Chapter 1

Introduction
Introduction

Risk Management is a new perception of an old idea. The concept of Risk Management is not new to the civilisation. In the ancient Indian Scriptures, it was said that man being the ultimate maker of his destiny, he was supposed to conquer ‘vidhi’ or ‘niyati’ (fate or chance) by ‘Mati’ or intellect. The ‘primitive’ man’s attempt to create a permanent area of safety moving into caves is probably one of the earliest examples of risk management.

This concept is being practiced from times immemorial. Prehistoric humans moved together in tribes to conserve resources, hunt for food, fend against attack from others, share responsibilities etc. We also come across a pithy saying (Deuteronomy 22:8 Holy Bible) as follows:-

“When you build a new house, you shall make a parapet for your roof so that you may not bring the guilt of blood upon your house, if anyone falls from it”.

Thus, from the distant past, mankind has recognised the need for safeguarding against the bad consequences of risks and chances which are inevitable in the environment.

In fact, risks are inherent in every walk of life. Risks are present “around every corner and under every stone”. The risk has been defined in the Concise Oxford Dictionary as “hazard, chance of bad consequences, loss etc, exposure to mischance”.
**Business in general, faces two types of risks as-**

a) Pure, Static or fortuitous risk.

b) Speculative dynamic or entrepreneurial risk.

Pure, Static or fortuitous risk always result in loss e.g. fire, explosion, accident etc. and these static or pure risks always vexes management, since those are arising independently of the business environment.

The contributing factors being accidental in nature these risks can also be termed as sources causing physical damage to assets, fraud and criminal violence, third party property damages, death/disability of employees/owners, legal liabilities and the like.

Insurance is normally arranged against these pure or static risks.

Speculative and dynamic risks relate to the consequences of management risks relating to the functions of marketing, finance, production, innovation of the entrepreneur or the Management.

In other words, these are the more fundamental risks against which it is not normally possible to obtain insurance protection, since these dynamic, speculative & entrepreneurial risks arise from unexpected changes in business environment of business resources.
Technological advance has led to new products and processes with accompanying new types of risks (for example nuclear) and since the early 1970s higher rates of inflation made risk handling and premium rating problems far more difficult.

Dynamic risks arise from the changes that take place in every society, ie economical, social, technological, environmental and political changes. The modern techniques like operation research are possibly the right tools to tackle these dynamic risks.

It is possible that a risk may take form of both pure risk and speculative risk characteristics. Thus, the risk of loss of property by fire is pure risk for the property owner, but a speculative risk for the insurer who underwrites such risk in the expectation of being able to achieve an overall profit on his portfolio.

Life is full of surprises—sometimes pleasant, at other times unpleasant, sometimes of minor importance, on other occasions catastrophic. Some unexpected event are the result of one’s own actions, perhaps due to a failure to exercise care, or through tackling things for which one is not well-equipped. Other experiences may be due to actions of other individuals, groups, or society as a whole; and sometimes nature is the culprit. No individual, firm, organisation, or society can know all that the future holds in store.
In other words, whereas some of the uncertainties are within the control of the individual or firm, others are part of the environment in which one lives or operates or survives. Risk Management is a universal concept which affects every walk of human being may be life, property, business activity and so on. The Risk Management has not been properly explored in our country.

The concept is often understood in a very limited segment say financial risk management, risk management in insurance etc. People often confuse risk management to be a part of insurance where as insurance is one of the process of risk management. Infact insurance is the last option in the whole process of risk management.

We are confining our study to the Risk Management in insurance sector. Insurance may be broadly classified into two sectors life and non-life. The life sector deals with insurance of human life only and non-life sector covers the rest of insurance.

