



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



SCHOOL OF
BUSINESS
SCIENCES

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Elements of Risk and the question of
insurance
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Risk

- Insurance and risk management as a subject involves terminology which should be understood.
- **Some of the common terms used in the subject are:**
- (i) Risk
- (ii) Loss
- (iii) Chance of loss
- (iv) Peril and hazard
- (v) Risk management, etc
- The word **loss** commonly denotes not having something that one possessed before e.g. loss of money, loss of property or even loss of memory.
- When used in insurance and risk management, the word **loss** has a limited meaning and refers to **reduction of economic value**.
- Losses can be direct or indirect e.g., burning of a building = direct loss. Cost of renting alternative building following a fire = indirect loss.

- *Risk* means different things to different people as we will see later. Risk is a situation where **loss is possible**.
- The *chance of loss* is expressed as a fraction or **percentage** – it is the **probability** of suffering a loss.
- Thus, if we expect 3 houses out of 1 000 houses to be destroyed by fire, then the expected chance of loss is:
 - 3/1000 or 0.003 or **0.3%**
- The chance of loss is just an estimation which is never accurate.
- Therefore, there is a direct connection between risk, loss and chance of loss.
- Presence of risk increases chance of suffering loss. Also, when risk is high, chance of suffering loss is also high.
- High risk denotes a high chance of loss.
- But the paradox about risk is that it can also create opportunities for gain.

- *Risk management* in simple terms refers to the **planned and informed development** as well as **implementation of ways to manage** an organization's **exposure to risk**.
- Therefore, risk management is necessary for any type of organization facing risk and chance of loss.
- **Risks facing an organization are a product of many factors including the following:**
 - (i) Economic factors
 - (ii) Social factors
 - (iii) Political factors
 - (iv) Legal and regulatory factors
 - (v) Geo-physical and climatic factors
 - (vi) Human factors

- We all have some idea of what we consider as risk.
- Some equate risk to **danger**, others to **undesirable events**.
- “**risk is the effect of uncertainty on objectives**”. This definition underscores the relationship between risk and uncertainty.
- Also, the effects could be **positive or negative**. Again, this underscores the point made earlier that risk is not only about negative outcomes.
- risk is the possibility that events will occur and affect strategy and objectives.

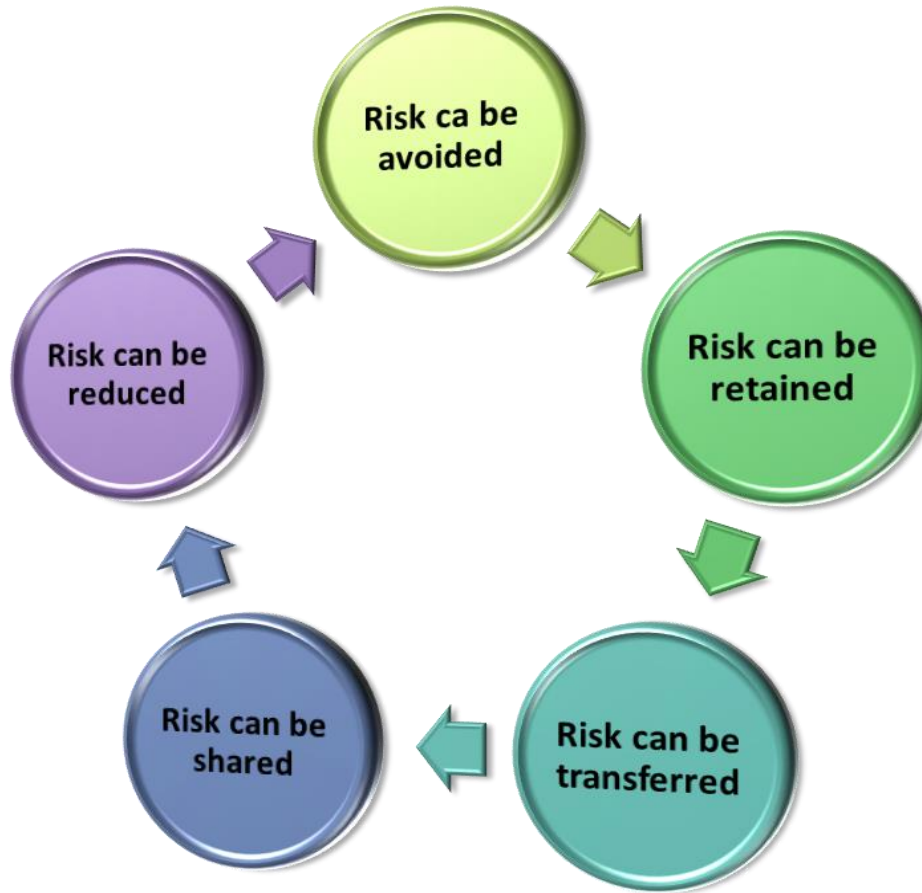
Therefore, risk attaches to the key business functions of:

