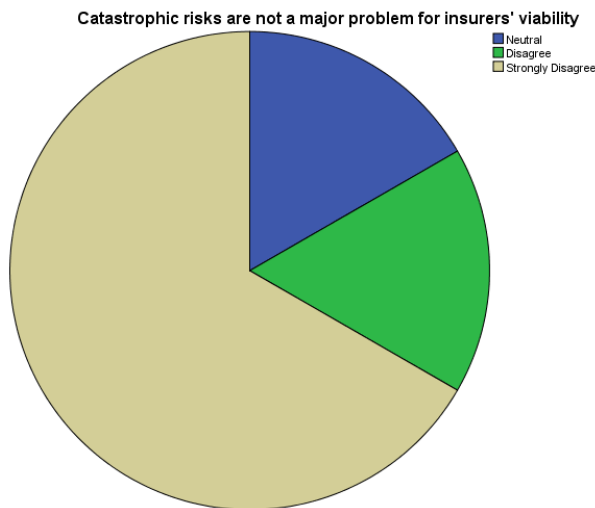


Figure 2 – Pie chart – Catastrophic risks – not a major problem

The table and pie chart above illustrates that there was general consensus of the impact that catastrophes can have on the insurance companies operations as 66.7% of the sample agreed to this statement. Only one respondent disagreed implying that catastrophe risks were not a major

problem for the company. The researcher could therefore ascertain from this result that insurers in general within the Caribbean view major catastrophes as a threat. In contrast a small % that is, (16.7%) disagree with this statement. The other 16.7% were neutral about the effect of disastrous risks.

Table 7 - Disaster management is a key element in the consideration of services and products offered by the insurance company

	Frequency	Percent	Valid %	Cumulative %
Strongly Agree	3	50.00	50	50.
Agree	2	33.3	33.3	83.3
Neutral	1	16.7	16.7	100
Total	6	100	100	

The results of this table indicate that there was an 83.3% cumulative percentage with five insurers in agreement and one insurer (16.7) maintaining a neutral stance. This implies that disaster management was viewed as a significant element in the insurance service offered to consumers. This is further illustrated in the bar chart below with the majority of respondents agreeing to the statement.

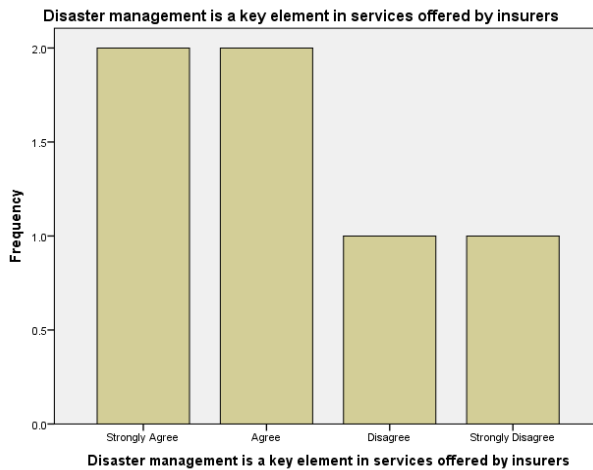


Figure 3 – Bar chart - insurers views on the use of disaster management in policy creation

Table 8 - The Company has an appropriate risk management policy which has assisted in disaster management

	Frequency	Percent	Valid %	Cumulative %
Strongly Agree	1	16.7	16.7	16.7
Agree	3	50	50	66.7
Neutral	2	33.3	33.3	100.00
Total	6	100	100	

This table implies that of the six (6) insurance companies approached, there are risk management policies in place to assist in disaster management. This was emphasized with 16.7% strongly agreeing to this notion and 50% agreeing. However, 33.3% of the sample was neutral thus not confirming whether there was a risk management policy in place or if one was in existence whether there was a focus on disaster management.

A comparison of more than one variable is possible through the use of multiple bar charts. Multiple bar charts allow for this exploration as they can provide 'comparisons of variables that emphasize the highest and lowest rather than precise values' (Anderson et al, 2010). This comparison is possible between adjacent bars'.

The researcher selected four variables to make comparisons. Two focused on the importance of risk management approaches in insurance companies and the others on disaster management within the insurance companies. Those comparisons are depicted in multiple bar charts.

1. The importance of the establishment of a well-defined risk management policy in insurance practice as opposed to standard insurance practice only. Variables 2 and 8 of the questionnaire were utilized for this comparison.

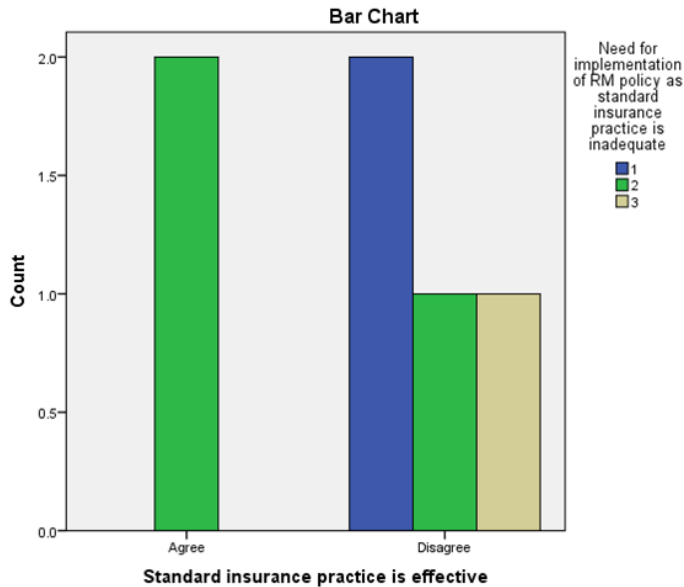


Figure 4 – Multiple Bar Chart 1- Standard Insurance Practice and Risk Management

The above bar chart provides a comparison of the number of respondents who view standard insurance practice as adequate as opposed to those who view a risk management policy inculcated in insurance practice to be necessary. The results appear to be mixed based on agreement to both statements with one respondent remaining neutral.

2. An insurer's view of disaster risk management may influence the use of disaster risk management in providing insurance services. Variables 1 and 6 of the questionnaire were used for this comparison

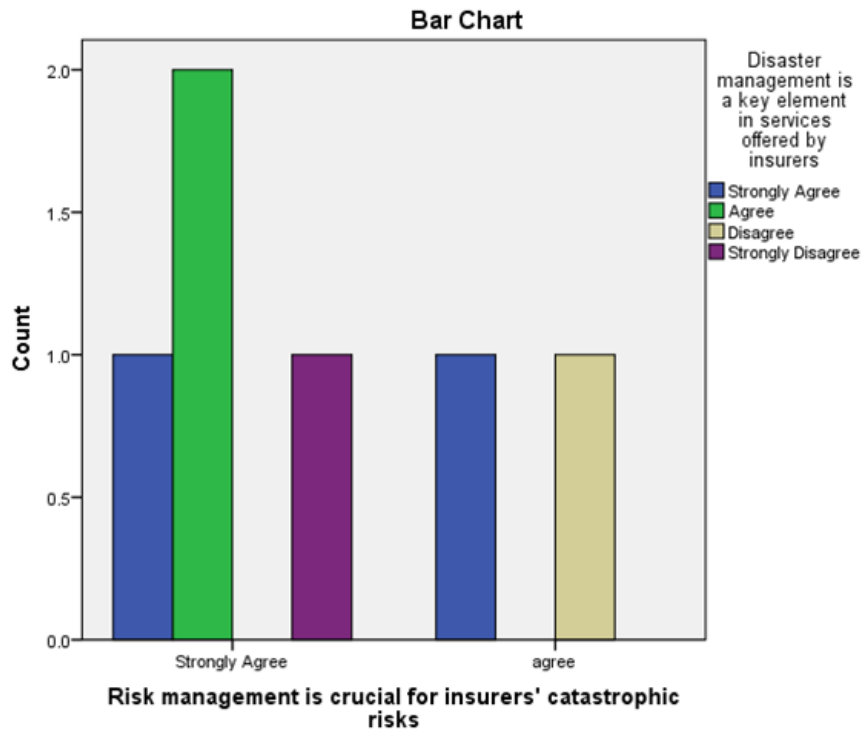


Figure 5 – Multiple Bar Chart 2 – Risk Management and disasters

A cross tabulation of two of the variables was done and portrayed in the following multiple bar chart which depicts that on average one respondent selected a response to one of the categories. The highest value selected was 2 based on the 'agreed' category implying that most of the respondents agree that disaster management is a key factor in policy creation and is crucial for handling catastrophic risks.

4.1.2 – Descriptive Statistics

Descriptive statistics were also used to assist in describing and comparing the numbers. These are referred to as measures of central tendency and include the mode, median and the mean and are depicted in the table below.