In the life insurance segment the concept of risk management has been almost unexplored. The Insurance companies have never advocated about practicing of risk management in daily life. The quality and risk of life of an individual can be improved considerably if the concept of risk management is followed.
In the non-life sector i.e. general insurance the risk management is being practiced to certain extent. But that too in most cases is done to get some discount in the insurance premium. It is not done voluntarily and to mitigate the risk to life and property. The area in non-life has many unexplored area. The general insurance covers all the manufacturing, services and property sector. Under manufacturing sector again there are number of different industries.

The industries in the manufacturing sector vary according to the manufacturing process and hazards, so the Risk Management process also varies from industry to industry. This study will help to find out the risk management techniques being utilized in all these sectors and further techniques that may be applied, the awareness of people in this sector about risk management.

Similarly in the services sector the business may be damaged seriously if any mishaps occur. The technique of risk management in this sector also needs to be assessed.

One major factor that is left out of consideration most of the times is the loss of profit once the business suffers any loss or damage. Suppose due to fire the chemical plant factory is destroyed. Now with the help of insurance the company can get claim and restore operation. But all this may take few months time. During this time the firm may loose heavily on account of non-production. This factor is
often ignored and not taken into account by the insureds. This study will help to quantify the amount (sample basis) of loss a unit may suffer from it. If the risk management is done properly a large amount of loss if not saved altogether may be minimized to a great extent. This can result in saving of large amount of our economic wealth.

The Risk Management is a very wide area which has not been explored properly in insurance sector in India. This study will help to unravel the myth behind this concept. This study has been carried on the industries situated in the Kanpur region which includes Kanpur nagar and Kanpur dehat.

**Hypothesis**

$H_0$ : The Risk Management process adopted by the industries will reduce the loss of individual industries as well as save the overall economic wealth of the country

$H_1$ : The Risk Management process adopted by industries will not result into savings.

**Methodology**

The research work has been conducted with the help of both Primary and Secondary data.
The Primary Data was collected mainly through following 3 methods:

1. Observation
2. Questionnaire
3. Mailing of Questionnaire

The Secondary was collected from various sources the detail of which is given in the Bibliography.

The data was taken mainly from recognised sources to ensure the reliability of the data.

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Definition - Risk

Risk is a concept that denotes a potential negative impact to some characteristic of value that may arise from a future event, or we can say that "Risks are events or conditions that may occur, and whose occurrence, if it does take place, has a harmful or negative effect". Exposure to the consequences of uncertainty constitutes a risk. In everyday usage, risk is often used synonymously with the probability of a known loss.¹

Risk = ( probability of risk occurring ) X ( impact of risk occurring)

2. Risk - uncertainty of outcome, whether positive opportunity or negative threat, of actions and events. It is the combination of likelihood and impact, including perceived importance.²
3. **RISK** is the combination of the likelihood and the consequence of a specified hazard being realized. It is a measure of harm or loss associated with an activity.³

In simple language we can say that risk is considered as an indicator of threat. See Diagram 1.1 Cause & Effect of Risk

**Properties of Risk**⁴

1. The possibility of suffering harm or loss; danger.
2. A factor, thing, element, or course involving uncertain danger; a hazard: "the usual risks of the desert: rattlesnakes, the heat, and lack of water" Frank Clancy.
3. The danger or probability of loss to an insurer.
4. The amount that an insurance company stands to lose.
5. The variability of returns from an investment.
6. The chance of nonpayment of a debt.
7. One considered with respect to the possibility of loss: a poor risk.
8. To expose to a chance of loss or damage; hazard.
9. To incur the risk of: His action risked a sharp reprisal.

**Risk versus uncertainty**⁵

In his seminal work *Risk, Uncertainty, and Profit*, Frank Knight (1921) established the distinction between risk and uncertainty.
Cause & Effect of Risk

Diagram 1.1

Loss Producing Event

CAUSE
- Natural Phenomena
- Breach of Natural Laws
- Man's actions

EFFECT
- Liability
- Property
- Bodily Injury
- Earnings Loss
... Uncertainty must be taken in a sense radically distinct from the familiar notion of Risk, from which it has never been properly separated. The term "risk," as loosely used in everyday speech and in economic discussion, really covers two things which, functionally at least, in their causal relations to the phenomena of economic organization, are categorically different. ...

