

# **“Black Swan Events and Its Risk Management”**

*Final Year Project report submitted in Partial fulfillment of the  
requirement of the award of the degree*



**Submitted to:**

**Mrs. SONAL GUPTA**

COLLEGE OF MANAGEMENT STUDIES

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**DEHRADUN**

**SUBMITTED BY:**

**JOHNSON P SAVIO (500036598)**

MBA ENERGY TRADING

COLLEGE OF MANAGEMENT STUDIES

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**DEHRADUN**

**APRIL 2016**

## DECLARATION

I hereby declare that the project, entitled “**Black Swan Events And Its Risk Management**” submitted to **University Of Petroleum and Energy Studies**, Dehradun, in partial fulfillment of the requirements for the award on the degree of **MBA in ENERGY TRADING** is a record of original research work done by me during the period of 2014-2016 under the guidance of **Mrs. Sonal Gupta**, and it has not formed the basis for the award of any Degree / Diploma / Associateship or other similar title to any candidate in the university.

**Place: Dehradun**

**Signature of Candidate**

**Date: 4<sup>rd</sup> April 2016**

## ACKNOWLEDGEMENT

The success of any project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to those who have played an important role in the success of this project.

I would like to thank the Lord Almighty for his all sufficient grace which was present during the entire period of my project. I would also like to thank University of Petroleum and Energy Studies which allowed me to undertake this dissertation.

It is with great honor I convey this acknowledgement so as to express my gratitude for the assistance, advice and support I received during the dissertation. I thank **Mrs. SONAL GUPTA**, my mentor for her support and valuable advices which help me to guide my way throughout the Dissertation.

At last but not the least I take this opportunity to express my gratefulness to my parents, classmates and friends who played an important role in the success of the project.

**JOHNSON P SAVIO**  
**500036598**  
**R590214023**

## CERTIFICATE

This is to certify that the Dissertation report entitled “Black swan events and its risk management”, submitted by Johnson P Savio to UPES for partial fulfilment of requirements for Masters of Business Administration (Energy Trading) is a bonafide record of the Dissertation work carried out by him under my supervision and guidance. The content of the report, in full or parts have not been submitted to any other Institute or University for the award of any other degree or diploma.

(\_\_\_\_\_)

Mrs. Sonal Gupta

Senior Faculty,

Department of Oil and Gas Management

College of Management & Economic Studies, UPES



## EXECUTIVE SUMMARY

The metaphor of Black Swan refers to unpredictable events, such as September 11, 2001, that happen from time to time and have enormous consequences. The phrase originated in medieval Europe during philosophical discourses, but has become widely known subsequent to the recent publication of Nassim Nicholas Taleb's eponymous bestseller, *The Black Swan: The Impact of the Highly Improbable*. Currently, civil engineers deal with the impact of extreme natural and man-made \_accidental or malevolent intentional\_ risks for critical facilities through a risk-based approach, where risk is a function of the likelihood of event occurrence and the resulting consequences.

Black Swan events are not foreseeable by the usual statistics of correlation, regression, standard deviation or return periods. Expert opinions are also of minimal use since their experiences are tainted by biases and constrained by finite human life span. This inability to estimate the likelihood of occurrence for Black Swan events precludes the application of risk management. Therefore, the development of strategies to manage their consequences is of paramount importance. The objective here is to discuss some past such events of engineering relevance, idiosyncrasies of human behavior responsible for missing precognition of their clues, and management strategies to cope with the potential or actual consequences of such unforeseen, large-impact, hard-to-predict events.

Here in this report I speak mainly about how to map the risks and how to manage these black swans. To mitigate the risk is hard so now we can do is to reduce the effect of this. Proper management can avoid occurrence of these events to an extent.

## Contents

DECLARATION .....	1
ACKNOWLEDGEMENT .....	2
CERTIFICATE .....	3
EXECUTIVE SUMMARY .....	4
1. Introduction .....	7
1.1 Black swan events .....	7
1.2 Risk mapping.....	10
1.3 Butterfly effect .....	11
2. Literature Review .....	12
3. Objectives .....	16
4. Research Methodology .....	17
5. Data.....	22
5.1 Effects of past events.....	22
5.1.1 Economic crisis 2008.....	23
5.2 Butterfly effect .....	33
5.3 Integration and Differentiation.....	36
5.4 Risk Mapping .....	38
5.4.1 Risk mapping process .....	39
5.4.2 Risk Evaluation Process.....	42
5.4.3 Risk map for economic crisis 2008.....	44
5.5 Management techniques.....	46
5.5.1 Credit default swaps .....	48
6. Conclusion.....	49
7 Recommendations.....	50
8. Reference .....	51

List of Figures

Figure 1 AIG value crash.....	23
Figure 2 Market crash 2008 on crude oil price. ....	25
Figure 3 Goldman sachs share value dip .....	26
Figure 4 Effect of factor on black swan.....	36
Figure 5 Effect by different factors.....	37
Figure 6 Risk mapping cycle .....	38
Figure 7 Risk Evaluation Map sample.....	43
Figure 8 Risk chart of 2008 economic crisis .....	44

# 1. Introduction

## 1.1 Black swan events

An occasion or event that veers off past what is regularly expected of a circumstance and that would be to a great degree hard to foresee. This term was promoted by Nassim Nicholas Taleb, a money teacher and previous Wall Street dealer.

Black swan occasions are normally irregular and surprising. For instance, the beforehand fruitful multifaceted investments Long Term Capital Management (LTCM) was crashed into the ground as a consequence of the progressively outstretching influence created by the Russian government's obligation default. The Russian government's default speaks to a black swan occasion since none of LTCM's PC models could have anticipated this occasion and its resulting impacts.

Stock and other venture markets are influenced by all way of occasions. Downturns or crashes, for example, the repulsive Black Monday or the share trading system accident of 1987 or the web rise of 2000 were generally "model-capable," yet the Sept. 11 assaults were far less so. Also, who truly anticipated that Enron would implode? With respect to Bernie Madoff, one could contend in any case.

In any case, the fact of the matter is, we as a whole need to know the future, however we can't. We can show and anticipate a few things (to a degree), yet not others - not the black swan occasions. What's more, this makes mental and down to earth issues.

For instance, regardless of the possibility that we effectively foresee a few things that effect on the stock and other monetary markets, for example, race results and the cost of oil, some other occasion like a characteristic catastrophe or war can override these different elements and toss our arrangements thoroughly out of kilter. Besides, occasions of this kind can happen whenever and keep going for any period of time.

To delineate the unusualness of these occasions, we'll take a gander at past wars. From one perspective, there was the extraordinarily short Six Day War in 1967. In any case, then again, in 1914, individuals thought "the young men will be home by Christmas." truth be told, those that survived were home four years after the fact. With respect to Vietnam, that did not precisely turn out as arranged either.

The expression "black swan" gets from a Latin expression; its most seasoned known event is the artist Juvenal's portrayal of something being "rara avis in terris nigroque simillima cygno" ("an uncommon winged animal in the terrains and all that much like a black swan"; 6.165).[3] When the expression was authored, the black swan was assumed not to exist. The significance of the representation lies in its similarity to the delicacy of any arrangement of thought. An arrangement of conclusions is possibly fixed once any of its crucial hypotheses is negated. For this situation, the perception of a solitary black swan would be the fixing of the rationale of any arrangement of thought, and also any thinking that took after from that fundamental rationale.

Juvenal's expression was a typical expression in sixteenth century London as an announcement of outlandish possibility. The London expression gets from the Old World assumption that allswans must be white since every single chronicled record of swans reported that they had white feathers.[4] In that connection, a black swan was unimaginable or possibly nonexistent. After Dutch adventurer Willem de Vlamingh found black swans in Western Australia in 1697,[5] the term transformed to suggest that an apparent outlandish possibility may later be disproven. Taleb takes note of that in the nineteenth century John Stuart Mill utilized the black swan sensible deception as another term to distinguish falsification.[6]

Black swan occasions were talked about by Nassim Nicholas Taleb in his 2001 book *Fooled By Randomness*, which concerned money related occasions. His 2007 book *The Black Swan* extended the allegory to occasions outside of money related markets. Taleb respects all major experimental revelations, authentic occasions, and creative achievements as "black swans"—undirected and unpredicted. He gives the ascent of the Internet, the PC, World War I, disintegration of the Soviet Union, and the September 2001 assaults as illustrations of black swan events.[7] Taleb asserts:[8] What we call here a Black Swan (and underwrite it) is an occasion with the accompanying three properties.

