INSTITUTE OF ACTUARIAL & QUANTITATIVE STUDIES

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Chapter: Unit 1 Chapter 1

Chapter Name: Risk Management for Business Design and Enterprise Enhancement

Today's Agenda

1. The Risk Management Process
2. Benefits of Risk Management Process
3. Risk vs Uncertainty
4. Systematic and diversifiable risk
5. Enterprise Risk Management
6. Stakeholders in Risk Governance

1 The Risk Management Process

➢ Introduction

Risk management is the process of ensuring that the risks to which an organisation is exposed to are the risks to which it assumes it is exposed and to which it is prepared to be exposed. The key essence of risk management is to protect the organisation against adverse experience that could result in it being unable to meet its liabilities.

The management of risk by any organisation, but particularly by a provider of financial products that provide benefits on contingent events, involves several steps. The stages in risk management are pretty much in line with the Actuarial Control Cycle.

- Risk Identification
- Risk Classification
- Risk Measurement
- Risk Control
- Risk Financing
- Risk Monitoring

1 The Risk Management Process

- **Risk Identification**

Risk identification is the recognition of the risks that can threaten the income and assets of an organisation. This is the hardest aspect of risk management.
This step is the hardest in the risk management cycle because the organization is exposed to a variety of risks and their identification needs to be comprehensive. Also the entire process is hard when the organization is exposed to unprecedented risks which it has never been exposed to before.
Having identified each risk, it is necessary to determine whether it is systematic or diversifiable.
For each risk it is necessary to have a preliminary identification of possible risk control processes that could be put in place which will reduce either the likelihood of the risk event occurring or the impact of the risk event should it occur.
It is also important to identify opportunities to exploit risks and gain a competitive advantage over other providers. Taking on risk is a potential source of profit and is the raison d'être for insurance and reinsurance companies, i.e. taking risks and making s profit out of it is the company's primary objective.
Determining the extent of risk an organization is prepared to be exposed to is also a part of the risk identification process. This is the risk appetite or risk tolerance level.

1 The Risk Management Process

- **Risk Classification**

Classifying risks into groups aids the calculation of the cost of risk and the value of diversification.
It also enables a risk 'owner' to be allocated from the management team. The risk owner would normally be responsible for the control processes for the risk.
The risks are classified into three broad levels, which are high risks, medium risks, and low risks.
The grouping of risks with similar risk characteristics for the purpose of setting prices is a fundamental precept of any workable private, voluntary insurance system. This process, called risk classification, is necessary to maintain a financially sound and equitable system. It enables the development of equitable insurance prices, which in turn assures the availability of needed coverage to the public. This is achieved through the grouping of risks to determine averages and the application of these averages to individuals.

1 The Risk Management Process

➢ **Risk Measurement**

Risk measurement is the estimation of the probability of a risk event occurring and its likely severity.
This would normally be carried out before and after application of any risk controls, and the cost of the risk controls would be included in the assessment.

Risk measurement gives the basis for evaluating and selecting methods of risk control and whether the risk should be:

- Declined – such as rejecting an insurance client if the risk he poses is too high
- Transferred – by transferring a part of the risk to the reinsurer
- Mitigated – by efficient planning and reducing the potential impact of the risk
- retained with or without controls.

1 The Risk Management Process

For instance a company that has carried out a risk measurement exercise and finds out :

- The risk of a system failure has a high probability and low severity
- The risk of an explosion has a low probability and high severity

Here the company ay decide to employ experts and retain the risk of system failure rather than transfer it to a third party, because the impact of this risk on the company's financial position is low. However, the financial consequences of an explosion are so high that the company may transfer this risk to an insurance company.

➢ **Risk Control**

Risk control involves deciding whether to reject, fully accept or partially accept each identified risk. This stage also involves identifying different possible mitigation options for each risk that requires mitigation.

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Risk control measures are systems that aim to mitigate the risks or the consequences of risk events by:

- Reducing the probability of a risk occurring.

An example would be control and checking procedures to prevent payments being made by a company on fraudulent claims.

- Limiting the financial consequences of a risk.

The financial consequences comprise the losses if the risk event occurs, together with the costs of mitigation techniques used, such as insurance premiums.

- Limiting the severity of the effects of a risk that does occur.

In particular, reducing significantly the probability of catastrophic loss. Insurance would be a common way of achieving this. Having sprinklers and fire extinguishers in place to reduce the damage caused by fire

1 The Risk Management Process

- Reducing the consequences of a risk that does occur.

For example, by ensuring the survival of the organisation and its continued ability to trade. This might be by having a business continuity plan that can speedily be put into place.

At times the consequences of a risk may not have a direct financial impact on the business, but has an impact on the operations of the company. For example the loss of a manufacturing premises due to a fire. The company could ensure the availability of an alternative premises or a factory which can be occupied swiftly following the event.

A risk that gives rise to serious exposures to the organisation must be a priority candidate for the application of control techniques.

Not all risks occur at a single point event. For example, in a stock market 'crash', prices do not normally fall in a single day, but the full effect of the crash is observed over a number of weeks or months.