The essential fact is that "risk" means in some cases a quantity susceptible of measurement, while at other times it is something distinctly not of this character; and there are far-reaching and crucial differences in the bearings of the phenomenon depending on which of the two is really present and operating. ... It will appear that a measurable uncertainty, or "risk" proper, as we shall use the term, is so far different from an immeasurable one that it is not in effect an uncertainty at all. We ... accordingly restrict the term "uncertainty" to cases of the non-quantitive type.

“...there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don’t know we don’t know.”

—Donald Rumsfeld
Hazard

A Hazard is a situation which poses a level of threat to life, health, property or environment. Most hazards are dormant or potential, with only a theoretical risk of harm, however, once a hazard becomes 'active', it can create an emergency situation. 6

Modes of a Hazard

A hazard is usually used to describe a potentially harmful situation, although not usually the event itself - once the incident has started it is classified as an emergency or incident. There are a number of modes for a hazard, which include:

Dormant - The situation has the potential to be hazardous, but no people, property or environment is currently affected by this. For instance, a hillside may be unstable, with the potential for a landslide, but there is nothing below or on the hillside which could be affected.

Potential - Also known as 'Armed', this is a situation where the hazard is in the position to affect persons, property or environment. This type of hazard is likely to require further risk assessment.

Active - The hazard is certain to cause harm, as no intervention is possible before the incident occurs.

Mitigated - A potential hazard has been identified, but actions have been taken in order to ensure it does not become an incident. This may not be an absolute guarantee of no risk, but it is likely to have been undertaken to significantly reduce the danger.
Classifying Hazards

By its nature, a hazard involves something which could potentially be harmful to a person's life, health, property or to the environment. There are a number of methods of classifying a hazard, but most systems use some variation on the factors of **Likelihood** of the hazard turning into an incident and the **Seriousness** of the incident if it were to occur.

A common method is to score both likelihood and seriousness on a numerical scale (with the most likely and most serious scoring highest) and multiplying one by the other in order to reach a comparative score.

**Risk** = Likelihood of Occurrence \( \times \) Seriousness if incident occurred.

This score can then be used to identify which hazards may need to be mitigated. A low score on likelihood of occurrence may mean that the hazard is dormant, whereas a high score would indicate that it may be an active hazard.

Causes of hazards

There are many causes, but they can broadly be termed into:

**Natural** - Natural hazards include anything which is caused by a natural process, and can include obvious hazards such as volcanoes to smaller scale hazards such as loose rocks on a hillside.
**Man made** - Hazards created by humans, which includes a huge array of possibilities, probably too many to list, as it includes long term (and sometimes disputed) effects such as global warming to immediate hazards such as building sites.

**Activity related** - Some hazards are created by the undertaking of a certain activity, and the cessation of the activity will negate the risk. This includes hazards i.e. flying.

**Definitions of Risk Management**

"Risk Management may be defined as the process of planning, organizing, directing, and controlling the resources and activities of an organization in order to minimize the adverse effects of accidental losses on that organization at the least possible cost."

"The process of handling pure risk by way of reduction, elimination, or transfer of risk, with the latter commonly achieved through insurance."

The most straight forward definition of Risk Management may be accepted as "Structural Commonsense applied to loss exposure. Common sense in identifying accidents or other untoward events which may result in losses and then deciding how to cope with them."
A decision process for selecting and putting into practice those risk management techniques which are most cost effective for a particular organization.

Risk management is a structured approach to managing uncertainty related to a threat, a sequence of human activities including: risk assessment, strategies development to manage it, and mitigation of risk using managerial resources.\textsuperscript{10}

The strategies include transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk.