	Risk management policy required for insurance practice	No well-defined risk management policy required	Standard insurance practice is effective	Catastrophic risks are not a major risk
Mean	1.33	3.333	3.1667	4.5
Median	1.000	4.00	4.0	5.5
Mode	1	4	4.00	5

	Risk management should be in place for disaster management	Disaster management is a key element in policy creation	Risk Management should be inculcated in insurance practice	Standard insurance practice is inadequate thus risk management is necessary
Mean	2.1667	1.83	1.33	1.83
Median	2.00	1.50	1.00	2.00
Mode	2.00	1	1	2

Table 9 – Descriptive statistics

The mode was viewed by the researcher as the most appropriate measure for use in this quantitative analysis. The mode denotes the value which occurs most frequently. In the data retrieved, the following can be construed:

- The majority of insurers strongly agreed that a risk management policy is crucial for handling catastrophic risks as the mode for the first variable was 1 or 'strongly agree'
- The mode of 4 for the second variable indicates that most insurers disagreed that an insurance company can be viable with the absence of a risk management policy.
- The mode in variable 3 indicates that there is a consensus that standard insurance practice is ineffective in handling catastrophic risks

- The mode result in variable 4 shows that there was a general disagreement that catastrophic risks' are not a major risk to insurance companies.
- The modal results in the last three variables all showed agreement with the need for a risk management policy to counter catastrophic risks and that disaster management is a key issue in policy and risk management consideration.

4.2 - Conclusion

The tables above and an analysis of each factor indicate that in general there was consensus that the establishment of risk management policies to counter catastrophe risks is essential in insurance company operations. Insurance companies would therefore benefit substantially from adopting risk management approaches rather than relying on standard insurance practice only.

The quantitative analysis also showed that catastrophes were generally viewed as risks but not major threats. However, insurers within the region in general consider the element of catastrophes and disaster management in establishment of services and products offered to consumers.

4.3 – Qualitative Analysis

4.31 - Approach to qualitative analysis

Saunders et al (2012) state that ‘meanings in qualitative data research depend on social interpretation and qualitative data are likely to be more ambiguous, elastic and complex than quantitative data’. Furthermore, ‘researchers need to make sense of the subjective and often socially constructed meanings expressed by those who take part in the research’ (Saunders et al, 2012: 546).

Furthermore, the writers state that qualitative analysis process involves the ‘categorization of the data collected into themes, groups, patterns and trends, which would assist in answering the research question’.

The data used for the analysis was derived from six semi-structured interviews conducted by the researcher. The interviews were conducted within a sixty minute period and audio recorded for an in depth analysis subsequently. The researcher opted to obtain raw data using this approach due to the possibility of obtaining information specific to the research question through in depth discussions.

The questions were addressed to managers of the six insurance companies, whose tenure in their current roles was sufficient to provide detailed information on the role of insurance risk management techniques in handling catastrophic risks. Their experience and expertise was varied with at least three of the professionals having gained over twenty years’ experience in the insurance industry in their countries and the other, less than ten years’ experience.

The recorded conversations were then transcribed with the use of transcript summaries which entailed a summary of the conversations. Kvale & Brinkman, (2009) describe those summaries as ‘compressing long statements into briefer ones in which the main sense of what has been said or observed is rephrased in a few words’. (Saunders et al 2012). Furthermore this method was adopted to

determine any patterns, trends, relationships or similarities which currently exist within the companies with regard to disaster management and catastrophic risks.

The researcher opted for the use of an inductive approach to the analysis of the data collected as was suggested by Saunders et al (2012). A template analysis formulated by King (2012) was viewed as the most appropriate approach as it was comprised of the use of 'codes and categories that represent the themes revealed from the data that have been collected' (Saunders et al, 2012:572). Furthermore according to the writers, this approach takes into consideration 'deductive and inductive approaches to qualitative analysis in those codes can be predetermined and then amended or added to as data are collected and analyzed'. Template analysis was viewed as flexible as it allowed for the revision of the coding system where new themes or patterns arose in the analysis process. The researcher identified several categories of similarities and differences among the participants of the interviews.

4.4 – Summary of Findings

Several key factors or themes were identified in the interviews transcribed. Those included the existence of processes for minimization of risks; the view of catastrophic risks as a major threat to insurance companies and consensus that the risk management policies adopted were effective.

4.4.1 - Establishment/existence of risk management policies

There were diverse responses to the need for and actual existence of risk management policies within the companies. All insurance executives agreed to the need for the establishment of risk management policies internally particularly in efforts to minimize risks. However, only two respondents confirmed that risk management policies actually existed internally. For instance,

Interviewee 1 stated that *'this is not practiced in St. Lucia but at our head office located in the international market'*.

Interviewee 2 stated *'the company does not have a risk management policy in place'* and

Interviewee 3 stated that *'we have no written policy but we practice risk management'*

However, there was consensus that insurance companies would benefit from the establishment of an Enterprise Risk Management policy and emphasis had been placed by a number of stakeholders to have this implemented; namely the Board of Directors of the insurance companies and reinsurance brokers.

Another common factor which was raised by some of the interviewees was the view that insurance practice incorporates risk management and actual establishment of a specific risk management policy was not necessary. Insurance provides an adequate form of risk transfer from the customer to the insurer.

The majority of respondents discussed the existing risk management approaches within their organizations. This extended specifically to internal policies such as reinsurance which protected the insurers against financial burdens, particularly due to catastrophes. External approaches were also uncovered where the companies' focused on risk management policies which took into consideration the consumers' minimization of losses.

4.4.2 - Disaster or catastrophes and their effects

A second theme which was derived from the coding of the qualitative data was that catastrophic risks were viewed as a major threat to insurers' viability, in particular hurricanes, earthquakes, storm surge and flooding from hurricanes had contributed to large losses. Interviewee 3 stated that in 2007, *'the island was exposed to two natural disasters; a hurricane and an earthquake which resulted*

in large losses for the company. Another major catastrophe for the company was a major fire and total loss at a distillery'. However, Interviewee 3 emphasized that 'in recent times the frequency of natural disasters has been reduced in the Caribbean; the islands have been affected by storms and hurricanes every three years', this makes catastrophes less of a threat'.

Other threats were noted especially in what 100% of the respondents viewed as an existing soft market within the region. Furthermore, three (3) of the six (6) respondents felt that the most significant risk facing their companies was that of a soft market and competition especially with regard to insurance premium rates. The additional threats included intense competition amongst insurers, reputational risks, fraud risks, abuse of insurance arrangement, no regulation of insurance rate reduction and inadequacy of risk transfer mechanisms such as reinsurance. Climate change, a major risk which is viewed as increasing the intensity of catastrophes was not regarded as a major risk to warrant the adoption of initiatives to curtail the adverse effects of disasters.

4.4.3 - Adequacy of risk management or mitigation mechanisms

An important theme raised was the adequacy of current processes used by insurance companies to minimize catastrophic risks. The processes included those enacted internally; namely reinsurance and insurance pools. Catastrophic risks were viewed as handled due to the presence of those risk management approaches. Interviewee 1 stated that *'insurance pools comprised of contributions from several branches and subsidiaries, had been established by the company to handle catastrophic risks'*. Interviewee 3 stated that *'reinsurance had been arranged to withstand the impact of losses due to two hurricanes and still make a profit. The reinsurance program selected must be more than adequate to cover large losses from natural disasters'*.

Reinsurance contracts were offered on a proportional and non-proportional basis, viewed as adequate and thus beneficial because they offered additional risk management processes to counter the possibility of loss of insurance operations. This included reinstatement cover in the event the total amount covered was depleted and event limits which provided a cap or maximum capacity; which insurers could not exceed to cover their risks.

However, Interviewee 6 felt that inadequate reinsurance was a risk for the company especially with the possibility of reinsurers having large losses and thus being unable to cover the capacity which insurers have transferred to them. To counter the possibility of inadequate reinsurance, this form of risk transfer was sort from reputable and A- rated reinsurers. Consequently, it was confirmed that one of the constraints of having an effective reinsurance program was the high premiums charged by reinsurers as well as the directives which would have to be adhered to. Interviewee 3 stated that *'on an annual basis premiums payable are as much as XCD 700,000.00 and is cost is quite exorbitant for the company'*.