To start with, it is an exception, as it lies outside the domain of normal desires, since nothing in the past can convincingly indicate its probability. Second, it conveys an amazing 'effect'. Third, despite its exception status, human instinct makes us create clarifications for its event sometime later, making it reasonable and unsurprising.

I stop and abridge the triplet: irregularity, compelling 'effect', and review (however not forthcoming) consistency. A little number of Black Swans clarifies nearly everything in our reality, from the accomplishment of thoughts and religions, to the elements of recorded occasions, to components of our very own lives.

### **Some major black swan events**

- The Sept. 11, 2001, assaults on the World Trade Center and Pentagon;
- A 75% decrease in the Nasdaq;
- The 2003 European heat wave (40,000 passings);
- The 2004 Tsunami in Sumatra, Indonesia (230,000 passings);
- The 2005 Kashmir, Pakistan, quake (80,000 passings)
- The 2008 Myanmar tornado (140,000 passings);
- The 2008 Sichuan, China, quake ( 68,000 passings);
- Financial subsidiaries irritate the world's saving money framework and budgetary markets;
- The disappointment of Lehman Brothers and the deal/liquidation of Bear Stearns;
- A 30% drop in U.S. home costs;
- The 2010 Port-Au-Prince, Haiti, seismic tremor (315,000 passings);
- The 2010 Russian heat wave (56,000 passings);
- BP's (BP\_) Gulf of Mexico oil slick;
- The 2010 business sector streak crash (a 1,000-point drop in the DJIA);
- The expanding size of turmoil in the Middle East; and
- Thursday's seismic tremor and torrent in Japan.

## 1.2 Risk mapping

Mapping systems when we discuss it is extremely helpful operating at a profit swan occasions. This can consequently be alluded when we sense the event of occasion. These occasions might be an element for an immense black swan occasion. When you outline the risk level of the variables can be distinguished and the impact can be anticipated. This is generally utilized as a part of the business sector by numerous organizations for adding to their system for fates.

Risk mapping is an instrument utilized by life back up plans as a part of the distinguishing proof, control, and administration of risk. It can frame the initial phase in an Enterprise Risk Management (ERM) procedure or it can remain solitary as the essential risk administration process for organizations that have not yet built up a full ERM framework.

Maybe the most essential element of risk mapping is its minimal effort, high-affect prologue to risk administration that expands upon the current foundation in the organization. It doesn't require a huge duty to capital use and, if done suitably, will give a significant initial phase in taking off risk administration over the organization. Organizations considering the risk mapping approach it ought to know it is not a one shot arrangement and the outcomes are not cut in stone. Or maybe it is an iterative process that refines administrations' comprehension of the exposures that it is overseeing, and measures the viability of the moderation systems utilized in controlling risk. The accompanying segments plot the progressions of the risk mapping process.

Risk mapping is a practical apparatus to consolidate risk mindfulness and organization risk administration into an organization's administration and operational procedures. As the procedure is utilized administration will, after some time, get to be agreeable in its part as risk chief and join risk administration into all parts of its part inside of the organization.

### 1.3 Butterfly effect

Geopolitical risk ordinarily is misconstrued by the very capacities accused of shielding an association's advantage. Risk administration tends to concentrate on nation particular risks — normal fiascos, things that could go "blast," changes in the political scene that could influence an organization's security courses of action or its capacity to work inside of a particular administrative administration. Be that as it may, geopolitical risk is distinctive. Indeed, even a territorial clash between two countries may not bring about a geopolitical risk for a substance, particularly if the contention is contained. Yet, other — apparently remote political, financial or social — occasions can make a falling arrangement of reactions and counter-reactions that might prompt unfriendly effects on an organization's business operations.

Call it the Butterfly Effect, an expression instituted by mathematician and meteorologist Edward Lorenz to depict how a little change (like a butterfly fluttering its wings in China on a Monday morning) in the present condition of a mind boggling framework, (for example, the world's climate) can create a huge change in that framework's future state, (for example, a tropical storm in Florida the next Friday). A framework in which a minor data can create an extensive yield is characterized as confused. That is the way of the earth in which business is directed today, and it is inside of that setting that geopolitical risk must be overseen.

## 2. Literature Review

1. **“A Black Swan in the Money Market”** by John B. Taylor Stanford University and John C. Williams Federal Reserve Bank of San Francisco

The 2008 monetary emergency saw an emotional and tireless hop in financing cost spreads between overnight government assets and more term interbank advances. The Fed took a few activities to lessen these spreads, including the production of the Term Auction Facility (TAF). The viability of these arrangements relies on upon the reason for the expanded spreads—whether counterparty risk, liquidity, or different elements. Utilizing a no-arbitrage estimating structure and different measures of risk, they discovered vigorous confirmation that expanded counterparty risk added to the ascent in spreads, however don't discover strong proof that the TAF significantly affected spreads.

2. **“Black Swans” and the Financial Crisis**” by Terry marsh U.C Berkeley and Quantal International Inc and Paul Pfleiderer Stanford Uty.

This paper clarifies about the risk administration instability and impact on securities exchange on account of 2008 crisi which is a black swan occasion. Clarifying about the expectation and gauge of black swan occasions and its impacts on financial condition and rate of impact in the profits of speculation made is additionally examined in this paper. Post-mortems of the financial emergency ordinarily say "black swans" as the uncommon occasions that were the Achilles heel of financial models, showing themselves as 25 standard deviation occasions happening a few days consecutively". Here, they quickly talk about the ramifications of "black swan" occasions in resource evaluating and chance administration. they then demonstrate that the "black swans" issue for all intents and purposes vanishes for S&P Index returns when astonishments are measured in respect to the standard deviation of the contingent S&P circulation. In our representation, we

utilize the one-day-slacked VIX as a straightforward measure of that restrictive S&P standard deviation.

3. **“Black Swan ,Crisis Economics, and Globalization: A Critical Appraisal”** by Astrid Illgner, Juhani Platt, Brandon Taylor of George Mason University.

This paper clarifies about Black swan , its events, impacts happened in the worldwide economy. They likewise distinguish what all risks included in different stages. Techniques created by partners to relieve the risk included moreover. In this its cited that Some speculators contend that the money related emergency was a "Black Swan," an unusual, high-affect occasion that can't be avoided. The thought of a Black Swan occasion was presented in 2007 by Nicholas Nassim Taleb, a venture reserve director and previous merchant, who contended that people's propensity to consider the past so as to anticipate as far as possible their comprehension of the world and expansions defenselessness to amazing, surprising occasions. Taleb battles that risk assumes a bigger part in world undertakings than most would care to concede, and that Black Swans are intensified by the way that they are sudden.

4. **“How relevant are Black Swan and Outlier events when planning your investments”** by Mohammed A. El-Kuwaiz.

This clarifies about risks that a speculation will be confronting amid the event of a Black Swan occasion . In the course of recent years, the 'Black Swan' hypothesis has turned out to be greatly prominent to clarify numerous marvels in the realm of contributing and Capital Markets. The hypothesis stipulates that profits are not ordinarily appropriated into a perfect bell-curve, and that profits have altogether a greater number of anomalies than individuals had already thought. The ramifications of this is impossible occasions are not as unrealistically as individuals frequently figure taking into account their customary models and that conventional risk administration, by utilizing models that expect typical disseminations, horribly under-estimate the risks they are bearing. We have thought about this and research. Keeping in mind we found that the hypothesis remains constant in the short-term, that it doesn't make a difference for speculators who look to contribute as time goes on. The justification for this is while returns are not typically appropriated for short perception periods (i.e. day by day returns), containing numerous more anomalies that is

anticipated in a typical dissemination, as you move to longer perception periods (i.e. every year, ten-years) returns turn out to be increasingly ordinarily dispersed.

5. “ **Black swans and market timing : How Not to generate Alpha**” by Javier Estrada  
Barcelona university.

The thought of this was to measure the effect of exceptions on long haul execution and to check do speculators acquire their long haul returns easily and relentlessly after some time or their long – term execution generally controlled by the arrival of only a couple anomaly. This article, in any case, is not about testing for the ordinariness of chose resources, as is done in the spearheading work of Mandelbrot [1963] and Fama [1965]. Nor is it about finding the appropriation that best fits the profits of chose resources, as is done in Aparicio and Estrada [2001], or about describing the tail conduct of chose resources, as is done in Jansen and de Vries [1991] and Longin [2005]. A definitive objective of this article, rather, is to measure the effect of exceptions on long haul execution.