Some traditional risk management is focused on risks stemming from physical or legal causes (e.g. natural disasters or fires, accidents, death and lawsuits). Financial risk management, on the other hand, focuses on risks that can be managed using traded financial instruments.

The objective of risk management is to reduce different risks related to a preselected domain to the level accepted by society. It may refer to numerous types of threats caused by environment, technology, humans, organizations and politics. On the other hand it involves all
means available for humans, or in particular, for a risk management entity (person, staff, organization).

In ideal risk management, a prioritization process is followed whereby the risks with the greatest loss and the greatest probability of occurring are handled first, and risks with lower probability of occurrence and lower loss are handled in descending order. In practice the process can be very difficult, and balancing between risks with a high probability of occurrence but lower loss versus a risk with high loss but lower probability of occurrence can often be mishandled.

Intangible risk management identifies a new type of risk - a risk that has a 100% probability of occurring but is ignored by the organization due to a lack of identification ability. For example, when deficient knowledge is applied to a situation, a knowledge risk materialises. Relationship risk appears when ineffective collaboration occurs. Process-engagement risk may be an issue when ineffective operational procedures are applied. These risks directly reduce the productivity of knowledge workers, decrease cost effectiveness, profitability, service, quality, reputation, brand value, and earnings quality. Intangible risk management allows risk management to create immediate value from the identification and reduction of risks that reduce productivity.
Risk management also faces difficulties allocating resources. This is the idea of *opportunity cost*. Resources spent on risk management could have been spent on more profitable activities. Again, ideal risk management minimizes spending while maximizing the reduction of the negative effects of risks.

**Areas of Risk Management**

The risk management has universal applicability. We cannot limit the boundaries of risk management. It has applicability in whatever area we can think of. It is equally applicable in our daily life as we walk on road, we are sitting in house or in a manufacturing entity. However for the sake of getting more insight into the subject generally it is classified as:-

**Risk Management in financial sector** – Risks related to financial sector

**Risk management in Insurance** – Risks involved in industries/other insurable items

**Enterprise Risk Management** – Risks in a business enterprise.

**Risk Management in various process of business enterprise/Projects**

**Risk Management – Benefits**

The following diagram 1.2 depicts the Potential Benefits of Risk Management:-
Risk Management - Benefits

Diagram 1.2

Potential Benefits of Risk Management

- Support effective use of Resources
- Quick grasp of New Technologies
- Fewer Shocks and unwelcome surprises
- Promotes Continual Improvement
- Ability to deliver Improved performance
- Reassure all Stakeholders
- Reduction in Material and Property damage
- Support strategic and Business planning
Steps in Risk Management

1. Risk Identification
2. Risk Evaluation
3. Risk Avoidance
4. Risk Reduction
5. Risk Retention
6. Risk Transfer

We shall study in details the various aspects in Risk Management. The flow chart diagram 1.3 in the next page signifies the various steps in the Risk Management Process.

1. Risk Identification:
The first step in the process of Risk Management is to identify the potential risks. Unless we are aware of the existing risks or risks which may arise in future we cannot prescribe any solution for controlling the risk. The objective is to define and identify all actual, perceived or anticipated risks.

In case of individuals the risks would include any factor that may bring about deterioration in physical well being of himself and family, current income, and future savings.

A firm/company may be exposed to many risks legal, social, economic, political, environment in which it does its business,
The inter-relationship of risk analysis, risk control, and risk financing

1. Is there a risk?
   - No: Disregard
   - Yes: Has it been measured?
     - Yes: Analyse risk
     - No: Is it significant?
       - Yes: Can it be avoided or eliminated?
         - Yes: Avoid/eliminate
         - No: Can it be reduced?
           - No: Is residual risk significant?
             - Yes: Disregard
             - No: Is it a catastrophes risk?
               - Yes: Can it be retained?
                 - Yes: Retain risk
                 - No: Transfer
                   - Yes: Insure
                   - No: Other-like retention
               - No: Can it be retained?
                 - Yes: Retain risk
                 - No: Transfer
                   - Yes: Insure
                   - No: Other-like retention
Vulnerability to unplanned losses, manufacturing process and the management systems and business mechanism by which it operates.