There was general consensus that there was no need to seek alternative forms of risk transfer other than those currently being used. There were no catastrophe bonds or other alternative risk transfer mechanisms used. Interviewee 6 stated *'The Caribbean insurance market and capital structure is not appropriate and too small to allow for the issuance of catastrophe bonds or other Alternative Risk Transfer (ART) policies.'*

4.4.4. - Effective risk management approaches

The insurers confirmed that the risk management policies offered by their companies were effective for catastrophic risks. The majority of respondents confirmed that the main risk management process was issuing of standard catastrophe insurance policies. Standard homeowner's comprehensive insurance and commercial insurance policies provided catastrophe insurance for losses due to perils such as hurricanes, floods, typhoons, storms and tornadoes. For

man- made catastrophes such as fires, cover was provided subject to surveys and investigations by loss adjustors. Interviewee 1 confirmed that *'on an annual basis we issue over 5000 private homeowner's insurance policies. Catastrophe insurance for private homeowners is not compulsory due to regulation but we have seen an increased demand for those policies'. Customers feel secure that this type of cover can provide some form of protection in the event of a catastrophe and we definitely provide insurance cover when catastrophes occur as in 2010 when the island was affected by Hurricane Ivan'*.

Deductibles were viewed as another effective risk management technique by the respondents as they helped insurers to minimize their small losses. In the Caribbean region, this risk management tool though effective for insurers is not undertaken by insurers on a voluntary basis. Instead, this is imposed by reinsurers are part of the reinsurance arrangements made. Homeowners and commercial insurance policies include deductibles which are applied to losses incurred.

Interviewee 1 stated that one risk management approach to counter catastrophic risks was 'the use of Global Positioning System (GPS), to obtain details via photos of the exact position of properties insured, to project high risk areas and assist in premium rating based on location. The insurer confirmed the success of this approach by stating the following *'We are the only insurer within St Lucia to have adopted this approach to management of risks. The use of GPS has assisted with determining the probable loss, detecting areas prone to storm and sea surge, flooding, wind susceptibility and in the rating of risks as well as reducing the accumulation exposure. Models are prepared with disaster management taken into consideration'*.

Another form of risk management was the use of surveys of the properties to be insured. The managers stated that surveyors or engineers visit and assess risks and make risk management suggestions for commercial risks and private

homeowners. The respondents confirmed that the surveys were free and assessments were offered for all risks within the portfolio. Interviewee 6 stated that this *'approach has been successful as we have recorded lower loss ratios in catastrophe events when compared with competitors'*.

The underwriting philosophy within some insurance companies was updated to take into consideration the greatest catastrophe exposure to the company. This took the basic form of obtaining information on the risks via completion of the proposal forms and the use of differential rating which involved rating by location. Furthermore, employees were trained to offer risk management advice to clients. One insurer stated that *'One of the ways we differentiate our business is by giving risk management advice to customers. Advice can be in the form of the use of or installation of fire extinguishers on premises, establishment of disaster recovery plans, advice to relocate to areas which are not prone to flooding and establishment of disaster recovery plans'*.

Alternatively, there was some disagreement with providing advice as this could result in customer dissatisfaction.

An element of risk management encouraged was upgrading of property to withstand natural catastrophes such as hurricanes and earthquakes. One interviewee confirmed that *'booklets were created for private and commercial policyholders with the advantages and guidelines to retrofitting of properties.'* *'Furthermore the intention was to ensure that the buildings were designed to withstand in particular the adverse effects of hurricanes'*. The incentive to adopt such approaches was the application of discounts if those changes were adapted. However, Interviewee 6 opposed this view stating that *'there are strict guidelines to the construction of buildings within the island and thus all buildings had to meet those specifications particularly to withstand the adverse effects of hurricanes; thus retrofitting is not a factor for consideration within this insurance market'*.

4.4.5. - Insurance market control

Another theme which was raised in the interviews was the issue of insurance market control. 4 of the interviewees raised the concern that risk management approaches in the insurance market may be influenced by how business is generated to insurance companies. The upsurge of insurance intermediaries has resulted in the shift of the risk management function to those intermediaries in some insurance markets within the Caribbean. For instance, one insurer stated the *'The insurance industry in St Lucia is controlled by insurance brokers as they place a large percentage of commercial business with the company. We have been unsuccessful in convincing customers to come to us directly for insurance'*.

This was viewed as a constraint to insurers if the intermediaries do not provide the risk management advice to customers. The issue of insurance education and qualifications was raised as in some insurance markets insurance intermediaries were not suitably qualified to offer risk management advice; this being attributable to the high costs associated with insurance education and lack of interest.

CHAPTER 5 – DISCUSSION& LITERATURE

The main objective of this chapter is to compare the findings of the research undertaken to the information stated in the literature review in efforts to derive at any similarities and differences. This will assist the researcher to determine whether the information derived from the insurance sector in the Caribbean has fulfilled the research objectives.

The researcher was able to assimilate that risk management approaches, particularly internal approaches were limited in the Caribbean region. This was confirmed due to only two of the respondents confirming the existence of such approaches. The literature indicates that organizations can implement ERM policies to assist in disaster management; Banks (2005) emphasized this in his view that ERM is a form of catastrophic risk management which can increase enterprise value'. It was established from the research process that the ERM process of implementation within Caribbean insurers is only in the discussion stages or some aspects practiced but no official policy implemented. Furthermore some of the respondents were not familiar with the approach and its benefits but had been advised by their Head Office and reinsurers to consider implementing. The researcher concluded that establishment of risk management frameworks or policies such as ERM was not viewed as compulsory and this was not regulated within the insurance sectors. Instead, those were haphazardly implemented if the need arose.

The literature stated that insurance companies in general are faced with a number of challenges including reputational, regulatory and catastrophic risks. Those challenges were emphasized by the respondents as having major effects if they occurred. However, four of the respondents stressed on the issue of competition and risk rating as the most significant risk; leading to loss of

business. The consensus was that catastrophe risks were not an immediate threat particularly due to the reduced frequency of natural catastrophes affecting the Region recently. Additionally, the effective reinsurance programs selected by the insurers lessened the burden associated with catastrophic losses.

Different opinions and analyses of the role of insurance in the management of catastrophic risks and disasters were expressed by the respondents. However, the various techniques employed by those insurers were in accordance with some of those stated in the literature; both on an internal and external level. The external approaches included reinsurance with a general consensus that reinsurance can 'increase underwriting capacity' and provide some form of 'protection against catastrophic losses' as was viewed by Rejda et al(2014). Reinsurance was viewed as effective and most relevant to the minimization of catastrophic risks. The respondents echoed the need to derive reinsurance from reputable and financially sound reinsurance entities. However, the highly sophisticated, effective and modern techniques which are predominantly used in the international markets such as Alternative Risk Transfer (ART) mechanisms had not been sought by Caribbean insurers due to their unsuitability for the small insurance markets. The clear benefits of deriving cover for catastrophic risks via the capital markets were not viewed as quintessential.

The insurers interviewed reiterated the existence of several classes of insurance policies being offered within the region which provided the required catastrophe insurance. There was a high demand for homeowners and commercial insurance policies albeit this type of cover not being a compulsory class of insurance via regulation. Those policies included several conditions which were emphasized in the literature as contributing to insurers' risk reduction objectives. Thus deductibles, exclusions, policy caps were inherent in the property and casualty policies offered by Caribbean insurers. An important element which was ascertained from the data collected was that reinsurers were instrumental in the

policy conditions inserted in the policies particularly, deductibles and an 'average clause'. This clause appeared to be unique to the Caribbean region.

A comparison of the outward approaches to risk management offered by Caribbean insurers with that stated in the literature indicate that several of the approaches were existing within the Caribbean region. The respondents confirmed the most predominant approaches were the use of surveys, insurance advice and proper underwriting of risks. Initiatives such as the application of discounts due to property enhancement and structural changes to withstand the effects of natural catastrophes were ineffective. In some territories such as in the Bahamas, homeowners were expected to adhere to the building codes in the construction of buildings which were prone to natural disasters. Retrofitting was therefore inconsequential in attempts to minimize risks. In addition insurers were reluctant to offer further discounts as low insurance premiums were already offered to obtain and retain business. Also, in islands where lower premiums were offered for retrofitting, consumers had not responded favorably.

Insurers appeared to be focused on the retention of market share due to intense competition among insurers'; loss of market share being viewed as the main risk in comparison to catastrophic risks. The insurance market was very competitive and controlled by the rates quoted. The issue of insurance regulation of prices was raised due to the respondents' views that many classes of insurance were 'underpriced' in order to obtain market share.

It was established that insurance education within the region is offered via insurance associations. This however was restricted to educational opportunities for members and not for the promotion of risk management approaches. In addition, due to the intense business environment in some territories there appeared to be little collaboration among insurers. Furthermore there was little emphasis on educating the public on risk management approaches as indicated in the literature, as a valuable risk management technique.