6. “**Geopolitical Risk: The Butterfly Effect and Black Swans**” by David Wildman FTI consulting.

This discussions about how the geopolitics is influenced by the black swan and butterfly impact. This record obviously clarifies about what is the butterfly impact its closeness with black swan occasion event. The routes for moderation is likewise talked about shortly to distinguish the risks and strategies to protect against those risks. Multinational enterprises normally have procedures and frameworks set up to assess and manage risks around the world. Organizations devote noteworthy assets to ensuring their kin and resources and frequently are powerful at relieving risks and reacting to crises in any given nation or business sector. In any case, there are more entangled circumstances that associations regularly are not arranged to stand up to: occasions including the elements of geopolitical risk — the perplexing communications of various performers (both state and non-state) that grow either gradually or quickly crosswise over universal fringes and markets. These circumstances can leave customary risk administration frameworks and groups flatfooted..

7. **“Key to success in managing a black swan event”** by Nancy green , Aon risk solutions

The expression "Black Swan" is on numerous individuals' lips, and not on account of the lead performer in a motion picture by that name won an Academy Award in 2011. While occasions of this sort have happened subsequent to the beginning of time, Black Swan picked up its place in our vernacular when Nassim Nicholas Taleb, a money teacher and previous Wall Street merchant, composed the 2007 success "The Black Swan". The theme weighs intensely on the brains of numerous board individuals and additionally those of initiative groups, and in the event that it hasn't been talked about yet in your association, it soon will be. A Black Swan occasion alludes to an exceptionally doubtful event with three attributes: It is difficult to foresee, it conveys a gigantic effect and its stun quality is dazzling in light of the fact that individuals would never think about such an occasion happening.

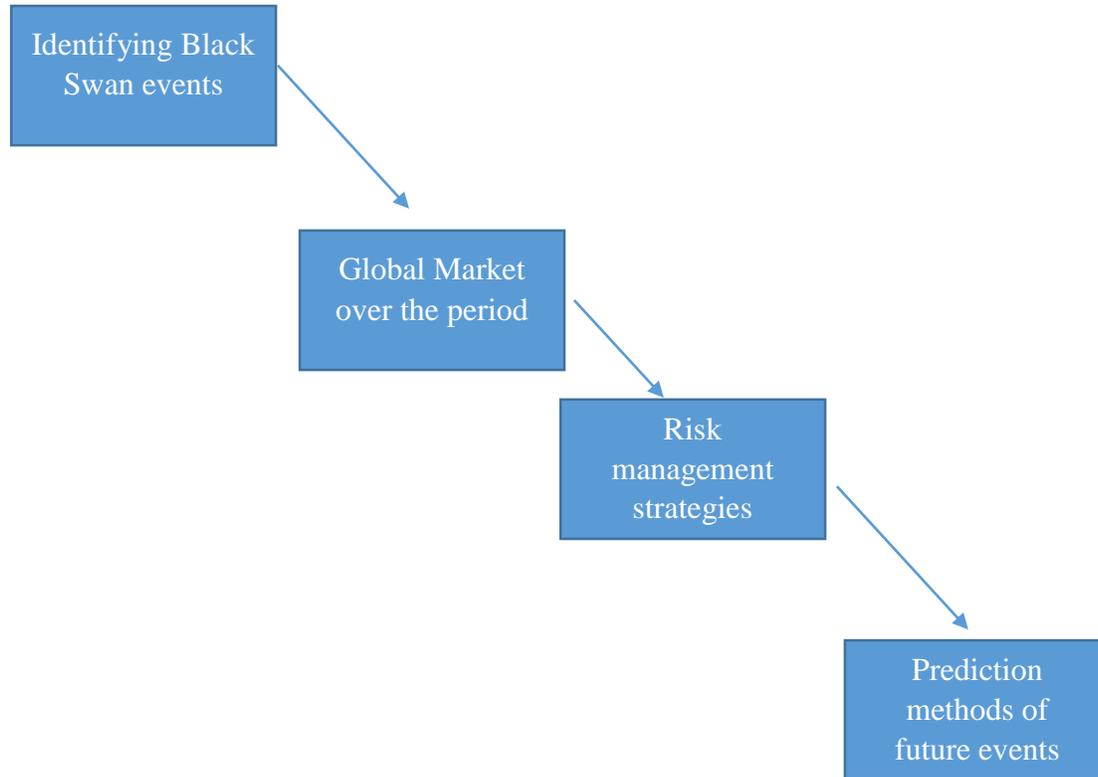
### 3. Objectives

1. Effects of past black swan events in global economy
2. Prediction and management of Black Swan events.
3. Risk management techniques followed to mitigate losses due to such events.

## 4. Research Methodology

Basically Descriptive type of research is the research methodology i used in this research paper. From the primary datas available secondary datas will be framed and it will be the subject for the analysis.

### Flow of the research:



Descriptive research is utilized to depict attributes of a populace or wonder being considered. It doesn't answer addresses about how/when/why the qualities happened. Or maybe it addresses the "what" question (what are the attributes of the populace or circumstance being examined?). The qualities used to portray the circumstance or populace are generally some sort of straight out plan otherwise called unmistakable classifications. For instance, the occasional table classifies the components. Researchers use information about the way of electrons, protons and neutrons to devise this straight out plan. We now underestimate the occasional table, yet it took enlightening exploration to devise it. Expressive research for the most part goes before illustrative exploration. For instance, after some time the intermittent table's portrayal of the components permitted researchers to clarify compound response and make sound expectation when components were joined.

Subsequently, unmistakable exploration can't portray what brought about a circumstance. In this way, engaging examination can't be utilized to as the premise of a causal relationship, where one variable influences another. At the end of the day, distinct exploration can be said to have a low prerequisite for interior legitimacy.

The depiction is utilized for frequencies, midpoints and other factual estimations. Regularly the best approach, before composing elucidating examination, is to lead a review examination. Subjective research regularly has the point of portrayal and specialists might catch up with examinations of why the perceptions exist and what the ramifications of the discoveries are.

Moreover, the conceptualizing of unmistakable examination (order or scientific classification) goes before the speculations of illustrative research. For an exchange of how the basic conceptualization of Exploratory exploration, Descriptive exploration and logical examination fit together see Conceptual system. Graphic exploration is otherwise called Statistical Research. The primary objective of this sort of exploration is to portray the information and attributes about what is being concentrated on. The thought behind this kind of exploration is to study frequencies, midpoints, and other factual computations. Despite the fact that this examination is profoundly exact, it doesn't assemble the causes behind a circumstance. Illustrative examination is mostly done when a scientist needs to pick up a superior comprehension of a point. That is, examination of the past rather than what's to come. Enlightening examination is the investigation of the current certain

wonders. The points of interest of the actualities won't be known. The current wonders' actualities are not known not persons. Hence, expressive exploration can't portray what brought on a circumstance. In this manner, expressive examination can't be utilized to as the premise of a causal relationship, where one variable influences another. At the end of the day, distinct examination can be said to have a low prerequisite for inward legitimacy.

The portrayal is utilized for frequencies, midpoints and other measurable estimations. Frequently the best approach, preceding composition spellbinding exploration, is to direct a study examination. Subjective research frequently has the point of depiction and scientists might catch up with examinations of why the perceptions exist and what the ramifications of the discoveries are.

This kind of exploration depicts what exists and might reveal new realities and significance.

The reason for illustrative examination is to

watch

depict

archive

parts of a circumstance as it actually happens (Polit and Hungler 1999)

This includes the accumulation of information that will give a record or portrayal of people, gatherings or circumstances. Instruments we use to get information in elucidating concentrates on incorporate

polls

interviews (shut inquiries)

perception (agendas, and so forth.)

There is no trial control or without a doubt any arbitrary choice to gathers, as there is in trial research.

The qualities of people and gatherings, for example, medical attendants, patients and families might be the center of distinct examination. It can give a learning base which can go about as a springboard for different sorts of quantitative examination techniques.

Elucidating examination can be clarified as an announcement of issues as they are at present with the analyst having no influence over variable. In addition, "spellbinding exploration might be portrayed as essentially the endeavor to decide, depict or distinguish what is, while diagnostic examination endeavors to build up why it is that way or how it came to be"

In its pith, unmistakable studies are utilized to depict different parts of the wonder. In its prevalent organization, unmistakable examination is utilized to portray attributes and/or conduct of test populace.

