

Project Risk Management

Prepared by Dr. Usama Al-Fendi

PMG 510
Project Risk Management

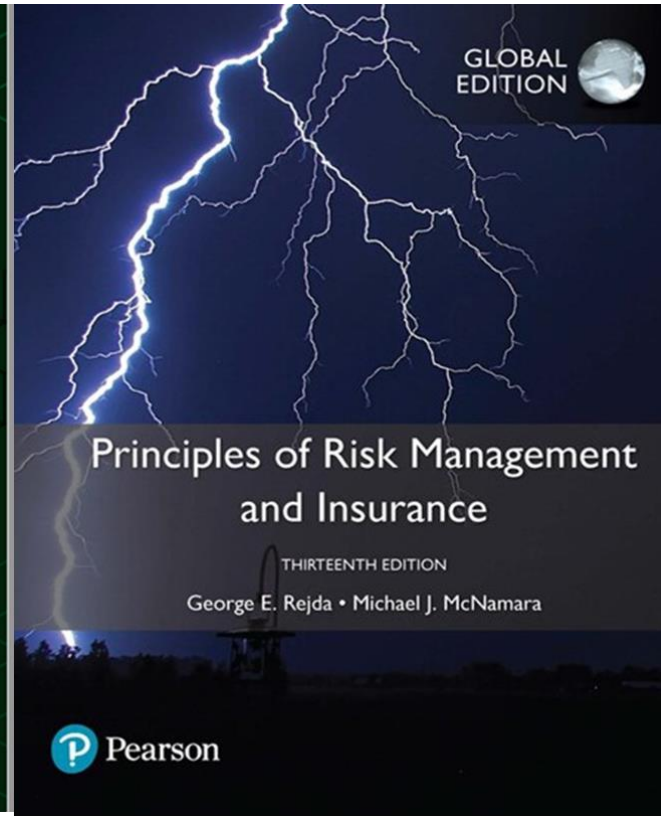
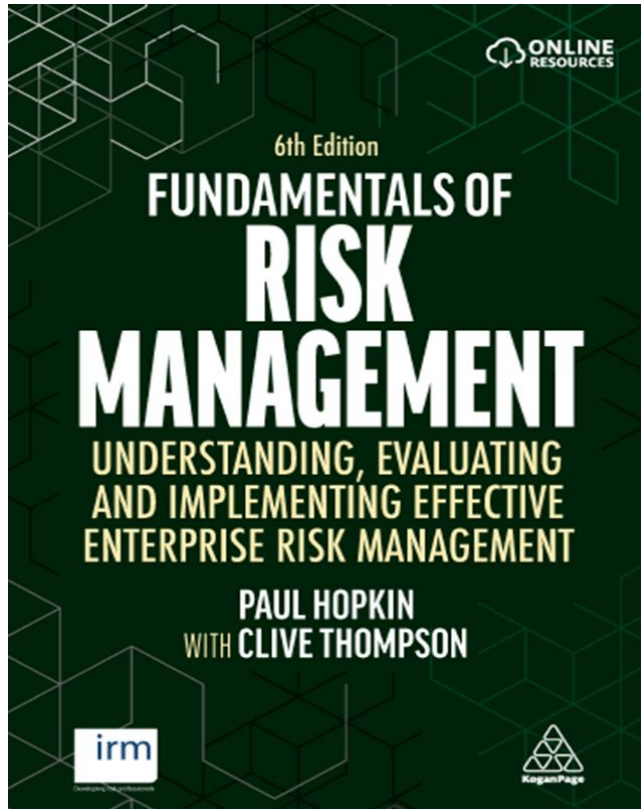
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Main References



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Course Outlines

- Approaches to defining risk
- Impact of risk on organizations
- Types of risks
- Scope of risk management
- Principles and aims of risk management
- Risk management standards
- establishing the context
- enterprise risk management
- Alternative approaches
- Risk assessment considerations

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Course Outlines

- ✓ Importance of Risk Management
- ✓ Different Definitions of Risk
- ✓ Chance of Loss (Probability of Occurrence)
- ✓ Impact of Loss (Severity of Loss)
- ✓ Peril and Hazard
- ✓ Classification of Risk
- ✓ Major Personal Risks and Commercial Risks
- ✓ Burden of Risk on Society
- ✓ Techniques for Managing Risk

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Why Risk Management



Different definitions of Risk

- ✓ Risk: Uncertainty concerning the occurrence of a loss
- ✓ Loss Exposure: Any situation or circumstance in which a loss is possible, regardless of whether a loss occurs.
- ✓ Probability that the actual outcome will deviate from expected.
- ✓ Volatility of returns above and below average expected level.