5.1 - Summary

The findings of this study reveal that insurance companies within the Caribbean practice risk management techniques as a form of catastrophe and disaster management. The approaches however are traditional approaches such as reinsurance which have been viewed as effective in handling catastrophic risks. There has been reluctance to adopt new approaches such as ARTS due to factors such as the low frequency of catastrophes and the focus on other risks and the success of existing risk transfer mechanisms. In addition, the issue of emerging risks such as climate change and its possible effects on natural catastrophes was not viewed as an important element to fortify the risk management practices to meet those unforeseen losses associated with catastrophes. This raises the concern of whether Caribbean insurers' risk management practices will suffice in the event of major catastrophes especially with the reluctance to explore new methods.

CHAPTER 6 - CONCLUSION

Risk management in insurance companies is clearly beneficial for the minimization of catastrophic risks. The findings from the research indicated that insurers' are aware of the benefits of establishing risk management approaches but a decision to implement may be based on factors such as insurers' views of the most imminent risks, the severity and frequency of losses, insurers' perception of the risk management concept, intervention by reinsurers and the strategic objectives of the insurance companies.

The research process outlined insurers' views that current approaches used to minimize catastrophic risks were adequate. The risk management approaches outlined in this research project indicate reluctance on the part of insurers within the Caribbean Region to implement new and innovative approaches to risk management. The research has shown that plausible explanations for this hesitation are the effectiveness of the traditional risk management approaches used and beliefs and perceptions that the insurance markets are not advanced to use modern practices of risk management. The findings may have also been influenced by the size of the survey used by the researcher.

6.1 – Implications for Insurers

This study provides insight into the practices adopted by more than one territory in the region and provides general information on what transpires in other insurance markets in terms of similarities and differences in risk management practices. The intention of this research project was to identify the risk management practices which can be used to curtail the losses associated with catastrophes. Insurers in the Caribbean are clearly aware of the adverse effects of catastrophes and have taken initiatives to assist in minimization of losses. However, the managers of insurance companies in the Caribbean region can use this research to improve on what is traditionally practiced both at the internal and external level. Mechanisms such as securitization of losses, insurance education

and use of hazard mapping can be beneficial to the Caribbean insurance industry.

The literature review has highlighted the best practices and provides some guidance into contemporary methods of risk management. The new approaches may be advantageous to insurers with respect to cost and effectiveness.

6.2. – Limitations of the study

There were several constraints imposed on the researcher in undertaking this research project. As the research project focused on the Caribbean region, a selection from each territory was not plausible. Due to the cross sectional time horizon a small sample was selected. This did not provide a diverse account to allow for generalizations. Additional insurers' views were required to make general views on the importance of insurance risk management in minimization of catastrophic risks, within the Caribbean region.

Obtaining information specific to the research question was a challenge due to the remote location of the researcher and the assiduous nature of the managers interviewed. This prompted the researcher to obtain information in the fastest manner and using the most effective methods. Additionally, some insurers approached, declined to respond to the request for information specific to the project thereby reducing the sample size.

The research objective was to obtain information on the role which insurance risk management plays in the reduction of catastrophic risks. Although best practices were derived, some different from what currently exists within the Caribbean region, there is uncertainty that insurers' will apply any change to what currently applies. The general perception of the insurers' interviewed was adequacy in the risk management approaches currently used.

The data was collected, transposed, coded and analyzed by a single researcher. This can result in a loss of objectivity. However, the researcher took the necessary steps to ensure this was not an ethical issue.

6.3 – Further Research

Further research may be required to determine whether there are any operating insurers who have adopted the new and innovative risk management approaches as was highlighted in the literature. The findings from this research may not be the general current practices; the results being influenced by the small sample of insurers used. Thus additional research on this insurance market may be necessary.

As this research paper was based on regional insurers only, research may be required to determine what practices actually exist in local companies and international companies which operate within the region.

The research paper also indicated the existence of a soft market in which there was no regulation of prices. This advertently had an effect on some risk management practices offered. Further research may be required on the regulation of such prices within the markets and whether insurance regulators have any influence on the risk management practices which insurance companies use.

6.4 –Personal Reflections

This research project was useful and the researcher worked diligently to ensure that requirements of the project were met. They were challenges in the initial stages with regard to the research topic to be selected but this was remedied after much thought and assistance. The main challenge faced was to obtain feedback and the willingness of some of the insurers to participate. Nevertheless,

with much determination the researcher successfully overcame this challenge; this was possible through discussion and probing for information specific to the research question. This research project was a valuable and educational experience for the researcher and provided details of the reality which exists within the Caribbean Region with respect to insurance risk management and catastrophic risks.

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APPENDIX 1**RISK MANAGEMENT SEMI-STRUCTURED INTERVIEW TEMPLATE**

Participant #:

Date of Interview:

**a.RISK MANAGEMENT POLICY/ CATASTROPHIC DISASTER
MANAGEMENT QUESTIONS**

1. What is your company's view on the establishment of a Risk Management policy?

- Is there a clearly defined RM policy? Please elaborate
 - Does this policy focus on catastrophic risks?
-

2. Has your company's operations been adversely affected by any catastrophic risks?

- Please provide an example (s)
-

3. Was there a clearly defined risk management approach within your organization for handling those risks? Please elaborate

- Is there a clearly defined RM approach to dealing with disastrous risks?
- Please indicate which risk management approaches are used with regard to catastrophes?
- Are factors such as identification, measurement, pricing and control of catastrophe exposure used in those approaches?

4. Have those risk management approaches been successful? How has this success been measured?

5. What in your opinion is best practice and should be done to better handle catastrophic risks?

6. Do you think more can be done to alleviate the adverse effects of catastrophes? If yes, please elaborate

B. INSURANCE – RISK TRANSFER QUESTIONS

1. Insurance is viewed as risk transfer mechanism and part of the risk management process especially in handling catastrophic risks.

- Do you view the standard insurance practice as being adequate?
 - Are there other risk transfer policies in effect?
-
-

2. Are there any insurance services/ schemes or products offered specifically as part of the disaster/hazard risk management process? A. Yes B. No – Please elaborate

3. What has been the impact of implementation of those services?

C. STAKEHOLDERS QUESTIONS

1. Have risk management approaches been targeted to any specific stakeholders such as customers to manage/mitigate those risks e.g. deductibles, excesses, monitoring of policyholders, surveys, underwriting standards, declinature of risks?

Please elaborate on what those are

2. Is there any strategy in place within your company to communicate and educate persons on catastrophes and ways to minimize risks?

3. What in your opinion should be the insurance industry's approach to disaster management?

- Have there been any industry wide risk management approaches or initiatives?

4. Is your company involved in any initiatives or collaborations with the government or local disaster agencies regarding management of catastrophic risks?

5. Who influences the establishment of insurance risk management policies within your organization, for disaster management?

APPENDIX 2

QUESTIONNAIRE

This is a research survey conducted to derive key information on risk management standards established within your organization to counter catastrophic risks. Please complete the following questions. The results of this evaluation will be used to encourage the RM concept.

1. Participant 1: _____
2. Job role: _____
3. Tenure: _____
4. Type of Business _____

5. Please read each of the statements below and indicate which best describes your

company's perspective on disaster risk management:

1 – Strongly Agree	2- Agree	3 – Neutral	4- Disagree	5-Strongly Disagree

a/A risk management policy is crucial for handling catastrophic risks experienced by the insurance company -----

b. Standard insurance practice has been effective in handling catastrophic risks_____

- c. An insurance company can be progressive and be viable with the absence of a well-defined risk management program -----
- d. Disaster or catastrophic risks are not a major problem for an insurance company's viability ----
- e. The company has an appropriate RM policy which has assisted in disaster management ---
- f. Disaster management is a key element in the consideration of services and products offered by the company -----
- g. A clearly defined risk management process inculcated within insurance practice is necessary to minimize risks _____
- h. There is need for implementation of an RM policy as standard insurance practice is inadequate to handle adverse risks _____

Thank you very much for taking the time to complete this questionnaire. I hope you found completing the questionnaire enjoyable. Your effort is greatly appreciated. If you have any queries or would like further information about this project, please contact the researcher at email address: gem1c13@soton.ac.uk

APPENDIX 3

CONSENT FORM 1

Topics - [An analysis of the role of insurance risk management in mitigation of catastrophic risks and disaster management]

Consent Form for Research Participant:

I am [GermaineMaxwell] a [MSc student]. I am requesting your participation in a study regarding [insurance risk management and catastrophic risks]. The study should last approximately 45___ minutes. You will be asked to fill out a short questionnaire. Personal information will not be released or viewed by anyone other than researchers involved in this project. A debriefing statement will be given to you upon completion of the study.

Any information you give will be kept completely confidential and in no cases will responses from individual participants be identified. As with any piece of research it is important to consider whether there are any risks to participants. The study involves minimal risk to participants (i.e., the level of risk encountered in daily life). There may be no direct benefit to you other than the sense of helping the public at large and contributing to knowledge.