Research questions in this kind of concentrates commonly begin with 'What is... ". Distinct studies are nearly connected with observational concentrates, however they are not constrained with perception information accumulation strategy, and contextual analyses, and in addition, studies can likewise be indicated as prominent information gathering techniques utilized with elucidating ponders.

Illustrations of exploration inquiries in distinct studies might incorporate the accompanying:

What are the best elusive worker inspiration apparatuses in cordiality industry in the 21st century?

What is the effect of viral advertising on purchaser conduct in shopper amongst college understudies in Canada?

Do corporate pioneers of multinational organizations in the 21st century have moral rights to get multi-million rewards?

What are the fundamental particular attributes of authoritative society of McDonald's USA?

What is the effect of the worldwide money related emergency of 2007 – 2009 on wellness industry in the UK?

Engaging studies can contain the components of both, subjective and quantitative strategies inside of a solitary research. In enlightening studies information gathering is encouraged without changing the earth.

A vital particular characteristic of illustrative exploration contrasted with option sorts of studies identifies with the way that while elucidating examination can utilize various variables, stand out variable is required to direct an engaging study. Three principle reasons for spellbinding studies can be clarified as portraying, clarifying and accepting examination discoveries.

Here in the dissertation descriptive analysis was done on different techniques used on risk mapping like Zurich  $ic^2$  method and normal risk mapping matrix method. Management techniques are also learned in detail to get a reframed report in an easy way to discuss as part of the research.

## 5. Data

### 5.1 Effects of past events

In the introduction we have seen some of the past events that happened as black swan in the history of mankind. black swan occasions incorporate the ascent of the web and PC, the Sept. 11 assaults and World War I. Be that as it may, numerous different occasions, for example, surges, dry spells, pandemics thus on are either unrealistic, flighty or both. This "non-processability" of uncommon occasions is not perfect with experimental techniques. The outcome, says Taleb, is that individuals add to a mental inclination and "aggregate visual deficiency" to them. The very actuality that such uncommon however significant occasions are by definition exceptions makes them unsafe.

Stock and other venture markets are influenced by all way of occasions. Downturns or crashes, for example, the horrendous Black Monday or money markets accident of 1987 or the web rise of 2000 were generally "demonstrate capable," however the Sept. 11 assaults were far less so. Also, who truly anticipated that Enron would implode? Concerning Bernie Madoff, one could contend in any case.

However, the fact of the matter is, we as a whole need to know the future, yet we can't. We can display and anticipate a few things (to a degree), yet not others - not the black swan occasions. What's more, this makes mental and functional issues.

For instance, regardless of the possibility that we effectively anticipate a few things that effect on the stock and other budgetary markets, for example, race results and the cost of oil, some other occasion like a characteristic debacle or war can override these different components and toss our arrangements absolutely out of kilter. Besides, occasions of this kind can happen whenever and keep going for any time span.

To delineate the unusualness of these occasions, we'll take a gander at past wars. From one viewpoint, there was the unfathomably short Six Day War in 1967. In any case, then again, in 1914, individuals thought "the young men will be home by Christmas." indeed, those that survived were home four years after the fact. With respect to Vietnam, that did not precisely turn out as arranged either.

### 5.1.1 Economic crisis 2008

This is one of the major black swan happened in the history which should be discussed in detail and learnings should be high from this event. This is because of the factors that led to the formation of the crisis. Prediction of blackswan is all about identifying the factors and judging its effect on the main event.



Source: deconstructingrisk.com

Figure 1 AIG value crash

U.S. families lost by and large about \$5,800 in wage because of lessened monetary development amid the intense phase of the money related emergency from September 2008 through the end of 2009.[1] Costs to the national government because of its mediations to moderate the budgetary emergency added up to \$2,050, by and large, for each U.S. family unit. Additionally, the joined crest misfortune from declining stock and home estimations totaled almost \$100,000, by and large per U.S. family unit, amid the July 2008 to March 2009 period. This investigation highlights the significance of decreasing the onset and seriousness of future money related emergencies, and the estimation of business sector changes to accomplish this objective.

The effects of this event was as follows:

**Income** – The money related emergency cost the U.S. an expected \$648 billion because of slower financial development, as measured by the distinction between the Congressional Budget Office (CBO) monetary figure made in September 2008 and the genuine execution of the economy from September 2008 through the end of 2009. That compares to a normal of roughly \$5,800 in lost salary for each U.S. family unit.

**Government Response** – Federal government spending to relieve the money related emergency through the Troubled Asset Relief Program (TARP) will bring about a net expense to citizens of \$73 billion as per the CBO. This is roughly \$2,050 per U.S. family unit by and large.

**Home Values** – The U.S. lost \$3.4 trillion in land riches from July 2008 to March 2009 as indicated by the Federal Reserve. This is generally \$30,300 per U.S. family. Further, 500,000 extra dispossessions started amid the intense period of the monetary emergency than were normal, in view of the September 2008 CBO gauge.

**Stock Values** – The U.S. lost \$7.4 trillion in stock riches from July 2008 to March 2009, as indicated by the Federal Reserve. This is generally \$66,200 by and large per U.S. family.

Employment – 5.5 million more American employments were lost because of slower monetary development amid the budgetary emergency than what was anticipated by the September 2008 CBO figure.



Figure 2 Market crash 2008 on crude oil price.



Figure 3 Goldman sachs share value dip

These graphs explains about how drastic was the effect of crash of the market which is considered as a black swan event happened in the 21<sup>th</sup> century. Many people lost their jobs, unable to pay the loans and the whole banking system crashed .

When we talk about the crisis we need to check on to the factors that created such a big issue in the economy.

1. Mark to market accounting:

In the mid 1990s, the Securities and Exchange Commission and the Financial Accounting Standards Board began requiring open organizations to esteem their benefits at business sector esteem instead of authentic expense arehearse that had been ruined and relinquished amid the Great Depression. This pushed for all intents and purposes each bank in the nation into bankruptcy from a book keepingoutlook when the credit markets seized in 2008 and 2009, in this way making it difficult to esteem resources.

## 2. Evaluations offices.

The budgetary emergency couldn't have happened if the three evaluations offices Standard and Poor's, Fitch, and Moody's hadn't arranged subprime securities as venture evaluation. Part of this was ineptitude. A portion of it stemmed from an irreconcilable situation, as the appraisals offices were paid by backers to rate the securities.

## 3. Infighting among monetary controllers.

Since its origin in 1934, the FDIC has been the most powerful bank controller in the nation the others have, at one time or another, incorporated the Office of the Comptroller of the Currency, the Federal Reserve, the Office of Thrift Supervision, the Securities and Exchange Commission, the Government Savings and Loan Insurance Corporation, and a variety of state administrative organizations. Be that as it may be, on account of infighting among controllers, the FDIC was successfully rejected from inspecting reserve funds and speculation banks inside of the OTS's what's more, SEC's essential locale somewhere around 1993 and 2004. Not fortuitously, those were the organizations that wound up wreaking the most devastation.

## 4. Securitization of credits.

Banks generally held a large portion of the credits that they begun. Doing as such gave moneylenders impetus, but defectively, to guarantee advances that had just a little risk of defaulting. That approach passed by the wayside, notwithstanding, with the presentation and multiplication of securitization. Since the starting bank doesn't hold securitized advances, there is less motivating force to nearly screen the nature of guaranteeing principles.

## 5. Credit default swaps.

These are extravagant budgetary instruments JPMorgan Chase created in the 1990s that permitted banks and other institutional financial specialists to guarantee against credit defaults. This circumstance drove numerous individuals in the money related industry to declare a conclusion to

credit risk. The issue, obviously, is that credit risk was just supplanted by counterparty risk, as organizations, for example, American International Group aggregated much more risk than they would ever plan to cover.

#### 6. Monetary belief system.

As the 1970s and '80s advanced, a developing partner of business analysts started converting about the omniscience of over the top free markets. This discussion powered the deregulatory intensity coursing through the economy at the time, also, it prompted the conviction that, in addition to other things, there ought to be no administrative body managing credit default swaps.

#### 7. Covetousness.

The yearning to get rich isn't a terrible thing from a monetary point of view. I'd indeed, even go so far as to say that it's important to fuel financial development. Be that as it may, eagerness turns out to be terrible when it's taken to the compelling. What's more, that is the thing that happened in the lead up to the emergency. Mortgage holders needed to get rich fast by flipping land. Contract originators put forth an admirable attempt, lawful and something else, to boost credit volumes. Home appraisers did likewise. Financiers were paid preposterous measures of cash to securitize harmful subprime contracts. Rating organizations raked in benefits by grouping generally harmful securities as investment grade. Controllers were engaged on getting a greater paycheck in the private division. What's more, government officials looked to pick up prominence by driving banks to loan cash to their un credit worthy constituents.