Frequently risk mitigation techniques involve management actions to be taken when certain trigger points are reached (for example to protect a portfolio value, or to reduce the amount of risk being accepted). It is vital that the actions really are taken when the trigger is reached and not delayed 'because it might get better tomorrow', however unpalatable the actions might be.

1 The Risk Management Process

This emphasizes on the significance of senior management buy-in to the risk management process. Models and assumptions used in the process are only valid to the extent that the actions would actually be taken in practice. Modelling of other possible courses of action and their consequences such as the effects of no action or delayed action, is equally useful.

Where more than one option exists for mitigating a particular risk, it will be necessary to compare each option, identify which option is optimal and then implement the appropriate options.
The organisation's risk appetite is another key feature in the decision on the approach to take to control individual risks. Risk appetite is likely to have both quantitative and qualitative components. The qualitative aspect of risk appetite includes risk preferences of the organisation.

The company's risk appetite will determine the level of risk the company chooses to accept, reject or partially accept, and thus the extent to which risk controls are required.

1 The Risk Management Process

➢ **Risk Financing**

Risk financing involves:

- determining the likely cost of each risk (including the cost of any mitigations and the expected losses and cost of capital arising from retained risk)
- ensuring the organisation has sufficient financial resources available to continue its objectives after a loss event occurs.

➢ **Risk Monitoring**

Having decided that all or part of a risk should be retained, with or without controls, the risks should be monitored.
Risk monitoring is the regular review and re-assessment of all the risks previously identified, coupled with an overall business review to identify new or previously omitted risks. It is important to establish a clear management responsibility for each risk in order that monitoring and control procedures can be effective.

1 The Risk Management Process

Risk monitoring process ensures that risks can be managed in a continuous manner. The objectives of risk management are:

- Check if the organisations risk appetite or exposure to risk has changed overtime
- Identify any new risks or if the nature of pre-existing risks has changed overtime. For example a company may now be exposed to political risk due to change of regime in the country, which did not exist in the previous regime
- Communicate about risks that have already occurred and how they have been managed
- Carry out an assessment of the current risk management process and its effectiveness

2 Benefits of Risk Management Process

Through an effective risk management process a provider of financial benefits will be able to:

- avoid surprises
- improve the stability and quality of their business
- improve their growth and returns by exploiting risk opportunities
- improve their growth and returns through better management and allocation of capital
- identify opportunities arising from natural synergies
- identify opportunities arising from risk arbitrage
- give stakeholders in their business confidence that the business is well managed.

Here risk arbitrage means the provider having different views on the price of risk in comparison to another party. The provider may accept a risk for a higher premium than his own view of the cost of risk, or transfer the risk for a lower premium than its own view of the cost.

2 Benefits of Risk Management Process

Ideally, in the management of risk, providers need to look to find the optimal set of strategies that balance the needs for return, growth and consistency. The risk management process should:

- incorporate all risks, both financial and non-financial
- evaluate all relevant strategies for managing risk, both financial and non-financial
- consider all relevant constraints, including political, social, regulatory and competitive
- exploit the hedges and portfolio effects among the risks
- exploit the financial and operational efficiencies within the strategies.

3 Risk vs Uncertainty

Uncertainty refers to the unpredictability of an outcome, whereas risk is the effect of a choice made which has a certain degree of uncertainty.
A risk can be associated with an event that is certain in time – will it rain on my wedding day?
Alternatively, the event can be certain and the issue is when it will occur – how long will I live to draw my pension?
Thirdly, both the occurrence and the timing can be uncertain – will my house suffer from storm damage?
A risk event having occurred, there can then be uncertainty about the consequences of the event – is the loss amount fixed or variable, and what is the shape of the loss distribution?
Finally, even certain strategies to avoid loss may not be risk-free on detailed investigation.
For instance purchasing of appropriate insurance for loss by fire avoids loss in respect of the event, but risk relating to counterparty default, liquidity, etc

4 Systematic and Diversifiable Risk

- **Systematic Risk**

Systematic risk is risk that affects an entire financial market or system, and not just specific participants. It is not possible to avoid systematic risk through diversification.
In the context of investment markets, the risk of a decline in the market as a whole, with all stocks being affected, is a systematic risk. Assuming that the investor is required to participate in the market, the risk cannot be avoided.
Conversely, the risk of a decline in the value of a single security can be mitigated by an investor spreading the risk and investing in a large number of small holdings.
A portfolio of 30 to 40 securities in developed markets such as the UK or US (more in case of developing markets because of higher asset volatilities) will render the portfolio sufficiently diversified to limit exposure to that of systematic risk only.
The term systematic risk is sometimes used interchangeably with systemic risk. Systemic risk is a specific technical term used in finance. Systematic risk has an additional more general meaning that is 'of or pertaining to a system'.