All responses are treated as confidential, and in no case will responses from individual participants be identified. Rather, all data will be pooled and published in aggregate form only. Participants should be aware, however, that the experiment is not being run from a 'secure' https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorised third parties (e.g., computer hackers). However,

the data would appear only as a string of numbers, so your responses will remain totally anonymous.

Visitors to this web site are welcome to complete the study, although they will receive no credit or monetary compensation. Participation is voluntary, refusal to take part in the study involves no penalty or loss of benefits to which participants are otherwise entitled, and participants may withdraw from the study at any time without penalty or loss of benefits to which they are otherwise entitled.

If participants have further questions about this study, they may contact the principal investigator, [Germaine Maxwell] at (gem1c13@soton.ac.uk).

If participants have further questions about their rights or if they wish to lodge a complaint or concern, they may contact Dr Martina Prude, Head of Research Governance, Research Governance Office, University of Southampton, Southampton, SO17 1BJ. Phone: (mad4@soton.ac.uk).

Please tick (check) this box to indicate that you consent to taking part in this survey.

APPENDIX 4

COMPANY CONSENT FORM

Study title: An analysis of the role of insurance risk management in the mitigation of catastrophic risks and disaster management

Researcher name: Germaine Eula Maxwell

Ethics reference:

This document seeks to confirm an agreement to participate in the above-mentioned research proposal.

Please initial the box(es) if you agree with the statement(s):

Data Protection

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name).....

Signature of participant.....

Date.....

APPENDIX 5

CONSENT FORM 2

Study title: An analysis of the role of insurance risk management in the mitigation of catastrophic risks and disaster management

Researcher name: Germaine Eula Maxwell

Ethics reference:

Please initial the box(es) if you agree with the statement(s):

Data Protection

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name).....

Signature of participant.....

Date.....

APPENDIX 6

DEBRIEFING STATEMENT

Study Title: An analysis of the role of insurance risk management in the mitigation of catastrophic risks and disaster management.

Researcher: Germaine E. Maxwell

Ethics number:

Thank you so much for participating in this study. Your participation was very valuable. It has been acknowledged that you are very busy and very much appreciate the time you devoted to participating in this study. There was some information about the study that could not be discussed with you prior to the study, because doing so probably would have impacted your actions and thus skewed the study results. This form explains these things to you now.

What is the research about?

This research paper is based on the risk management processes which have been adopted by insurance companies to assist in disaster management. Risk Management is viewed in prior research as being applicable to minimisation of losses and this research seeks to determine if this approach is successful within the insurance context. The findings can only augur well for insurers as their practices can be reviewed to determine whether they are appropriate or can be enhanced.

Use of active deception or misleading participants

There was no use of active deception or misleading of applicants in the interview process. The information obtained will be used specifically to conduct the analysis as has been stated in the research question

We hope this clarifies the purpose of the research, and the reason why we could not tell you all of the details about the study prior to your participation. If you would like more information about the research, you may be interested in the following:

'Insurance Industry Catastrophe Management Practices; by Lawson, R. Card N. and Vass, G.; American Academy of Actuaries (2001); Strategies for Better Protection against Catastrophic Risks by Meyer R. & Kunreuther H, (University of Pennsylvania, 2007)

If you have any questions or concerns, you may contact me:

Germaine E. Maxwell at email address: gem1c13@soton.ac.uk

It is very important that you do not discuss this study with anyone else until the study is complete. Our efforts will be greatly compromised if participants come into this study knowing what is about and how the ideas are being tested. Once again results of this study will not include your name or any other identifying characteristics.

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the research support officer, Angela Faux (risethic@soton.ac.uk) or Dr Martina Prude, Head of Research Governance, Research Governance Office, University of Southampton, Southampton, SO17 1BJ. Phone: (mad4@soton.ac.uk).

APPENDIX 7

PARTICIPANT INFORMATION SHEET

Study Title: An analysis of the role of insurance risk management in the mitigation of catastrophic risks and disaster management

Researcher: Germaine E. Maxwell Ethics number:

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

I am a Masters student of the University of Southampton conducting a research project towards completion of a Masters of Science degree in Risk Management. The project is focused on investigating the relevance of risk management approaches to disaster management and minimisation of catastrophic risks. The questions which will apply are based on those risk management approaches, their importance and effects of their implementation.

Why have I been chosen?

You have been chosen to participate because of your role and credibility in the insurance industry. Your company has been well established with a sound reputation and advanced in its insurance practices.

What will happen to me if I take part?

The process will entail an interview via electronic means with the researcher which would allow for a discussion on the subject matter. This should be conducted within a 30 – 45 minute period.

Are there any benefits in my taking part?

The benefits of participating is that the results of this research can assist the company in reviewing its risk management approaches to determine if appropriate and viable and thus focus on any possible improvements.

Are there any risks involved?

There are no risks involved in this process of data collection.

Will my participation be confidential?

Your name and company name will be kept confidential as data will be coded to ensure this privacy. This research is compliant with the Data Protection Act/ University policy and information will be kept in encrypted files and accessible only by the researcher. Anonymity will be preserved with the use of the coding of the data, once obtained. You have the right to withdraw at any time without any legal rights being affected.

What happens if I change my mind?

You have the right to withdraw at any time from participating in this process. Legal rights of participants will not be affected by the decision to withdraw.

What happens if something goes wrong?

In the event of any concerns or complaints participants may wish to contact Research support officer, Angela Faux (risethic@soton.ac.uk) or Dr Martina Prude, Head of Research Governance (mad4@soton.ac.uk).

Where can I get more information?

In the event of additional information being sought,

Offer contact details of anyone in the research team who could answer any questions that a potential participant may have after reading this information sheet.

APPENDIX 8

TEMPLATE ANALYSIS OF SEMI-STRUCTURED INTERVIEWS

•PERCEPTION OF RISK MANAGEMENT WITHIN CARIBBEAN INSURANCE COMPANIES

- a. General perception
 - Definition of risk management as viewed by insurance companies
 - Perception of importance of adopting a risk management policy
 - Reasons for implementation of risk management policies
 - Knowledge of various risk management policies which can be effected
 - Interest in adoption of risk management policies for insurance companies
 - Number of insurers who have adopted RM policies
 - Establishment and existence of risk management policies

- b. Disaster and catastrophe risk consideration in risk management policies

• PERCEPTION OF DISASTERS/ CATASTROPHIC RISKS

- Major risk to insurers?
- Other forms of risks
- How catastrophes should be curtailed
- Role of insurance companies in minimizing catastrophic risks

• ROLE OF INSURANCE RISK MANAGEMENT APPROACHES IN CATASTROPHIC RISKS

- Perception of catastrophic risks by insurers
- Type of catastrophes with most adverse effects

- Approaches to handling catastrophic risks
- Traditional catastrophic risk management approaches vs modern
- Adequacy of risk management approaches adopted

- **FACTORS INFLUENCING ADOPTION OF RISK MANAGEMENT PRACTICES**

- Successful risk management practices
- Insurance market control

APPENDIX 9 – TRANSCRIPT SUMMARIES

TRANSCRIPT SUMMARY - PARTICIPANT 1

1. RISK MANAGEMENT POLICY/ CATASTROPHIC DISASTER

MANAGEMENT QUESTIONS

What is your company's view on the establishment of a Risk Management policy?

- Is there a clearly defined RM policy? Please elaborate
- Does this policy focused on catastrophic risks?

Answer – this is not practiced in St Lucia but in Bombay, India. A professional in officer who conducts inspections and he will suggest any improvements, suggestions made before any decisions are made. Risk management team is in place. Inspections and suggest the appropriate measures – video filming

2. Has your company's operations been adversely affected by any catastrophic risks?

- Please provide an example (s)

Answer (fire catastrophe in an oil refinery).

3.Question – Any natural disasters affected the company and resulted in huge losses?

Answer: Yes, the tsunami in 2006. Losses were not too great. The company was able to minimize its losses.

4. Is / was there a clearly defined risk management approach within your organisation for handling those risks? Please elaborate

- Please indicate which risk management approaches are used with regard to catastrophes?
- Are factors such as identification, measurement, pricing and control of catastrophe exposure used in those approaches?

Answer: Yes. A risk pool and reinsurance. Insurance pools comprised of contributions from several branches and subsidiaries, had been established by the company to handle catastrophic risks

5. Have those risk management approaches been successful? How has this success been measured?

Answer: Yes

6. What in your opinion is best practice and should be done to better handle catastrophic risks?

Answer: Prevention is better to mitigate the loss. Prevention – advancement of technology a week before, people swift in action to move persons before the natural; disaster, better conditions for others.

1. Do you think more can be done to alleviate the adverse effects of catastrophes? If yes, please elaborate?

Answer: Yes

B. INSURANCE – RISK TRANSFER QUESTIONS

1. Insurance is viewed as risk transfer mechanism and part of the risk management process especially in handling catastrophic risks.