#### 8. Extortion.

While not very many agents have been arraigned for their part in the money related emergency, don't translate that to imply that they didn't confer misrepresentation. For sure, the confirmation is overpowering that solidifies and down Wall Street purposely securitized furthermore, sold poisonous mortgage backed securities to institutional financial specialists, including insurance agencies, annuity reserves, college enrichments, and sovereign riches reserves, among others.

#### 9. Short term speculation skylines.

In the lead up to the emergency, examiners and financial specialists chastised well run firms, for example, JPMorgan Chase and Wells Fargo for not taking after their associates' lead into the most riskous sorts of subprime home loans, securities, and subsidiaries. In the interim, the organizations that succumbed to the siren tune of a snappy benefit Citigroup, for example were the first to fizzle when the place of cards came tumbling down.

#### 10. Legislative issues.

Since the 1980s, investors and legislators have framed an uneasy collusion. By molding the endorsement of bank mergers on the Community Reinvestment Act, lawmakers from both sides of the path have adequately extorted banks into giving advances to un credit worthy borrowers. While banks and institutional speculators retained the risks, legislators trumpeted their part in extending the American long for homeownership.

#### 11. Off balance sheet risk.

Why did speculators permit budgetary firms to accept so much risk? The answer is that nobody comprehended what they were up to in light of the fact that a large portion of the riskous resources weren't thought about their accounting reports. They had been securitized what's more, sold off to institutional financial specialists, though with lingering risk coming from guarantees that went with the deals, or were corralled in so called special purposes elements, which are autonomous trusts that the banks built up and controlled. Suffice it to say that the greater part of the remaining obligation overwhelmed back onto the banks' accounting reports strictly when the you know what hit the fan.

#### 12. Terrible financial suppositions.

As stupid as it appears looking back, it was by and large accepted before the emergency that home costs could never decay all the while on an across the nation premise. This conviction drove

guarantors of and speculators in mortgage backed securities to trust that geologically differentiated pools of home loans were basically riskfree when they clearly were most certainly not.

### 13. High oil costs.

Starting with the twin oil embargoes of the 1970s, oilproducing nations started collecting monstrous stores of socalled petrodollars which were then reused over into the U.S. monetary framework. This circumstance influenced banks and different sorts of monetary firms to give the cash something to do in progressively minor courses, for example, subprime contracts.

### 14. A broken global financial framework.

A standout amongst the most undervalued reasons for the monetary emergency was the exchange awkwardness between the creating and created universes. By keeping their monetary forms falsely discouraged versus the U.S.dollar which is finished by purchasing dollars with recently printed local monetary forms export initiated countries, for example, China aggregated enormous stores of dollars. Like the petrodollars of the 1980s and '90s, these assets were then reused once again into the U.S. monetary framework. To put this cash to utilize, budgetary firms had minimal decision yet to settle for the status quo and along these lines develop the pool of potential borrowers.

### 15. The salvage of Bear Stearns.

In March 2008, the Federal Reserve spared Bear Stearns with a lastminute \$30 billion credit supplied through JPMorgan Chase. As restricted to coming up short, the country's fifthlargest speculation bank at the time wound up being sold for \$10 an offer. The issue with the salvage, in any case, was that it diminished the motivating force on Lehman Brothers CEO Dick Fuld to discover a privatesector answer for its much greater, and in the long run lethal, issues. Looking back, it appears generally clear that the Fed ought to have either let Bear Stearns fall flat or, significantly moreideally, safeguarded them two out.

#### 16. Lehman Brothers' insolvency.

Permitting Lehman Brothers to fall flat was an oversight of immeasurable scope. History unmistakably exhibits that the ruin of a noteworthy moneycenter bank be it a business or speculation bank practically continuously triggers widescale budgetary frenzies. In 1873, it was Jay Cooke and Company. In 1884, it was Grant and Ward. In 1907, it was the Knickerbocker Trust Company. I could continue forever with samples. The fact of the matter being, notwithstanding the truly upsetting considered rescuing somebody as forcefully hostile as Dick Fuld, it would have been a little cost to pay to dodge the resulting financial slaughter.

#### 17. The "Greenspan put."

For two decades taking after money markets accident of 1987, the Federal Reserve, guided by then Chairman Alan Greenspan, brought down loan fees after each major money related stun, a pattern that got to be known as the Greenspan put. It was this technique, expected to prevent money related stuns from changing into financial downturns, that drove the national bank to drop the Fed stores rate after the 9/11 terrorist assaults. Furthermore, it was this drop gave the oxygen, maybe, to swell the lodging bubble.

#### 18. Financial strategy from 2004 to 2006.

Pretty much as low loan costs prompted the lodging bubble, the Fed's approach of raising rates from 2004 to 2006 in the long run made it burst.

#### 19. Basel II bank capital guidelines.

At whatever time an economy encounters a serious money related stun, one of the most serious issues is that undercapitalized banks will be rendered ruined. That is valid to a limited extent due to the preposterous use of marktmarket bookkeeping amid times of intense anxiety in the credit markets, and to a limited extent.

## 20. The failure of IndyMac Bank.

The \$32 billion IndyMac Bank was the main major storehouse foundation it was in fact a thrift instead of a business bank to fall flat amid the emergency when the Office of Thrift Supervision seized it on July 11, 2008. In a circumstance like this, the FDIC generally guarantees all contributors and leasers against misfortunes, independent of as far as possible. Be that as it may, for IndyMac's situation, it didn't.

## 5.2 Butterfly effect

Butterfly Effect, an expression begat by mathematician and meteorologist Edward Lorenz to portray how a little change (like a butterfly fluttering its wings in China on a Monday morning) in the present condition of a perplexing framework, (for example, the world's climate) can deliver a monstrous change in that framework's future state, (for example, a tropical storm in Florida the next Friday). A framework in which a modest data can deliver a substantial yield is characterized as tumultuous. That is the way of nature in which business is directed today, and it is inside of that setting that geopolitical risk must be overseen.

### The Butterfly Flapping Its Wings in the Ukraine; Australia Feels the Cold

A clear perusing of the 2014 Ukrainian emergency would take note of the furnished clash between professional Russian breakaway volunteer army individuals and government drives, the impacts on those threats on populaces in the Crimea and Kiev, the bringing down of Malaysian Airlines flight MH17 (purportedly by Russian-supplied rebels), the Russian addition of Crimea and the declaration of broad approvals against Russia by the West. Every one of these occasions spoke to risks to resources and staff. Dealing with those risks, while troublesome, was moderately uncomplicated. In any case, less clear were the consequences of the contention months after the most turbulent battling had stopped.

A sub-species of the Butterfly Effect is the Black Swan. Foreseeing that Russia may surge advertises with low-evaluated wheat or that an Australian territorial government may cross out a huge mining contract, is exceptionally troublesome. In the book, *The Black Swan: The Impact of the Highly Improbable*, Nassim Nicholas Taleb depicts Black Swan occasions as those that are startling; produce a great effect; and, albeit actually anomalies, request clarifications and reactions. By definition, Black Swans are uncommon. Be that as it may, given an undeniably perplexing and interconnected world, in addition to the fact that they are getting to be normal, yet their effects are all the more comprehensively felt. Organizations with predominant risk administration receiving wires can make the startling less so. They can receive a blend of systems that, changed in accordance with the corporate hankering for risk, can offer the meeting room some assistance with anticipating Black Swan occasion designs and moderate the impacts.

In the market when some unnoticeable event happens sometimes it remains unnoticeable because the effect on the market by the change will be less for the current time. But in the future if because of this event a huge crash or boom occurs then this event is called as a butterfly event. We consider this as the integral effect of the small effect that came in the market.

Associations first should comprehend that conventional risk alleviation methodologies are deficient to the errand. Risk alleviation as-normal spotlights on occasions that can and do explode yet does not have the complete viewpoint either to envision or track the post-quake tremors of the Black Swan or the responses and countermeasures of an extensive variety of players that constitute the Butterfly Effect. Amid the risks in the Ukraine, for instance, a multinational bank would have been astute to do all that it could to secure its locales and work force in Kiev, and, to be sure, any expert risk relief capacity would have tried. Yet, to relieve geopolitical risk, that bank additionally would have should have been receptive to what was happening in universal relations and household arrangement making the world over. That more extensive perspective is fundamental, particularly (as ended up being the situation) if the bank was put resources into wheat.

