**Concept of risk**

There is no agreed definition of the concept of risk. If we study the literature we find a number of different ways of understanding the risk concept. Some definitions are based on probability, chance or expected values, some on undesirable events or danger, and others on uncertainties. Some consider risk as subjective and epistemic, dependent on the available knowledge, whereas others grant risk an ontological status independent of the assessors. (Aven T. , 2012)

Many supposedly authoritative sources refer to events or outcomes as risks, whereas risk is actually an attribute of an event: a measure of its probable consequence. Nevertheless 95 per cent of risk professionals responding to a survey in 2011 agreed that ‘a risk’ is an event. Having defined risk, let’s consider how to quantify it. We might hope to be guided here by standards, but the ISO Guide 732 definition that has influenced almost all other risk-related standards is ‘effect of uncertainty on objectives’: a definition at once irrefutable and effectively useless, as it’s entirely abstract. Many attempts to create operationally functional definitions have been made, ranging from the elementary ‘risk=likelihood x consequence’ to quite complex combinations of ‘vulnerability’, ‘threat’, ‘opportunity’, ‘impact’ among other terms, multiplied and summed in various ways. (Barwise, 2014)

In economics, risk is regarded as a category that is quite hard to define in an explicit way. Neither in theory nor in practice is there a single universal definition which clearly identifies this category. The difficulty here lies in the very nature of risk, i.e. a phenomenon that is complex and multidimensional. As an interdisciplinary category, risk is addressed by a vast array of sciences, e.g. technical, social, natural and medical ones. Generally, there is no scientific discipline in which risk is not present in one way or another. This is also one of the reasons why risk is so difficult to interpret in science. In economics, too, risk has been a focus of research all over the world for many years, giving rise to various interpretations. (Raczkowski & Tworek, K., 2016)

Enterprise Risk Management is a comprehensive and integrated framework for managing credit risk, market risk, operational risk, economic capital, and risk transfer to maximize firm value. (Lam, 2003)

Risk is understood as an expected value, as a probability distribution, as uncertainty and as an event. Some common definitions are: Risk equals the expected damage/loss. Risk equals the expected disutility. Risk is the probability of an adverse. Risk is a measure of the probability and severity of adverse effects. Risk is the combination of probability of an event and its consequences. Risk is defined as a set of scenarios each of which has a probability and a consequence. Risk is a situation or event where something of human value (including humans themselves) is at stake and where the outcome is uncertain. Risk is an uncertain consequence of an event or an activity with respect to something that humans value. Risk refers to uncertainty of outcome, of actions and events. Risk is equal to the two-dimensional combination of events/ consequences and associated uncertainties. Risk is uncertainty about and severity of the consequences of an activity, with respect to something that humans value. (Aven T. , 2008)

**Risk management**

There is no single and universal risk management formula which could be fully applicable and appropriate for every entity, without exception. There is also no risk management methodology which could be widely and uniformly adopted, i.e. there are no methods which could work in every case and in every entity. There are, however, some universal rules—devised by appropriate institutions and organisations that promote risk management knowledge worldwide—which could be followed by entities in their risk management processes. (Raczkowski & Tworek, K., 2016)

Risk, however, needs to be handled differently in the public and private sectors. First of all, the specific nature of activities carried out by an entity which manages risk has to be taken into account. Irrespective of the entity’s profile and the risk management area, the thorough implementation of the right procedure should lead to tangible benefits for the entity, such as significant savings. The bottom line is that risk management means savings and today this is a prerequisite for any modern management process. At the same time, risk management is an integral part of strategic management and supports organisational governance. (Raczkowski & Tworek, K., 2016)

Some sources have referred to ERM as a new risk management paradigm. As in the past, many organizations continue to address risk in “silos,” with the management of insurance, foreign exchange, operations, credit, and commodities each conducted as narrowly focused and fragmented activities. (Fraser, Simkins, 2010)

Enterprise risk management has to satisfy a series of parameters. It must be embedded in a business’s system of internal control, while at the same time it must respect, reflect and respond to the other internal controls. Enterprise risk management is about protecting and enhancing share value to satisfy the primary business objective of shareholder wealth maximisation. It must be multifaceted, addressing all aspects of the business plan from the strategic plan through to the business controls:

• strategic plan

• marketing plan

• operations plan

• research and development

• management and organisation

• forecasts and financial data

• financing

• risk management processes

• business controls

Hence, in summary, enterprise risk management may be defined as “a comprehensive and integrated framework for managing company-wide risk in order to maximise a company’s value”. (Chapman, 2011)