Different definitions of Risk

- Objective Risk vs. Subjective Risk
 - **Objective risk** is defined as the relative variation of actual loss from expected loss
 - It can be statistically calculated using a measure of dispersion, such as the standard deviation.
 - We can quantify and measure it quantitatively and without personal biased.

Different definitions of Risk

- Objective Risk vs. Subjective Risk
 - **Subjective risk** is defined as uncertainty based on a person's mental condition or state of mind
 - Two persons in the same situation may have different perceptions of risk
 - High subjective risk often results in conservative behavior
 - Have personal biased.

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Chance of Loss

- **Chance of loss:** The probability that an event will occur.
- Probability of Occurrence.
- Likelihood of happening.
- It can be quantified as a number between zero and one.
- Best way to measure it objectively is through historical actual frequency data.

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Impact of Loss

- **Impact of loss:** The dollar value of loss that will result if the probable event occur.
- Loss severity.
- It can be quantified through the size of loss exposure.
- Example: for car insurance companies, loss exposures are the dollar value of the insured car (\$10,000, \$50,000, \$100,000)
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Peril and Hazard

- **A peril** is defined as the cause of the loss
 - In an auto accident, the collision is the peril, earth quake the damage is the peril.
- **A hazard** is a condition that increases the chance of loss.
- Example: during winter icy roads can increase the frequency of car accident occurrence.

Types of Hazard

- **Physical hazards** are physical conditions that increase the chance of loss (icy roads, defective wiring, unstable areas)
- **Moral hazard** is dishonesty or character defects in an individual, that increase the chance of loss (faking accidents, inflating claim amounts)

Types of Hazard

- **Attitudinal Hazard** (Morale Hazard) is carelessness or indifference to a loss, which increases the frequency or severity of a loss (leaving keys in an unlocked car)
- **Legal Hazard** refers to characteristics of the legal system or regulatory environment that increase the chance of loss (large damage awards in liability lawsuits)

Classification of Risk

- **Pure and Speculative Risk**

- A pure risk is one in which there are only the possibilities of loss or no loss (earthquake, car accident, fire in the warehouse)
- A speculative risk is one in which both profit or loss are possible (gambling, investing in stocks)

Classification of Risk

- **Diversifiable Risk and Undiversifiable Risk**
 - A diversifiable risk affects only individuals or small groups, or a company alone or one sector in the economy (car theft, resign of a CEO, increase the price of raw material). It is also called nonsystematic or particular risk.

Classification of Risk

- **Diversifiable Risk and Undiversifiable Risk**
 - An undiversifiable risk affects the entire economy or large numbers of persons or groups within the economy (hurricane, interest rate change by central bank, wars, pandemics like COVID19). It is also called systematic risk or fundamental risk. Government assistance may be necessary to insure undiversifiable risks.

Classification of Risk

- **Enterprise risk** encompasses all major risks faced by a business firm, which include: pure risk, speculative risk, strategic risk, operational risk, and financial risk
 - Financial Risk refers to the uncertainty of loss because of adverse changes in commodity prices, interest rates, foreign exchange rates, and the value of money.

Classification of Risk

- **Enterprise Risk Management** combines into a single unified treatment program all major risks faced by the firm:
 - Pure risk
 - Speculative risk
 - Strategic risk
 - Operational risk
 - Financial risk
 - Compliance Risk

Common Types of Risk

- **Credit Risk:** the risk that the borrower will not be able to payback his obligation on a timely manner.
- **Market risk:** the risk that occur due to changes in market variables.
- **Operational risk:** the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events

Organizational definitions of Risk

Organization	Definition of risk
ISO Guide 73 ISO 31000	Effect of uncertainty on objectives. Note that an effect may be positive, negative, or a deviation from the expected. Also, risk is often described by an event, a change in circumstances or a consequence
Institute of Risk Management (IRM)	Risk is the combination of the probability of an event and its consequence. Consequences can range from positive to negative.
Orange Book from HM Treasury	Uncertainty of outcome, within a range of exposure, arising from a combination of the impact and the probability of potential events.
Institute of Internal Auditors	The uncertainty of an event occurring that could have an impact on the achievement of the objectives. Risk is measured in terms of consequences and likelihood.