The conventional model for assessing a business sector's risks — PESTEL, which remains for the political, financial, social, innovative, natural and legitimate lenses through which the risk examination is led — forgets the performing artists that can impact trade crosswise over outskirts. Numerous utilizations of the PESTEL model incorporate one and only organization's point of view on a given circumstance and that organization's business position as influenced by the PESTEL inputs. However, viable geopolitical risk examination includes seeing an organization's position from the point of view of contenders, restriction lawmakers, outsider elements and the sky is the limit from there. As such, peer back to front, not outside in. In geopolitical terms, the risk profile of a given business sector zone is one and only figure a careful risk examination. An official can't just ask, "What's the business atmosphere in Papua, New Guinea?" The official, and the risk administration capacity, likewise should consider the organization's business, its plan of action, the organization's entrance and leave procedures, etc.

To represent geopolitical risk, the organization can:

-Work to comprehend the neighborhood political, financial and social elements influencing the business in those wards as well as in the areas that might affect those purviews. Could boot soles containing elastic sourced from Indonesia turn into the objective of an exchange blacklist or authorize if a debate emerged in the middle of Indonesia and China or Bangladesh or another ward?

-Endeavor to suspect the repercussions of multi-sidelong exchange assentions including one (yet not all) of the nations in its store network. For instance, if an exchange understanding causes the expense of Bangladeshi work, or of Chinese materials, to rise, the boot maker ought to be arranged to utilize elective work and materials in expectation of those business sector changes.

-Survey every nation's and local purview's point of view on where incomes, benefits, costs and esteem are being made or utilized as a part of the store network and what political, monetary, social, lawful and money related ramifications these might have. The question between the European Union ("EU") and the United States over hormone treated meat, for occasion, has not stopped since it began in the 1980s. EU limitations on meat imports prompted retaliatory taxes forced by the United States on a scope of European sustenance claims to fame. (Canada has its own particular debate on the same issues.) In 2012, the EU needed to settle the question before the World Trade Organization and consent to build imports of nonhormone treated meat.

### 5.3 Integration and Differentiation

We can have relation with integration and differentiation for the black swan risk and butterfly risk. In the definition for butterfly risk we understood that a small flap in china when moved to America it will get integrated to form a tycoon or tornado in US. The accumulation of the effects will directly come into effect and creates a chance for a massive destruction in future.

We can think in another view point as when we differentiate the total effect of an event we will certainly get the effect caused by a factor which resulted in the main event.

This analysis can be done with a basic equation that can be derived on the basis of relation of the factor with the event we are considering. For example to invest in Venezuela if a company is checking the risk , one factor that drives the economy is crude oil. So crude oil price is having the effect on the economy. To find the effect of a black swan that can arise due to low crude oil price we can integrate the equation of relation for crude oil price and economy dip . the area of the curve gives total effect of the factor and when we divide into strips we can get the effect for it for a particular period of time.

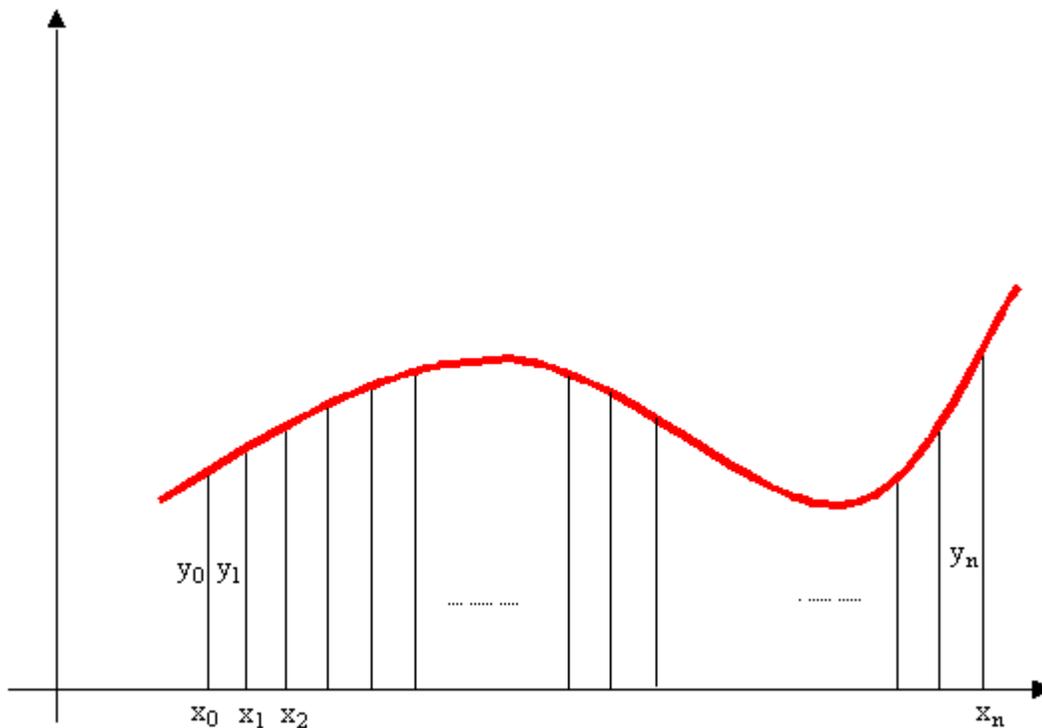


Figure 4 Effect of factor on black swan.

The figure explains the overall effect as the area under the curve and for a period of time  $X_1 - X_0$   $Y_1$  is the effect.

When we take many factors causing a major event, the combined effect will give the effect of black swan. Combined integral equation delivers us the effect of the event caused by all the factors.