While identifying risk exposures no risk whether small or big should be left out. It is a fact that many major fires have taken place by careless throwing of cigarette butt. So the Risk Manager must carefully visualize all the dangers the organization may be exposed to in current as well as future. For this the Risk Manager must have thorough knowledge of the firms business activities.

Risk identification requires perseverance, diplomacy, imagination and above all awareness of changes taking place within the firm. Sometimes it may seem that Risk Manager is nothing but a pessimist who sees danger around every corner and points out risk inherent in projects favoured by other executives or in products and procedures that have been around for years. However unexpected can and often does happen. The Risks in an organization may be described better with the Risk Management Circle diagram 1.4 in the next page. This diagram lists out the different areas and persons in charge of it.
Risk Management Circle

Risk Identification / Analysis
Examples of risk environments and loss prevention resources of a company

Diagram 1.4
2. Risk Evaluation:

The second step in the risk management process is evaluation of risk. It means the risks which have been identified must be carefully evaluated to measure the frequency and severity of risk. The risk manager should evaluate the impact of a particular loss and the maximum loss the asset can suffer. We also call it as PML i.e. probable maximum loss or possible maximum loss.

Apart from large losses the risk manager must study the frequent smaller losses which add up to the cost of production. In many industries incidents reports have become a key element in identifying the loss trends. Mathematical formulas can be used to project the probability and severity of the losses. Sophisticated technique such as Monte carlo simulation, correlation and regression analysis, future research and probability theory can also be helpful. However a wise risk manager knows that the understanding of the ever changing world and the vagaries of human nature are just as important as mathematical formulas when it comes to evaluating risks.

The following risk pyramid\textsuperscript{13} diagram 1.5 shows the various stages of loss which must be taken into account –
3. Risk Avoidance

Risk Avoidance refers to completely avoid the risk either by not undertaking the particular business or by avoiding a risky process. For example a company may not decide to build a factory in the earthquake prone zone.

This step is practically impossible because a person cannot sit in his home in order to avoid the risk of being hit by a bus while walking on road. Yes in some processes if alternative processes are available then the risky process may be avoided. Risk avoidance also depends upon risk bearing capacity. For some persons a level of risk may be normal but for other even a small risk may be a cause of concern. So this
depends upon the risk bearing ability of an individual or an organization.

Risk avoidance, which has been synonymous with human instinct and man's obvious choice, from times immemorial, hardly has any practical utility and relevance, as on date. In no perceivable sphere of commercial activity of man, one can afford to contemplate avoiding 'risk' - as such technique has become absolutely unviable in the present day context of die-hard competition.

Risk avoidance, in today's parlance means avoidance of opportunities and withdrawing from the competitive existence, which no progressive minded individual or Organization can afford to think even.

4. Risk Reduction

Risks that cannot be eliminated can be reduced through loss prevention programmes. Fire hazards can be reduced by installing smoke and sprinkler system and enforcing "No smoking Zone". Burglary can be discouraged by having proper security arrangements, installing fencing, spotlights and employing night guard.

Employees injuries can be reduced by preventive maintenance in the factory and implementing safety procedures.
Once the risk identification is complete the risk manager can work out in the areas where the losses can be reduced by implementation of risk management measures. A Risk Management circle Diagram 1.6 in the next page shows the various process in risk reduction.
Risk Management Circle

Risk Reduction (Fire as Specific Peril)
Diagram 1.6

Factors
Influencing
Effective
Control / Treatment
5. Risk Retention:
Where a 'risk' cannot be avoided, reduced or controlled, where the risk or source of risk is unknown, individuals and Organizations 'retain' the risk and bear the cost of financial losses/consequences by themselves.