Many organizations are implementing ERM processes to increase the effectiveness of their risk management activities, with the ultimate goal of increasing stakeholder value. In fact, a recent survey of insurance executives worldwide finds that enterprise risk management has ‘‘come of age’’, with insurers giving ‘‘enterprise level risk management increasing attention, high-level accountability, and clear responsibilities’’. (Beasley, 2005)

**Benefits of enterprise risk management**

No risk management process can create a risk-free environment. Rather, ERM enables management to operate more effectively in a business environment where an organisation’s risk exposure profile is never static. Enterprise risk management provides enhanced capability to:

• Increase the likelihood of a business realising its objectives. ERM will equip organisations with techniques to identify, record and assess the opportunities they seek to proactively pursue and exploit. At the same time it will support the identification and conscious management of the risks associated with selected opportunities to ensure that bottom-line performance is enhanced rather than eroded. In this way it will enable organisations to mature and realise their stated objectives.

• Build confidence in stakeholders and the investment community. As a result of the global financial crisis institutional investors, rating agencies and regulators are more focused on and more eager to learn about an organisation’s capabilities for understanding and managing risk. Investors in particular will wish to understand the degree of risk their investments will be exposed to and whether the returns will be adequate. Board members and managers may be called upon to explain the framework, policy and process they have in place for managing risk. ERM provides the rigour to establish, describe and demonstrate proactive risk management.

• Comply with relevant legal and regulatory requirements. ERM, through establishing (and subsequently monitoring) a risk management framework, requires an organisation to understand, record (and keep up to date) the business context including, but not limited to, the legal and regulatory requirements it has to comply with and, where appropriate, the implications of not doing so.

• Align risk appetite and strategy. Risk appetite is the degree of risk, on a broad-based level, that a business is willing to accept in pursuit of its objectives. ERM supports management’s consideration of a business’s risk appetite first in evaluating strategic alternatives, then in setting boundaries for downside risk.

• Enhance corporate governance. ERM and corporate governance augment each other. ERM strengthens governance through challenging potential excessive risk taking as occurred in the global financial crisis, encouraging board-level engagement in the high-level risk process and improving decision making on risk appetite and tolerance.

• Embed the risk process throughout the organisation. ERM, through the creation of a framework, policy, process, plans and training can embed risk management throughout the organisation from the board down to all elements of the organisational structure as risk exposure can emanate from any corner of the organisation (e.g. from a breach of ethics at board level to a breach of environmental legislation by production).

• Minimise operational surprises and losses. ERM supports businesses to enhance their capability to identify potential risk events, assess risks and establish responses, and thereby to reduce the occurrence of unpleasant surprises and associated costs or losses.

• Enhance risk response decisions. ERM provides the rigour to identify and select among alternative risk responses – risk removal, reduction, transfer or retention.

• Optimise allocation of resources. A clear understanding of the risks facing a business can enhance the effective direction and use of management time and the business’s resources to manage risk.

• Identify and manage cross-enterprise risks. Every business faces a myriad of risks affecting different parts of the organisation. The benefits of enterprise risk management are only optimised when an enterprise-wide approach is adopted, integrating the disparate approaches to risk management within a company. Integration has to be effected in three ways: centralised risk reporting, the integration of risk transfer strategies and the integration of risk management into the business processes of a business. Rather than being purely a defensive mechanism, it can be used as a tool to maximise opportunities.

• Link growth, risk and return. Businesses accept risk as part of wealth creation and preservation and they expect returns commensurate with risk. ERM provides an enhanced ability to identify and assess risks and establish acceptable levels of risk relative to potential growth and achievement of objectives.

• Rationalise capital. More robust information on risk exposure allows management to more effectively assess overall capital needs and improve capital allocation.

• Seize opportunities. The very process of identifying risks can stimulate thinking and generate opportunities as well as threats. Reponses need to be developed to seize these opportunities in the same way that responses are required to address identified threats to a business.

• Improve organisational learning. ERM can enhance organisational learning through the use of lessons learnt prior to embarking on new change projects and the maintenance of records of successful risk treatment plans that effectively removed risks prior to realisation.

There are three major benefits of ERM: improved business performance, increased organisational effectiveness and better risk reporting. (Chapman, 2011)

**APPROACHES TO RISK**

Risk management is the process of identifying risk, assessing risk, and taking steps to reduce risk to an acceptable level. The risk management approach determines the processes, techniques, tools, and team roles and responsibilities for a specific project. The risk management plan describes how risk management will be structured and performed on the project (“Risk Management Guide for Information Technology Systems”, 2012).