- (i) objective setting,
- (ii) strategy formulation, and
- (iii) strategy implementation

Theory of economics and finance = risk is any situation where **outcomes are uncertain** or, the possible variability in outcomes **around some expected value**.

- Therefore, the theory of economic and finance defines risk as the **variation of actual outcomes** from expected outcomes i.e. expected outcome = **x** ; actual outcome = **y** . Potential variation between the 2 is risk.
- **From all the definitions of risk considered here, there are important attributes of risk to note:**
- (i) Risk is measurable
- (ii) Risk is quantifiable
- (iii) Risk is dynamic and can produce **positive and negative** outcomes.
- (iv) Risk is manageable through market instruments e.g. insurance, hedges.
- Since risk is variation from the expected, the best way to measure it is by assessing potential variation of outcomes around the expected.
- Accordingly, the standard deviation becomes the best measure of risk.

OTHER THINGS WE CAN DO ABOUT RISK



Risk Transfer

- **What is insurance?**
- A contract which outlines the rights and duties of parties to an insurance contract.
- Who are the parties to an insurance contract?
- Insured- The person who takes out an insurance cover.
- Insurer- The party that provides insurance.
- Rights and duties of the parties
- Insured- Pay a premium and make a claim
- Insurer- Charge a premium and pay the claim

Life and None Life Insurances

- Motor Insurance
- Fire Insurance
- Marine Insurance
- **Business interruption insurance**
- Commercial lines and Financial products
- Travel insurance
- Long term Insurance
- Life insurance
- Retirement insurance

All of the world's largest cities are built on large natural bodies of surface water, the growth and stability of all major cities. There is one global exception, Johannesburg. Johannesburg is the largest city in the world not situated near a significant source of water. **All 5.6 million citizens are supplied water piped in from national and international reservoirs**, an unprecedented act of engineering and city planning which needs to be recognised as truly remarkable. But let us consider what would happen if this life support system, that exchanges water to supply this ever expanded city, **suddenly fails**.

As a city we have seen the increasing water shedding and water levels in major dams and **reservoirs have reached historic lows due to a combination of infrastructure neglect**, sustained power failures and major reservoirs and unsustainable water consumption practices.

With Day Zero looming—a day when taps across the city could run dry—residents are demanding **urgent action to secure their water future**. The crisis has raised questions about water governance, **infrastructure resilience, and community preparedness**. Residents are concerned about equitable water distribution, **the safety of the city's drinking water**, and strategies for minimizing water waste and revitalise critical water exchange projects. Others fear the impact of water shedding on food security, public health and safety, and the city's political stability. Above all, people want clear guidance on how to adapt their behaviours and demand systemic changes to prevent Day Zero.

Your task is to **develop a comprehensive Water Security Plan**. This plan should address **immediate, medium-term, and long-term strategies** to safeguard Johannesburg's water resources and prevent day zero, and what actions communities can take that are currently struggling with water supply and quality in the city of Johannesburg. Consider **risks to human life**, the environment, and the city's infrastructure while proposing creative and interdisciplinary solutions to making public more aware of our current water situation.

Risk Management Assignment Question:

Johannesburg faces a looming water crisis, with the possibility of "Day Zero" highlighting the city's vulnerability due to its dependence on distant water sources and aging infrastructure. Based on the 2025 WIE Scenario and the proposed Water Security & Risk Management Strategy:

Critically evaluate the key risks facing Johannesburg's water supply system in terms of likelihood and impact.

Then, **develop a risk management plan** that includes risk identification, risk assessment, and appropriate mitigation strategies.

Risk Management Assignment Question:

Your answer should consider:

- Infrastructure vulnerability
- Environmental and climate-related risks
- Governance and public communication
- The role of Insurance
- Financial resilience mechanisms
- Community-based risk reduction actions

How can interdisciplinary collaboration between government, private sector, and civil society contribute to water security and long-term resilience in Johannesburg?

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