The easiest and the cheapest way of dealing with small losses is to pay for them out of one's own resources when they occur or possibly set out a contingency fund to pay for the larger losses.

Such retention may either be a deliberate decision or the result of a failure to recognize that a risk exists or deal with it in some other way with confidence.

It is not uncommon where business firms, despite being aware of the existence of risk exposures, fail to appreciate and visualize the direct and indirect losses that might impact their business values and consequently retain such risks ignorantly.  

Though risk retention-planned or unplanned- as such, is a risk management technique, reluctantly adopted and accepted, both by individuals and Organizations, under varied circumstances, it is neither a viable alternative nor a wise recourse to pursue, by any standard of logic.
Many survey and analytical study, in this regard, indicate that even Organizations with substantial built-up reserves, sooner than later, do not find favour to fund the losses, on their own, arising out of retention of the perceived risk.

Retention of risks - which is perceived and identified - and whose probability estimates, in terms of frequency and severity, are measured and profiled, majority of Organizations have been proved unsuccessful in managing the risks and reimbursing the losses, from their own resources. Except in isolated cases, self-insurance method of risk retention has not achieved the projected objectives of risk management, particularly, where cost of losses is quite substantial, and it may upset the cash flows from current receipts.

6. Risk Transfer

This is the last step in the risk management process. The risks which may not be treated or reduced by above means can be transferred through the mechanism of insurance. By purchasing the insurance cover the organization shifts the burden of risk on the insurance company. Thus by bearing a small cost known as premium the company can transfer its risk to the insurers.

Some of the opt quoted reasons, by Risk Managers in industrial Organizations, being availability of need-based insurance covers, at competitive cost and effort, that ideally suits changed style and
strategic planning of the Organization in loss minimization. In a study conducted by the technical wing of a leading Reinsurance broker, it was revealed that the comprehensive ‘all-embracing’ and ‘nil risk retention’ package policies like Industrial All Risk policy, not only have scope for reimbursing all the pure risk losses to the maximum but also have proven advantages in reducing the cost of risk management in complex and mega risk industries like petrochemicals, engineering, textile manufacturing and aviation industries, as reflected in their balance sheets.  

Liberalization and globalization of insurance, world over, development and introduction of several innovative and cost-effective insurance products against every perceivable risk and finally compulsions of competitive servicing, have made insurance as the ultimate solution against risk management vis-à-vis all other techniques like Risk avoidance and Risk retention.

Developing innovative insurance covers like Credit insurance against speculative and market risks, Micro insurance for agriculturists (combining life and non-life covers and HIV insurance launched in China and so on have revolutionized the insurance technique of Risk management and made it more relevant and preferable to all other contemporary techniques today than ever before.
Though, conceptually and in line with academic point of view, balanced combination of insurance and non-insurance techniques and healthy ratio of risk retention to risk transfer by risk financing is ideal thing for commercial and business Organizations, in terms of practical application and logic, insurance has no viable substitute, as on today, that can afford to give wider protection and security at lesser administrative cost and cash outflow towards insurance premium.

The data base and loss statistics of number of high risk industries, in the last decade or so, have shown strategic shift form limited risk retention to increased risk transfer to insurance, thereby indicating, the overall progressive relevance and reliance on insurance, of course with optimum loss control and loss minimization measures in containing the consequences of risk to manageable level.

Thus organizations need to have a perfect balance between risk retention and transfer through insurance. This will certainly help to reduce the cost and achieve the overall business objective.

The following Risk Management Circle\textsuperscript{18} Diagram 1.7 aptly describes the insurance process:-
Risk Management Circle

Risk Transfer
Diagram 1.7

Risk Financing Aspects
- The financing losses arising out of these perils can be controlled as well as insured

Risk Characteristics
- The financing losses arising out of these perils can be controlled but not insured
- The financial losses arising out of these perils can neither be insured (Except for War/Warlike perils during ocean / Air Transit) Nor minimised / Eliminated and to be borne by the company.
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