**Three kinds of approach can be followed for involving management and stakeholders in identifying risks:**

* ***Top down-approach:*** the decision-making process is centralized at governance level. This approach can show two modes:

a*) Full top-down mode*, where the business units’ risks are listed at department level, meaning that heads of unit cannot add risks themselves at unit level. There is no need of risk escalation, except at departmental level.

*b) Prevailing top-down mode*, where a corporate risk register is directly created from a detailed operational risk register.

* ***Bottom-up approach:*** the decision-making process is done at management level. Operational risks are identified by any staff member while performing his or her daily work (e.g., in order to encourage the staff to be more active in defining non-conformities, an opportunity to register them online has been provided).
* ***Mixed approach:*** the board entity states the criteria (top-down) by which the heads of unit identify and manage risks (bottom-up). Risks may be viewed and assessed throughout the organization at any level (e.g., group, program, office, project, etc.) (“Risk management approaches”, 2017).

**The 5 step approach to risk assessment:**

* **Step One – Identify the hazards**

This step requires the responsible manager to physically tour the workplace and determine objects and practices that could potentially cause harm.

It is highly recommended that the manager engages with employees to gather their opinions on these potential hazards. After all the employees are the individuals who have the most contact with them. It may also be useful to review records of previous accidents and see if it is possible to identify any recurring themes.

* **Step Two – Who is at risk?**

Try to determine who is most likely to be harmed by the hazards already identified - this will inform your decision regarding how best to manage the risk.

* **Step three – Put precautions in place**

Putting precautions in place is perhaps the most practical step. This involves formulating measures to mitigate any risks that may have been identified.

Your first concern should be to ascertain whether or not the risk can be eliminated altogether. The law recognises that, in some cases, this is not possible. If this is true of your workplace, your actions should be judged against accepted 'best practice'.

If a risk cannot be eliminated, a less hazardous alternative should be sought. However, If this is not possible then access to the hazard should be prevented, exposure should be limited, safety equipment should be issued, or welfare equipment should be made available.

* **Step Four – Record results**

If your Practice has fewer than five employees you are not legally required to make a written record of the assessment, but you should still make all staff aware of the potential hazards in the workplace.

Furthermore, you should be able to demonstrate that the assessment has been acted upon and that the identified risks have been mitigated or managed to a sufficient degree.

* **Step five – Review assessments regularly**

This should generally occur annually, but more frequent reviews may be necessary if the workplace conditions change more often (“The 5 step approach to risk assessment”, 2018).

**TYPES OF RISK**

Different types of risk can be classified under two main groups:

* **SYSTEMATIC RISK**
* **UNSYSTEMATIC RISK**

1: Types of Risk





**SYSTEMATIC RISK**

Systematic risk is due to the influence of external factors on an organization. Such factors are normally uncontrollable from an organization's point of view.

It is a macro in nature as it affects a large number of organizations operating under a similar stream or same domain. It cannot be planned by the organization.

The types of systematic risk are interest rate risk, price risk and reinvestment rate risk (“Types of risk”, 2016).

* **INTEREST RATE RISK**

Interest rate risk is the risk that arises for bond owners from fluctuating interest rates. How much interest rate risk a bond has depends on how sensitive its price is to interest rate changes in the market. The sensitivity depends on two things, the bond's time to maturity, and the coupon rate of the bond (Stephen A. Ross, Randolph W. Westerfield, & Bradford D. Jordan, 2010).

* **Price risk**

Price risk is the risk of a decline in the value of a security or a portfolio that can be minimized through [diversification](https://www.investopedia.com/terms/d/diversification.asp), unlike [market risk](https://www.investopedia.com/terms/m/marketrisk.asp). It is lower in stocks with less [volatility](https://www.investopedia.com/terms/v/volatility.asp) such as [blue-chip stocks](https://www.investopedia.com/terms/b/bluechipstock.asp). Investors can use a number of tools and techniques to [hedge](https://www.investopedia.com/terms/h/hedge.asp) price risk, ranging from relatively conservative decisions such as buying [put options](https://www.investopedia.com/terms/p/putoption.asp) to more aggressive strategies including short selling and [inverse ETFs](https://www.investopedia.com/terms/i/inverse-etf.asp) (“Investopedia”, 2018).