- Do you view the standard insurance practice as being adequate?
- Are there other risk transfer policies in effect?

Answer: Other forms of risk transfer used by the company – pool for terrorism for the potential risks. All the companies will contribute to the pool, catastrophe claims met by the pool. Modern third party pool. 20 companies contribute to the pool. All claims will be met by the pool. 50 companies contribute to the pool.

A; Reinsurance is risk transfer mechanism

2. Are there any insurance services/ schemes or products offered specifically as part of the disaster/hazard risk management process? A. Yes B. No – Please elaborate

Answer: All the fire policies include loss or damage by flood – all fire losses will automatically cover the catastrophic risks. On an annual basis we issue over 5000 private homeowner's insurance policies. Catastrophe insurance for private homeowners is not compulsory due to regulation but we have seen an increased demand for those policies. Customers feel secure that this type of cover can provide some form of protection in the event of a catastrophe and we definitely provide insurance cover when catastrophes occur as in 2010 when the island was affected by Hurricane Ivan'.

3. What has been the impact of implementation of those services?

Answer: Yes they have been effective

C. STAKEHOLDERS QUESTIONS

1. Have risk management approaches been targeted to any specific stakeholders such as customers to manage/mitigate those risks?

(Approaches may include deductibles, excesses, monitoring of policyholders, surveys, underwriting standards, declinature of risks)

Answer: We normally or invariably have engineers who would inspect inventory, generators, if there is a breakdown how long it will take to replace it – consequential loss.

Excesses to minimize risks – cannot control losses, deductible allows for small claims to be minimized.

2. Is there any strategy in place within your company to communicate and educate persons on catastrophes and ways to minimize risks?

Notifications in the media

Answer: We sometimes place advertisements in the newspapers

3. What in your opinion should be the insurance industry's approach to disaster management?

- Have there been any industry wide risk management approaches or initiatives?

Answer: The company and regulator has policies to educate about risk management

4. Is your company involved in any initiatives or collaborations with the government or local disaster agencies regarding management of catastrophic risks?

Answer: Company hopes to promote events – We will have those in due course.

5. Who influences the establishment of insurance risk management policies within your organization, for disaster management?

Answer: Past claims experience – how we can minimize the losses. Risk management came into force because of those experiences.

TRANSCRIPT SUMMARY - PARTICIPANT 2

1. What is your company's view on the establishment of a policy? Is there is a risk management policy?

The company does not have a risk management policy in place. Management has not shared a Risk Management policy with us. However Enterprise Risk management is a policy which has been discussed with an aim to assist in minimizing risks.

2. Has your company's operations been affected by any catastrophic risks?

The only time the company has had widespread losses is when we had hurricanes and storms. This Agency has in place a well-structured and reliable reinsurance arrangement; the company transfers its losses via non proportional reinsurance .The biggest loss which had an adverse effect was in 2011 but this had .nothing to do with local insurance business but instead in the international insurance market.

3. Is there a clearly defined risk management approach within your organization for handling those risks?

No we do not have a risk management policy in place

4. What do you think is best practice to handle or mitigate catastrophe risks?

Underwriting staff should be pushed in the direction of not just quoting premiums but doing an element of RM. The reality though is that over 65 percent of business is generated through brokerage firms. The onus is on them to provide risk management advice to customers. We do try to assist clientele to manage

risk. This is done on an individual basis where we do surveys for clients who seek property insurance, getting them to look at their exposure. We don't have a risk management division or risk manager due to size of agency but we try to do risk assessments to ensure that our reservations are heeded to client. The insurance industry in St Lucia is controlled by insurance brokers as they place a large percentage of commercial business with the company. We have been unsuccessful in convincing customers to come to us directly for insurance'. Once brokers' control we tend not to look closely at the risk, we tend not to assist clients with RM advice.

We as a company tried to improve our stock of properties and improve or minimize risks associated with hurricanes by trying to push clients in the way of retrofitting, upgrading homes...a guide to retrofitting your homes was done several years ago. 'Booklets were created for private and commercial policyholders with the advantages and guidelines to retrofitting of properties.' 'Furthermore 'the intention was to ensure that the buildings were designed to withstand in particular the adverse effects of hurricanes. The booklets were designed by Tony Gibb who was a foremost. The homeowners' booklet had a checklist...if a customer's home was upgraded in keeping with the recommendations outlined in the homeowners' book a discount would apply. The commercial booklets were given to contractors. The strategy was not successful in the market.

Pricing has remained competitive. 25percent discount we hoped to offer for retrofitting wouldn't make any sense now. We never looked to reintroduce those books.

5. At present, if retrofitting was donewould you give a reduced rate

No...Commercial building rates are as low as 5.8 per thousand. If we have to give you a 25 percent off this book rate it would be way too low.

Booklets were healthy discounts when rates were higher. Had to rethink application of books and gradually threw away the initiative.

6. What other risk transfer policies are in place?

There is no use of alternative risk transfer mechanism. We rely on reinsurance. There are no schemes or services which are used specifically for disaster risk management. We apply deductibles in our policies; a strategy to minimize your risks. – but I can't say it is tool ..it is something ...it is not initiated by us. It was imposed by reinsurers. We are happy it is here because it does it helps to mitigate our losses with the application of a 2 percent deductible.

No hazard maps which could be used

Apart from basic underwriting tools there is nothing more which we use to mitigate our risks.

A lot of homeowners insist we write subsidence in respect of property on hillsides...but we apply a 2% landslide deductible. Engineers reports are sometimes requested to assess the risks. Assessment of risks based on our own assessments. If on a hill decline or apply an excess. No additional premium charged for the peril. In this soft market an additional premium would not be recommended.

Educating peoplebooklets were in place to educate customers. In terms of education the only thing we do is when we do marketing of our company we discuss the importance of insurance

7. What do you think of the insurance industry's approach should be?

Met someone recently who is part of a climate change council and he reminded me that it is years they are trying to get insurance companies on board in respect of risk mitigation. That is a positive move. The insurance industry can only support and give lip service to the actions and the work of those committees that are trying to battle climate change; to change procedures to help manage those climate change and hurricane risks. If we participate we can go a long way into minimizing risks. No insurance company has taken on this approach. The Insurance Council of St Lucia, an insurance association which the company is a member of, sits on the climate change local committee. However this has made no difference; handling at a local level is not making much of a difference. Too much focus in the industry is on fighting each other and thus there is no collaborating. The Climate Change Committees wants the insurance industry to assist in changing the attitudes of people.

Disaster agencies and those committees spearheaded by the Ministry of Planning in Government to get insurers on board.

8. You think that climate change is a major problem...do you think it will increase your catastrophe risks?

Insurers have not woken to the idea that it will increase costs. Climate change will cause more frequent hurricane and hurricanes of increased severity will

obviously have an impact on our losses. We are aware of the CCRIF and the another facility that the world bank in conjunction with Swiss are and Munich has established re with regard to farmers and offering them some parametric insurance. Only one insurer is known to offer some kind of parametric insurance but recently this company reduced its operations. I am not certain of this is still offered.

9. Who would be responsible in adopting a risk management policy in your company?

This is a family owned enterprise. United insurance may get involved and might suggest conceptualizing some sort of ERM and risking management plan to safeguard operations for the company in this market. The principle or general manager would be responsible for initiating such as scheme.

10. What do you consider to be the biggest risk which the company faces?

The biggest risk is the competition from other insurers. United has reinsurance and business organized, not accustomed to losses. 2011 was the only time we suffered losses. Competitors can reduce your business. Nagico Ins. Our biggest competitor has not quota share treaty...offering low rates. There is a risk of you losing a good chunk of business to customers. The pie is not growing.. With the entry of new insurers the business is shrinking.

TRANSCRIPT SUMMARY – PARTICIPANT 3

1. Does your company have a risk management policy in place?

We have no written policy but we practice risk management

2. In what way do you practice it?

We look at Swiss Re and how they practice for example where they invest their money like in government bonds and are careful with our investments; Rearrangement of reinsurance. Reinsurance had been arranged to withstand the impact of losses due to two hurricanes and still make a profit. The reinsurance program selected must be more than adequate to cover large losses from natural disasters. We have proportional and excess. A programme in case out excess is used up. On an annual basis premiums payable are as much as XCD 700,000.00 and is cost is quite exorbitant for the company'. We have a reinstatement programme to cover that programme so we will not suffer financially. Capital to set up set up at 2.3 million.

Rating of the company was a b+++ rating due to the sizing of the company.

3. What has been the biggest risk your company has faced?

The state of the market, the competition is promoting unhealthy competition as was announced by the Eastern Caribbean Central Bank. insurance is a promise to pay and some companies will not be able to keep to that promise. Don't want to get involved in the price war. For the last two or three years it has been getting worse. Insurance is not a priority for insurers and thus persons will accept whatever rate is offered

There is a new insurance act to be pushed by ECCB specifically to reduce the number of players in the market.