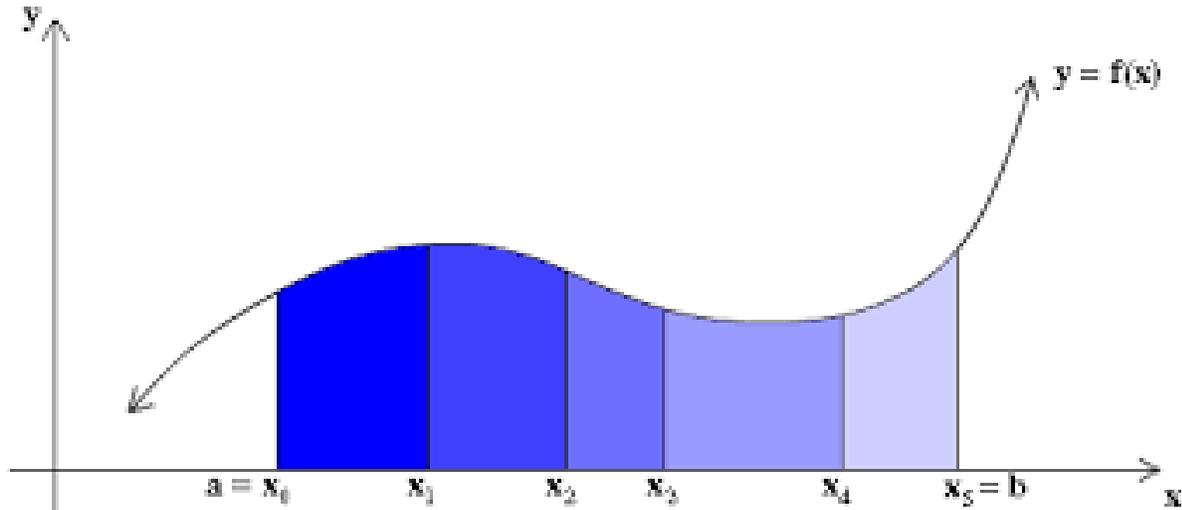


Figure 5 Effect by different factors

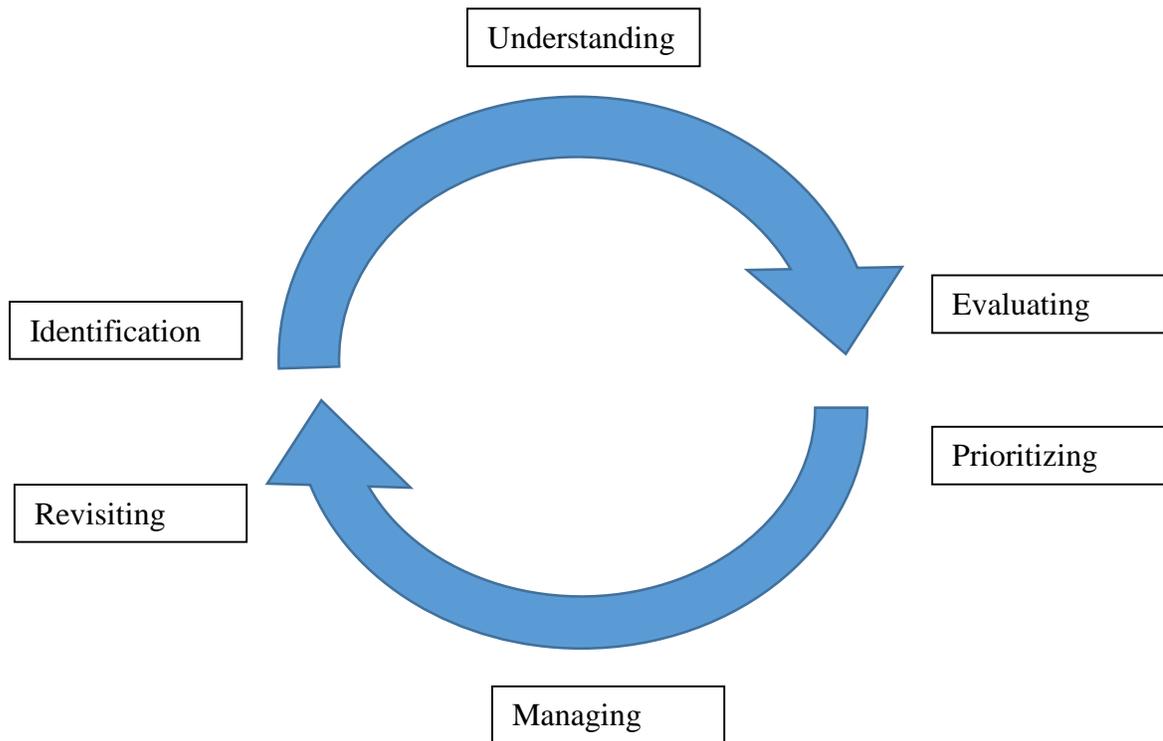
$Y = f(X)$  is the functional equation of the black swan event

Where  $X$  is the combination of  $X_1, X_2, X_3 \dots X_n$  which are the root causes of the  $f(X)$  which is called as  $Y$ , the black swan event.

Consider the equation  $y = mx + c = f(X)$  which is the root cause of black swan event. When we integrate the equation it becomes  $y \, dx = mx^2 + cx + e$  where  $e$  is the error term. The integrated equation gives the overall effect of the root cause on the main event. This way by identifying root causes and forming an integral equation with variables as the root causes we can somehow predict the effect caused by these factors if they all turned together to be a black swan event.

### 5.4 Risk Mapping

Risk mapping is a method in which we analyze the various events and factors that caused past events and we map them on a matrix block table based on their effect and intensity on the event.



*Figure 6 Risk mapping cycle*

This explains the risk mapping cycle for an event. Risk mapping is an instrument utilized by life back up plans as a part of the distinguishing proof, control, and administration of risk. It can structure the initial phase in an Enterprise Risk Management (ERM) procedure or it can remain solitary as the essential risk administration process for organizations that have not yet built up a full ERM framework.

Maybe the most critical component of risk mapping is its lowcost, high-affect prologue to risk administration that expands upon the current foundation in the organization. It doesn't require a huge duty to capital use and, if done suitably, will give a significant initial phase in taking off risk administration over the organization.

Organizations considering the Risk mapping approach it ought to know it is not a one shot arrangement and the outcomes are not cut in stone. Or maybe it is an iterative procedure that refines administrations' comprehension of the exposures that it is overseeing, and measures the adequacy of the moderation techniques utilized in controlling risk. The taking after segments layout the progressions of the Risk mapping process.

#### 5.4.1 Risk mapping process

##### Identification

Risks must be identified keeping in mind the end goal to:

- guarantee that the full scope of huge Risk is enveloped inside of the Risk Management process.
- create procedures to quantify presentation to those Risk and.
- start to add to a typical dialect for Risk management with the organization.

Most risk can be characterized into one of the accompanying classifications:

- Market Risks
- Credit Risks
- Insurance Risks
- Operational Risks

Beginning with a thorough be that as it may, nonexclusive rundown of risks, the organization ought to at that point plan to choose its own list by considering the accompanying criteria:

- Importance to the organization's exercises;
- sway on the association's monetary condition;
- Capacity to oversee independently from different risks.

This stride is frequently embraced as a conceptualizing exercise including key group individuals from over the business that not just leads to a thorough rundown being assembled additionally

helps in building support for the activity. The last "Risk rundown" ought to then be checked for consistency with the organization's business arrangements and expected Risk administration forms.

### Understanding.

For each of the chosen risks from Identification, it is important to add to an expansive comprehension. This incorporates figuring out if the risk is driven by inward or outer occasions. In a few circumstances, it might demonstrate supportive to really plot the accurate grouping of occasions prompting a misfortune circumstance. This could result in the distinguishing proof of middle of the road mediation focuses where misfortunes can be anticipated or restricted. Existing risk estimation what's more, control procedures should be reported, what's more, if the misfortune succession has been plotted, the area of the control process in the succession can be distinguished.

The last step in comprehension the risks is to study late occasions related to risks including misfortune occasions, effective risk control on the other hand alleviation, and close misses both in the more extensive world and inside the organization. Such occasions ought to be contemplated and lessons can be learned and shared.

### Evaluating

This step in risk mapping is to assess the risks. This includes:

- assessing the recurrence of misfortune occasions, e.g., low, medium, and high;
- assessing potential seriousness of misfortune occasions, e.g., low, medium, and high;
- considering counterbalancing elements to breaking point recurrence then again seriousness of misfortunes and comprehend potential control forms.

### Prioritizing

The assessments of risk recurrence, seriousness, and controls from assessment are then united on to a solitary report. The risks are positioned as indicated by a joined score joining all three evaluations. The positioning begins with the risk with the most exceedingly terrible blend of recurrence, seriousness, furthermore, control scores.

### Managing

The solidified assessments from prioritizing ought to at that point naturally show the risks that need the generally consideration. Frequently, for these most extreme risks, a organization will choose that a subjective procedure is lacking. Quantitative measures are distinguished that can be performed on a general premise and reporting frameworks are produced for these most imperative risks to bring the measures to management's consideration on an opportune and customary premise. It can't be pushed enough how imperative progressing observing and estimation is to the effective administration of the business risk. This basic stage includes choosing how to oversee the most essential and biggest risks, considering the risk return relationship, connection with different risks, consistency with organization methodology, furthermore, the association's risk resilience level. It is imperative to accomplish the privilege equalization between the application of the risk administration systems and observing the key risk pointers in the business. This ought to incorporate wherever conceivable the usage of data as of now produced by the business. A key a portion of overseeing risk is the presentation of basic procedures to constrain the presentation to real ranges of risk. A case of this is the control forms around the presentation of new items.

### Revisiting

Numerous organizations might feel that it is more savvy to just execute full risk observing and administration frameworks for the biggest risks. This is most likely genuine, however shockingly, the universe of risk never stops. As the competitive marketplace changes furthermore, the money related markets move, yesterday's generally safe position might get to be tomorrow's high-risk position. The procedure of distinguishing, understanding, assessing, what's more, organizing risks must be rehashed frequently keeping in mind the end goal to guarantee that the key risks are being fittingly oversaw. Every period administration will audit what happened in the later past and evaluate whether risk administration endeavors created the normal results also as surveying what changes have occurred in the markets and the world that might change its perspective of its risks. At that point it is prepared to begin the procedure once more from identification.

#### 5.4.2 Risk Evaluation Process

Risk Evaluation is commonly done in two stages:

- First, the normal recurrence of misfortune occasions is resolved or evaluated.
- Second, the normal seriousness of misfortunes is evaluated.