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Major Personal Risks and Commercial Risks

- **Personal risks** involve the possibility of a loss or reduction in income, extra expenses or depletion of financial assets:
 - Premature death of family head
 - Insufficient income during retirement
 - Most workers are not saving enough for a comfortable retirement

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Major Personal Risks and Commercial Risks

- **Personal risks**
- Poor health (catastrophic medical bills and loss of earned income)
 - Involuntary unemployment

Major Personal Risks and Commercial Risks

- **Personal risks**
- **Property risks** involve the possibility of losses associated with the destruction or theft of property:
 - Physical damage to home and personal property from fire, tornado, vandalism, or other causes

Major Personal Risks and Commercial Risks

- **Personal risks Direct loss vs. indirect loss**
 - A direct loss is a financial loss that results from the physical damage, destruction, or theft of the property, such as fire damage to a home

Major Personal Risks and Commercial Risks

- **Personal risks Direct loss vs. indirect loss**
 - An indirect loss results indirectly from the occurrence of a direct physical damage or theft loss, such as the additional living expenses after a fire to a home. These additional expenses would be a consequential loss

Major Personal Risks and Commercial Risks

- **Personal risks**
- **Liability risks** involve the possibility of being held liable for bodily injury or property damage to someone else
 - There is no maximum upper limit with respect to the amount of the loss
 - A lien can be placed on your income and financial assets
 - Defense costs can be enormous

Major Personal Risks and Commercial Risks

- **Commercial Risks**

- Firms face a variety of pure risks that can have serious financial consequences if a loss occurs:

- Property risks, such as damage to buildings, furniture and office equipment
 - Liability risks, such as suits for defective products, pollution of the environment, and sexual harassment

Major Personal Risks and Commercial Risks

- **Commercial Risks**

- Loss of business income, when the firm must shut down for some time after a physical damage loss
- Other risks to firms include crime exposures, human resource exposures, foreign loss exposures, intangible property exposures, and government exposures

Burden of Risk on Society

- **The presence of risk results in three major burdens on society:**
 - In the absence of insurance, individuals would have to maintain large emergency funds
 - The risk of a liability lawsuit may discourage innovation, depriving society of certain goods and services
 - Risk causes worry and fear

Techniques for Managing Risk

- **There are Four major methods for managing risk**
 - Avoidance
 - Acceptance or Retention
 - Loss control or Mitigate
 - Transfers

Techniques for Managing Risk

Risk Avoidance:

Prevents the organization from entering into a risk-rich situation or environment. For example, when choosing a vendor for a service, the organization could choose to accept a vendor with a higher-priced bid if the lower-cost vendor does not have adequate references.

Example: A company decided not to invest in X country due to the high political instability.

Techniques for Managing Risk

Risk acceptance or Retention

Based on the comparison of the risk to the cost of control, management could accept the risk and move forward with the risky choice.

- (An individual or firm retains all or part of a given risk)

Techniques for Managing Risk

- **Example:** There is the risk an employees will burn themselves if the company installs new coffee makers in the break room. The benefit of employee satisfaction from new coffee makers outweighs the risk of an employee accidentally burning themselves on a hot cup of coffee, so management accepts the risk and installs the new appliance.

Techniques for Managing Risk

Risk acceptance or Retention

- **Active retention** means that an individual is consciously aware of the risk and deliberately plans to retain all or part of it
- **Passive retention** means risks may be unknowingly retained because of ignorance, indifference, or laziness
- Self Insurance is a special form of planned retention by which part or all of a given loss exposure is retained by the firm

Techniques for Managing Risk

Risk control or mitigate

- Mitigating risks involves implementing action plans and controls that reduce the likelihood of the risk and/or the impact it would have if the risk were realized.

Techniques for Managing Risk

Risk control or mitigate

- For example, if an organization allows employees to work from home, there is a risk of data leakage due to the transmission of data across the public internet. To mitigate this risk, management might implement a VPN service and have remote users access the business network through VPN only. This would reduce the likelihood of data leakage, thereby mitigating the risk.

Techniques for Managing Risk

Risk control or mitigate

- An other example, when the bank impose a segregation of duties to the operations deliver and prevent one single employee form having more than one process in the transactions.
- This technique will be the most important one in the risk mitigation stage.

Techniques for Managing Risk

– Risk or Loss control

- Loss prevention refers to activities to reduce the frequency of losses
- Loss reduction refers to activities to reduce the severity of losses

Techniques for Managing Risk

- **Loss prevention refers to activities to reduce the frequency of losses**

Example: speed cameral controls, strict regulations for not smoking in the gas stations, segregations of duties, applying good fundamental analysis before investments in foreign currencies.

Techniques for Managing Risk

- **Loss reduction refers to activities to reduce the severity of losses**

Example: seat belt, placing fire extinguishers along the building, emergency exits in the buildings, concentration limit for investments in foreign currencies.

Techniques for Managing Risk

Risk Transfer

- Transferring the risk means shifting the risk to another organization. The three most common means for transferring are outsourcing, warranties and insuring.

Techniques for Managing Risk

Risk Transfer

- When outsourcing, management cannot completely transfer the responsibility for controlling risk. Insuring against the risk ultimately transfers some of the financial impacts of the risk to the insurance company.



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