For 4 years Swiss Re felt the company was small. I was oversubscribed by 50% . There is capacity in the market. After a catastrophe rates falls. The company is very conservative In 2007, the island was exposed to two natural disasters; a hurricane and an earthquake which resulted in large losses for the company. Another major catastrophe for the company was a major fire and total loss at a distillery'. In recent times the frequency of natural disasters has been reduced in the Caribbean; the islands have been affected by storms and hurricanes every three years', this makes catastrophes less of a threat. The trend or frequency is every 3 years.

4. Did those catastrophes have an effect on your company?

Answer: .No. Because of the proportional reinsurance program we were able to cover our losses. We pay a large premium but reinsurance offers adequate protection.

No alternative forms of risk transfer are used.

5. Customers ...do you offer an advice, written material that would assist in mitigating their risks?

Answer: Giving advice can result in problems. Hurricane Ivan which affected St Lucia caused losses. One customer who we gave advice to delete hurricane insurance cover was displeased when the hurricane caused his building to be damaged. As hurricane cover was excluded he couldn't claim for his losses. Since this situation we are reluctant to offer risk management advice to customers.

6. Is any advice given to customers on mitigation of losses to their properties?

Answer: There is no underwriting in the St Lucian market it is a matter of price. Brokers are most concerned about the price. The price is so cheap that techniques such as retrofitting would not make a difference. Subsidence and landslip cover which is offered by two insurers including this company does not make a difference in convincing persons to insure with the company. Rates are competitive .Technical answer is yes you should however the reality is that we don't.

We conduct surveys and use GPS as risk management techniques. We are the only insurer within St Lucia to have adopted this approach to management of risks. The use of GPS has assisted with determining the probable loss, detecting areas prone to storm and sea surge, flooding, wind susceptibility and in the rating of risks as well as reducing the accumulation exposure. Models are prepared with disaster management taken into consideration

The current state of the market prohibits offering discounts for building structural improvements. The prices are so low already, any insurer would not proceed to give a lower rate because of the price reductions.

Another risk management mechanism is the use of event limits which are inserted in reinsurance policies to reduce writing capacity. Most companies have an event limit of 15 per cent. If you go over this event limit you are responsible for any losses which occur.

7. Are there any products or services or policies established with catastrophe risks in mind?

Answer: Standard for policies

Two companies have specific policies for example sun general specifically geared to the clients for catastrophes. Come up with a policy where you can buy a policy to cover that deductible. It doesn't necessarily have to be an existing client and buy the policy to cover their product.

EC global has a program - for farmers. Similar to what is offers by CCRIF. Some form of parametric insurance. Once event is triggered then payment will be made.

8. Insurance industry....what can be done as a whole? Are there any initiatives that can be taken as a whole to assist in the risk management process?

Answer: The whole insurance industry is designed to do this. But this is not working. Don't think the insurance entities will ever come together.

What you pay for your reinsurance makes the difference. When a hard market in 1990s. Insurers came together and there was a tariff to charge certain rates. Homeowners rates were at 12 per Mille. This did not last. Within a year no insurers worked to keep to this tariff.

9. Is your company involved in any initiatives with any other stakeholders ...
When I was asked about a risk management policy is in place . Enterprise risk management . When researched the topic..we were already doing it. They did say that we have practices in place...although not written.

10. Who in your opinion influences risk management policies in your organisation?

Different factors influence risk management policies. For instance, the Board, investment company, broker, manager, experience, overtime put certain things in place, reinsurance broker.

TRANSCRIPT SUMMARY –PARTICIPANT 4**1. What is your company's view on the establishment of a Risk Management policy?**

- **Is there a clearly defined RM policy? Please elaborate**
- **Does this policy focus on catastrophic risks?**

As a company, we view a Risk Management policy as critical to our organization's success. While not yet fully in place, we are in the process of defining our RM policy. Over the last 12 months, RM has been identified as an area that requires specialized attention. To that end, we have gone as far as to establish a Governance, Risk and Compliance department and staffed them with highly qualified individuals.

The focus of our RM policy will encompass risks in its various forms – reputational, financial, personnel and catastrophe, to name a few. As an insurance organization, we often find ourselves acting in the capacity of Risk Advisers to our clients, so it has become somewhat of a natural progression for us to assimilate this into our Modus Operandi.

2. Has your company's operations been adversely affected by any catastrophic risks?

- **Please provide an example (s)**

As an insurer operating in numerous territories throughout the Caribbean, catastrophic risks have pretty much become a way of life. The effect has been both direct and indirect. Direct effects have included the impact on our balance sheet of paying catastrophe claims throughout our network. Indirectly, we have found ourselves needing to implement measures to combat insurance fraud by would-be opportunists whenever disasters strike.

We have also had to earmark specialists like emergency medical personnel and engineers to assist with our pre- and post-disaster planning.

3. Was there a clearly defined risk management approach within your organisation for handling those risks? Please elaborate

While there was a disaster management plan, its sufficiency went as far as the operations of the office immediately before, during and after a disaster. We are persuaded that the effectiveness can be improved by extending the scope of same to our clients – the major commercial ones at minimum. By taking a proactive approach prior, this would help to mitigate against the adverse financial effects on our policyholders and, by extension, reduce or losses during a catastrophe.

At present, the company's disaster management plan entails items such as supplies, emergency contact numbers, securing machinery, monitoring the effects of the disaster and other similar matters. What it does not address are things like enlisting the services of counsellors for our claims staff to help them handle the stress associated with the volume of claims that normally follow a disaster.

4. Insurance is viewed as risk transfer mechanism and part of the risk management process especially in handling catastrophic risks.

- **Do you view the standard insurance practice as being adequate?**
- **Are there other risk transfer policies in effect?**

As an insurer, our risk transfer practices are fairly adequate but, like many other things, can be improved. With respect to what our customers have done, for many of them it is inadequate but we continue to strive to find ways in which we can help them to protect themselves.

We do not currently employ other risk transfer policies. However, with the advent of our Risk Department, along with our Investment Manager, we have identified this as a strategic area for further exploration in the short term – next 2 - 4 years.

5. Please indicate which risk management approaches are used with regard to catastrophes?

• Are factors such as identification, measurement, pricing and control of catastrophe exposure used in those approaches?

As a company, we have identified the sources of risk to our organization from catastrophes (CAT). We have also examined the potential impact of any catastrophic losses that may occur. Our scope for potential impact is normally from that of the Expected Maximum Loss (EML). Considering our aggregate exposures in every territory, we run catastrophe models using the assistance of our business partners in Reinsurance.

We also differentiate our CAT pricing based on the location of the territory within the CAT belt. As such, territories like Trinidad and the ABC Islands would find themselves charging a significantly different rate for the CAT exposure.

Our surveyors use more stringent loss control measures for territories within the CAT belt mainly because severe losses are far more likely within this region.

6. Have those risk management approaches been successful? How has this success been measured?

We would have to say that these approaches have indeed been successful.

(Un)fortunately enough, we have not had as many CAT events in the past 10 years as we have had in the previous 10 years, so our ability to accurately measure the effectiveness would correspondingly be affected. However, by virtue

of building codes, adherence to engineering standards and even indications from systems such as Tropical storms – we have found ourselves in a position where the adverse effects of risk – both CAT and non-CAT, have been smaller and smaller

7. Have risk management approaches been targeted to any specific stakeholders such as customers to manage those risks?

Please elaborate on what those are

Yes, the risk management approaches have been targeted to specific stakeholders.

Yes, the risk management approaches have been targeted to specific stakeholders.

Loss prevention and reduction measures have been suggested to many of our clients. Methods to reduce the effects of robberies to our Jewellers block customers; fires to our commercial building and Liability losses to our commercial businesses represent just a few.

In one of our territories, we noticed that a number of jewellery stores had been targeted for robbery. To that end, we have made suggestions such as not having more than a certain percentage of the entire stock of jewellery in any one display case; putting the higher value items towards the back of the store.

Property insurers would have been encouraged to introduce a fire safety program to include trainings that would include how to use fire extinguishers and awareness of how to prevent and mitigate against fire losses.

8. What in your opinion is best practice and should be done to better handle catastrophic risks?

Catastrophic risks need to be handled primarily through education.

Unfortunately, a number of our clients make decisions based on the direct cost only, with little to no regard of the potential impact – financial, psychological, emotional and otherwise – on the business if a loss were to occur. Better sensitization of the approach to catastrophic risk would enable the insureds think ahead and use insurance only as a part of a well thought-out catastrophe plan.