4 Systematic and Diversifiable Risk

- **Diversifiable Risk**

Diversifiable risk arises from an individual component of a financial market or system.
In the context of investment markets, diversifiable risk occurs when the value of an individual security falls. A rational investor should not take on any diversifiable risk, as only non-diversifiable risks are rewarded within the scope of most financial systems.
This means there is no compensation for having selected a concentrated portfolio. An investor should diversify across asset classes and within asset classes.
Therefore, the required return on an asset, that is, the return that compensates for risk taken, must be linked to its riskiness in a portfolio context – ie its contribution to overall portfolio riskiness – as opposed to its 'stand-alone riskiness'.
According to the above theory, all rational investors would hold a portfolio of assets that was as well diversified as possible. If all investors had the same estimates of the relative risks and returns then they would all hold the same market portfolio. It would be impossible to outperform the market except by chance, so only index-tracking funds would exist.

4 Systematic and Diversifiable Risk

However, in practice different investors have different estimates of the risks and returns. As a result, they will hold a less well-diversified portfolio if they believe that it offers a sufficiently higher expected return than the market to compensate them for the diversifiable risks they take. The risk appetite of the investor will affect the extent that they are prepared to move away from the market portfolio in search of higher returns.

- **Risks that are both Systematic and Diversifiable**

Whether a risk is systematic or diversifiable depends on the context.
For example, an investment fund that is constrained to invest in domestic equities, because of the prospectus and other information issued to clients, will see the domestic equity market as a systematic risk. A worldwide equity fund that can invest in domestic and overseas equities will see exposure to the domestic equity market as a diversifiable risk. Such a fund can hold investments from a wide range of international markets and thus limit the exposure to any particular national market.

5 Enterprise Risk Management

➢ **Business Units**

All but the simplest businesses comprise a number of business units. These units might:

- carry out the same activity but in different locations
- carry out different activities at the same location
- carry out different activities at different locations
- operate in different countries・operate in different markets
- be separate companies in a group, which each have their own business units.

The largest multinational companies may comprise business units that carry out completely unrelated activities.

5 Enterprise Risk Management

- **Managing Risk at the Business Unit Level**

Choice needs to be made as to whether risk should be managed at:
The business unit level
The group level also known as enterprise risk management

One approach to risk management would be for the parent company to determine its overall risk appetite and to divide this up among the business units. Just as each business unit has its own management team to run its business, the business unit management team manages the risks of the business within the risk appetite they have been allocated.
As risk analysis involves allocation of capital to support the risks retained by each business unit, this approach is likely to mean that the group is not making best use of its available capital.
It is clear that this approach makes no allowance for the benefits of diversification or pooling of risks. A crude approach to allow for diversification would be simply to allow the risk appetites allocated to the business units to add up to perhaps 130% or 150% of the group's overall risk appetite.

5 Enterprise Risk Management

- **Managing Risk at the Enterprise Level**

A preferable approach is to establish the group risk management function as a major activity at the enterprise level. The group can then impose similar risk assessment procedures on the various business units, which will enable the results from the various models to be combined into a risk assessment model at the entity level.
This can be considered as the most capital efficient way of risk management as it allows for pooling of risk, diversification and economies of scale
Enterprise risk management involves considering the risks of the enterprise as a whole, rather than considering individual risks in isolation. This allows the concentration of risk arising from a variety of sources within an enterprise to be appreciated, and for the diversifying effects of risks to be allowed for.
This will also give the group management insight into the areas with resulting undiversified risk exposures where the risks need to be transferred or capital set against them. This will be an important feed into the business planning and capital allocation cycles.

5 Enterprise Risk Management

Such an approach to risk management will enable the company to take advantage of opportunities to enhance value, ie if they understand their risks better, they can use them to their advantage by taking greater (educated) risks in order to increase returns. Enterprise risk management is not just about reducing risk – it is also about a company putting itself into a better position to be able to take advantage of strategic risk-based opportunities.

Thus enterprise risk management allows for:

- Consistency across business units
- Considers the risks of an enterprise as a whole, rather than in isolation, thus allowing for diversification
- Seeking opportunities to enhance value

6 Stakeholders in Risk Governance

- **Internal Stakeholders**

In an efficiently run organisation, all members of staff are stakeholders in risk governance.
In a company with a well-embedded risk culture, all employees should be looking out for risks to which the business is exposed and should be suggesting ways in which risks can be mitigated or controlled. Reports from staff on risk should be noted and rewarded through the normal appraisal system.
All large companies and all providers of financial products should have a designated Chief Risk Officer. This role will normally be at the enterprise level. It will be responsible for allocating the risk budget to business units after allowing for diversification, and for monitoring the group exposure to risks and documenting the risks that have materialised and affected the group.
Business units will often have a risk manager, although this function may be combined with another role, depending on size. At business unit level the responsibility is to make full use of the allocated risk budget, as well as data collection, monitoring and reporting.

6 Stakeholders in Risk Governance

- **External Stakeholders**

Organisations can also encourage their customers to note and report risks that they come across in using the company's products or visiting the company's premises.
Other stakeholders may have a strong interest in risk governance within an organisation. This could include any shareholders of the organisation, any regulators of the organisation and credit rating agencies.