These evaluations ought to consider genuine organization experience, related industry experience, encounters in disconnected commercial enterprises, patterns, and estimates. The evaluation might be performed quantitatively by means of investigation of misfortune experience information or through a model. Outside information can likewise be utilized to build up a desire. Be that as it may, if information is absolutely distracted or is not adequately pertinent to the organization's circumstance, then subjective assessments are required. Also, organizations use subjective assessments when they are utilizing risk mapping as their initial steps into big business wide risk administration. Misfortune recurrence is regularly condensed into a little number of classes to permit simple examination and to deemphasize minor contrasts in risk measuring. These classes can be considered as "Low," "Low," "Direct," "High," and "High." The other part of risk assessment is to analyze the potential seriousness of misfortunes if one of the misfortune occasions for which the recurrence was distinguished really happens. Once more, the seriousness can be created from organization experience, related industry experience, encounters in inconsequential commercial enterprises, patterns, and estimates. Organizations likewise utilize subjective assessments for seriousness when utilizing risk mapping as their essential framework for big business risk. Be that as it may, it is regular for seriousness assessments to relocate all the more quickly to a quantitative procedure, since a misfortune sum is less demanding to distinguish than a misfortune likelihood. At first, chance size may be measured with a "Low," "Low," "Direct," "High," and "Extremely High" range, yet organizations regularly start utilizing number qualities after maybe a couple yearly cycles.

## RISK EVALUATION MAP

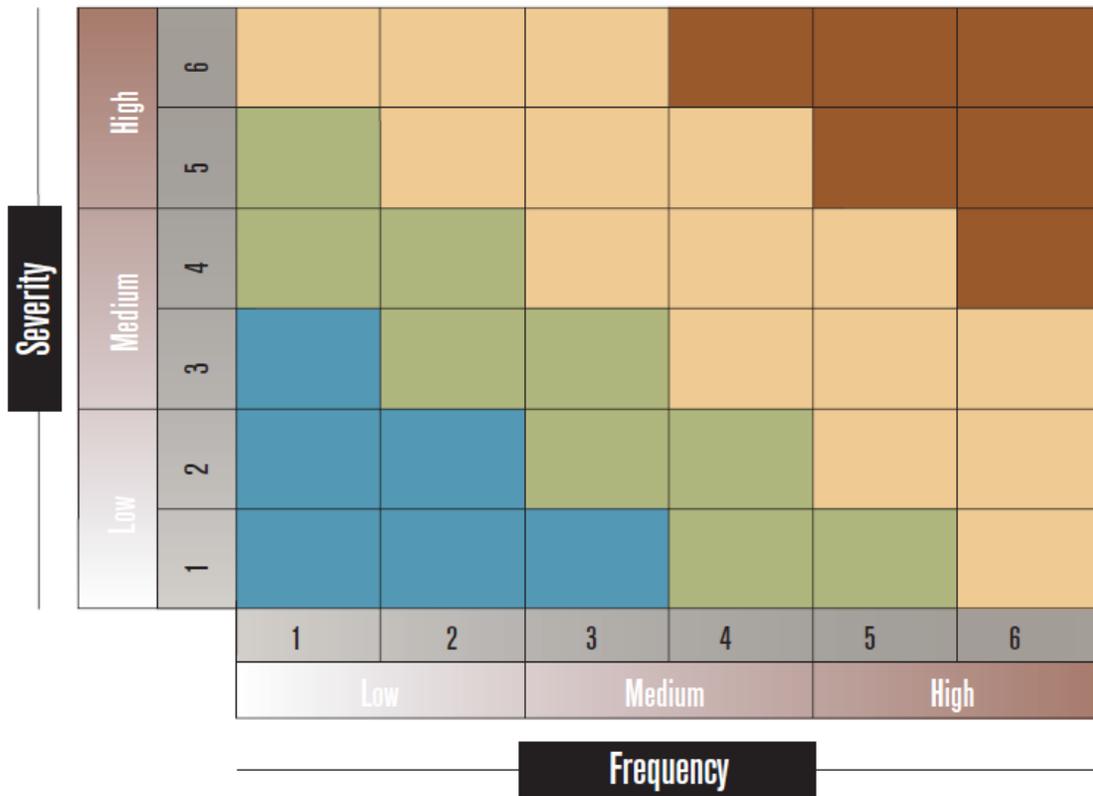


Figure 7 Risk Evaluation Map sample



Here I am giving some important factors which are considered to cause the crisis of 2008.

1. Mark to mark accounting
2. Ratings agencies
3. Infighting among financial regulators
4. Securitization of loans
5. Credit default swaps
6. Economic ideology
7. Greed.
8. Fraud
9. Short term investment horizons
10. Politics
11. Off-balance-sheet risk
12. Bad economic assumptions
13. High oil prices
14. A broken international monetary system

The above figure gives the sample risk map for the economic crisis of 2008.

### 5.5 Management techniques

1. Set up reaction objectives, doling out administration to meet those objectives and setting up reporting channels amid the emergency.
2. Build up quick reaction objectives and qualities keeping in mind the end goal to restrain the effect before a formalized arrangement is created.
3. Engage neighborhood administration and faculty to perceive and relieve rising calamitous risks.
4. Arrange and execute excess relief reactions on the off chance that the essential reaction fizzles.
5. Know your assets and how to utilize them amid a disaster. Pioneers ought to monitor inner and outside recourses including staff, monetary, and physical assets.
6. Fuse outside points of view and encounters into their reaction technique.
7. Stay objective all through the procedure when breaking down, talking about, and reacting to disastrous risks.
8. Keep up the ethical high ground by arranging and executing reactions taking into account what is correct, as opposed to getting ready for just the organization's best advantage.
9. Challenge your reaction methodology with an autonomous point of view to distinguish shortcomings before the BlackSwan does.

There are some quick ways which was developed and established in the current market they are as follows:

1. Recognize risk occasions
2. Evaluate the likelihood of every occasion
3. Make a costbenefit investigation of reaction options
4. Pick a reaction
5. Reassess likelihood and contact with organization reaction

6. Progressing observing of risk occasions.

### 5.5.1 Credit default swaps

This was used by American investment bank for mitigating the risk of the mortgages in US. This was right opposite to the trend of market for mortgages in US. Investment banking institutes started investing on this tool and created awareness in the market about the crash and this made the crash easier than expected.

A credit default swap is a specific kind of swap intended to exchange the credit introduction of settled pay items between two or more gatherings. In a credit default swap, the purchaser of the swap makes installments to the swap's dealer up until the development date of an agreement. Consequently, the merchant concurs that, if the obligation backer defaults or encounters another credit occasion, the dealer will pay the purchaser the security's premium too all interest installments that would have been paid between that time and the security's development date.

A credit default swap is the most well-known type of credit subordinate and might include city securities, developing business sector securities, contract supported securities or corporate securities.

A credit default swap is additionally regularly alluded to as a credit subordinate contract.

Numerous bonds and different securities that are sold have a decent measure of risk connected with them. While organizations that issue these types of obligation might have a moderately high level of trust in the security of their position, they have no chance to get of ensuring that they will have the capacity to follow through on their obligation. Since these sorts of obligation securities will frequently have extensive terms to development, similar to ten years or more, it will regularly be troublesome for the guarantor to know with sureness that in ten years time or more, they will be in a sound money related position. On the off chance that the security being referred to is not very much evaluated, a default with respect to the backer might be more probable.

## 6. Conclusion

Black Swans are erratic yet can be arranged for by setting up ID techniques, reaction objectives, what's more, speedy reaction techniques before the occasion happens.

Before investing in any country companies should check for the possible black swans that can arise in that country so that their investment will be safe and if risk is high they can take appropriate management techniques so that future loss will be mitigated and minimized.

Proper team should be there by the government for the checking of un ethical and illegitimate methods followed by the organizations which indeed contributes to the origin of any market crash or something.

Risk mapping is an effective method by which studies on past events helps us to predict the origin of future new black swans . the factors with high risk are to be met and proper measures should be taken to avoid it.

## 7 Recommendations

Basel accords III , Dodd frank act... are brought for the mitigation of future risks. More policies should be framed according to the threat of the factor which can cause black swan.

There should be thorough checking through the history of the country, their financial status, market drivers so that we can find how stable the country is and how vulnerable it is to geopolitical risk.

When investing on a country normal PESTLE analysis wont work for the geopolitical risk. It should be framed nicely with proper response team and proper mitigation method to minimize the risk.

## 8. Reference

- 1 [www.garp.com](http://www.garp.com)
- 2 [www.investopedia.com](http://www.investopedia.com)
- 3 [www.goldmansachs.com](http://www.goldmansachs.com)
- 4 [www.bloomberg.com](http://www.bloomberg.com)
- 5 [www.aon.com](http://www.aon.com)
- 6 [www.fticonsulting.com](http://www.fticonsulting.com)