As insurers, whenever we approach policyholders and would-be clients about loss control, they often view it as too costly to pursue. As an insurer, we have ways of applying underwriting measures to loss exposures to make them more profitable for us. However, this can still leave our clients exposed to some extent. Governments can attempt to enforce certain rules more stringent loss prevention methods, but for many of them the 5-year cycle for the next general election precludes them from taking as firm a stance as they would like.

Sadly, whenever the insuring public suffers a loss, they tend to pass the blame on to the insurance industry under the guise of being taking advantage of or misled. Be that as it may, it is up to the insurers, to come together for the greater good of all players involved.

9. What in your opinion should be the insurance industry's approach to disaster management?

- Have there been any industry wide risk management approaches or initiatives?

Disaster management should be viewed as a strategic opportunity for the insurance industry. Because we liaise with a number of other industries, we are poised to provide the government with statistics and data to help them to enforce stricter safety and protection standards on other industries – similar to what happens in the United States with motor vehicles. In the US, these vehicles get

Crash Safety Ratings which consumers can use to determine what automobile they wish to purchase.

In similar manner, the Insurance Industry should rate different buildings and structures to allow customers to understand the potential catastrophic impact of their investments. The industry should also expend a special effort to educate the populace, but start with college-level students. This would have the dual benefit of preparing the next generation of insurance professionals and to sensitize the next generation of insurance buyers as to benefits of disaster management.

In some of the territories in which we operate, the local insurance institutes have enshrined it in the local Insurance Acts that persons practising insurance should have minimal insurance qualifications. This has the benefit of having front-line colleagues who view clients not as money to be collected, but as uninformed customers to protect.

10. Is there any strategy in place within your company to communicate and educate persons on catastrophes and ways to minimize risks?

At present, no formal method exists. The way that we approach it is by encouraging persons to pursue insurance qualifications. With the learning garnered, these persons would have gained an appreciation of risk management. Regrettably, this method tends to be somewhat reactive, and there is the ever-present possibility that persons would gain theoretical knowledge without the practical application.

With the advent of our Governance, Risk and Compliance department, measures are being implemented to address this. Webinars and risk manuals are being compiled, and we anticipate that these will be completed by March 2015.

11. Is your company involved in any initiatives or collaborations with the government or local disaster agencies regarding management of catastrophic risks?

No, at present, no such collaborations exist.

12. Who influences the establishment of insurance risk management policies within your organisation, for disaster management?

The major stakeholders are the Chairman, the Chief Risk Officer, The Managing Director and the Chief Executive Officer. The Chief Underwriting Officer and the Underwriting Manager also play a big part shaping these risk management policies.

TRANSCRIPT SUMMARY - PARTICIPANT # 5

1. Has there been any specific catastrophe which your company has been affected by?

- How was your company able to deal with losses

Answer: This is a fairly new company which has been formed – 9 months. No disaster recovery plans have been written. Build in redundancies to power supply – server, laptop backup. We are in the service business. Data and laptop are required to operate and function. We can operate from anywhere. The problem is that we can have a disaster recovery plan – internet connectivity is a weak link. We are reliant on the same network.

Hurricanes – yes we view as a major threat – that is the kind of business we write. Yes we have insurance to cover assets whether due to windstorm, flood.

2. Is there any interaction with the capital markets / use of reinsurance?

Capital markets – catastrophe bonds

Answer: We are an intermediary – not an insurance company. We understand the necessity for reinsurance cover but we do not get involved specifically in that.

3. What approaches are used with customers to assist in minimizing risks?

Customers- the importance of adopting approaches or mitigate risks?

Answer: One of the ways we plan to differentiate our business is by giving them RM advice.

Homeowners are encouraged to have fire extinguishers. RM and disaster recovery plans are encouraged – we give advice on disaster recovery plans. Adequate rm plan in place by customers – we tend to apply discounts, in underwriting of risks the rating is reflective of that – meaning rates are reduced

4. Are there any collaborations with other companies or the industry to assist in disaster management?

Answer: The Bahamas insurance association is involved in this – this is as public relations function where the press is used to educate the public about safety measures.

5. What in your opinion – best practice for insurance companies to handle catastrophe risks?

Answer: There is need to have adequate reinsurance arrangement for catastrophe reinsurance – depends on the risks taking of insurers in terms of property – commercial properties they underwrite.

Flood – 80% of damage – aggregates are exposed- change reinsurance approach to ensure adequately cover. Ensure that there is a reinstatement cover in place and adequate. Understand the risk they take on; have an analysis of those exposures.

TRANSCRIPT SUMMARY - PARTICIPANT 6

1. Is there any specific catastrophe that your company was exposed?

Answer: Hurricanes are the major risk which the company is faced with. I notice from your questionnaire – risk management is not standard. We live in a CAT prone area and that is all part of risk management policy or aspect of it all. Plan how we will operate prior to hurricane. Cat plan in place before hurricane affects which areas will be hit, prone to storm surge loss adjustors, accommodations for loss adjustors, staff to deal with claims, no power anywhere to have in place, no way to communicate after a hurricane.. plan which areas will be hit, how many loss adjustors, whether there will be staff to deal with those claims,

Last major catastrophe was Ivan hurricane – we had to get a boat to house everyone to provide power and provide accommodation and communication we needed.

It is easier to plan for hurricanes; for earthquakes no warnings – more difficult to plan.

2. Other than reinsurance does your company use any other forms of risk transfer?

Answer: No the effect of the CAT bonds would result in more capacity being dumped in the Caribbean. Traditional sources of risk transfer. Have a good relationship with reinsurers.

3. What could be the result of inadequate reinsurance?

Answer: Purchasing of reinsurance is not scientific – there is a degree of guess work. Reinsurance based on models...based on loss ratio of 10 -15 on portfolio. Ivan loss ratios were in region of 30 -40 percent – inadequate cover due to not

purchasing adequate insurance, stock market crash some insurers failed due to low returns from the stock market, no underwriting profit...reinsurers losses because of large losses can't respond to claims made by insurers. Quota reinsurance is in place to prop up capital. Capital requirements low to cover reinsurance. Multiple insurance failing capital base is limited to pay for any losses. The Caribbean insurance market and capital structure is not appropriate and too small to allow for the issuance of catastrophe bonds or other Alternative Risk Transfer (ART) policies.

4. Are there any specific initiatives used in efforts to mitigate catastrophic losses like those applicable to buildings?

Answer: We write business in three territories in Caribbean; Turks and Caicos, Bahamas and Caymans – building guidelines are strict – homogenous policy – concrete blocks, tile roof – can withstand winds of 120 miles per hr., building structure has little to do with storm structure. There are strict guidelines to the construction of buildings within the island and thus all buildings had to meet those specifications particularly to withstand the adverse effects of hurricanes; thus retrofitting is not a factor for consideration within this insurance market. We concentrate on the storm surge threat. Increased wind threshold and storm surge factor – The majority of claims would be from storm surge. No issues with roofs being blown off. 2 to 3 feet of water inside house - can result in a 40% loss of fixtures. It is difficult for Caribbean islands to prevent CAT losses. We cannot do to move from low lying areas in places like the Bahamas. As long as people live near coasts there is little we can do. With global warming this will expect to be worse. Government intervention is required to get everyone to move from low lying areas. As long as property is exposed and building along coasts there is little we can do.

6. Educating of customers – Is there any strategy in place?

Answer: As an industry at the beginning of the hurricane season we place ads in the newspapers about hurricane preparedness. We have no brochures and there is no initiative for the whole industry

7. Are there any initiatives with government and disaster management agencies

Answer: We can communicate with agencies in the USA...can't remember the name of the agency post CAT. Any collaborations with the other bodies. We communicate with agencies. There is always communications with them. We employ technical adjustors who offer advice on risk management. Use loss adjustors out of the UK. (Crawford loss adjustors out of the UK).

8. Who influenced the RM structure in place at your company?

Answer: The old Royal and Sun Alliance policy – procedure handed down from royal sun alliance. It was their strategy on how they should proceed. RM policy was influenced by old Royal Sun Alliance Company. We always had a risk management policy in place.

9. What is your opinion – what do you think is the most appropriate approach – best practice

Answer: Depends on many factors - This depends on the event and scenario. You basically model your risk management based on the disaster approach. Different approaches apply to hurricanes and earthquakes. Different approaches applied based on what was listed in the questionnaires. Model RM approach to the scenario you want to deal with.

APPENDIX 10 – RISK MANAGEMENT MATRIX

Type of Loss	Frequency	Loss Severity	Appropriate Risk Management Technique
1	Low	Low	Retention
2	High	Low	Loss Prevention & Retention
3	Low	High	Insurance
4	High	High	Avoidance

Source: Rejda, G.E. (2011) p.p. 53

Figure 6 – Risk Management Matrix