* **Reinvestment rate risk**

Reinvestment risk is the risk that future coupons from a bond will not be reinvested at the prevailing [interest rate](https://www.investopedia.com/terms/i/interestrate.asp) from when the bond was initially purchased. [Reinvestment](https://www.investopedia.com/terms/r/reinvestment.asp) risk is more likely when interest rates are declining and affects the yield to maturity of a bond, which is calculated on the premise that all future [coupon](https://www.investopedia.com/terms/c/coupon.asp) payments will be reinvested at the interest rate in effect when the bond was first purchased. Zero-[coupon bonds](https://www.investopedia.com/terms/c/couponbond.asp) are the only [fixed-income instruments](https://www.investopedia.com/video/play/fixedincome-security/) to have no reinvestment risk since they have no interim [coupon payments](https://www.investopedia.com/video/play/coupon/) (“Investopedia”, 2018).

* **MARKET RISK**

Market risk is comprised of the “unknown unknowns” that occur as a result of everyday life. It is unavoidable in all risky investments. It can also be thought of as the opportunity cost of putting money at risk (“Market Risk”, 2018).

In other words, market risk refers to the overall economy or securities markets, while specific risk involves only a part (“Market risk”, 2018).

In competitive markets such as the liberalized electricity markets, market risk is an extremely importatnt variable both in day-by-day business acitvity and in the strategic decision-making process. For this reason its correct definition and assessment is a fundamental issue for companies which operate in those markets. Traditionally, risk is defines as the uncertainty which may affect the economic performance of a certain business or investment. This uncertainty can have a positive or a negative impact on the business, but of course also on people concerned by the negative impacts that unpredictable events may have on their business or investment returns (Fiorenzani, 2006).

* **Absolute risk**

Absolute risk is the probability or chance of an event. It is usually used for the number of events (such as a disease) that occurred in a group, divided by the number of people in that group (ed. for the International Epidemiological Association by Miquel Porta., 2014).

Absolute risk reduction (also called risk difference) is the absolute difference in outcomes between one group (usually the control group) and the group receiving treatment. The percentage tells you how much the risk of something happening decreases if a certain intervention happens (“Relative Risk and Absolute Risk: Definition and Examples”, 2018).

* **Relative risk**

In statistics and epidemiology, relative risk or risk ratio is the ratio of the probability of an event occurring (for example, developing a disease, being injured) in an exposed group to the probability of the event occurring in a comparison, non-exposed group(“Proportions, Odds, and Risk”, 2017).

The relative risk of something happening is where you compare the odds for two groups against each other. Although relative risk does provide some information about risk, it doesn’t say anything about the actual odds of something happening; on the other hand, absolute risk does (“Relative Risk and Absolute Risk: Definition and Examples”, 2018).

* **Directional risk**

Directional risk involves exposure to the direction or movement of a major financial variable. This is measured by linear approximations such as Beta, Duration or Delta (Financial risk management, 2007).

A trader intentionally takes directional risk when he expects that the value of a particular market factor or a class of market factors will change in a paticular direction in the near future. If the market factor(s) changes in the direction the trader expects, his position will gain in value, if not, it will lose value (M.A.H. Dempster, 2001).

* **Non directional risk**

Non-Directional risk arises where the method of trading is not consistently followed by the trader. For e.g. the dealer will buy and sell the share simultaneously to mitigate the risk (“Types of risk”, 2016).

Non-directional risks involve non-linear exposures or exposures to hedged positions or volatilities. These maesures include Basic Risk, Residual Risk, Convexity or Gamma (M.A.H. Dempster, 2001).

* **Basic risk**

Basis risk is due to the possibility of loss arising from imperfectly matched risks. For e.g. the risks which are in offsetting positions in two related but non-identical markets (M.A.H. Dempster, 2001).

Basis risk in finance is the risk associated with imperfect hedging. It arises because of the difference between the price of the asset to be hedged and the price of the asset serving as the hedge, or because of a mismatch between the expiration date of the hedge asset and the actual selling date of the asset (calendar basis risk), or—as in energy—due to the difference in the location of the asset to be hedged and the asset serving as the hedge (locational basis risk) (“Moneyterms”, 2017).

* **Volatility risk**

This is a type of price risk that results not from changes in levels of prices but their volatility. Volatility refers to the degree of unpredictable change in a financial variable over a period of time. For example, the valuation of option contracts depends on the volatility of the underlying asset (Financial risk management, 2007).

* **PURCHASING POWER OR INFLATIONARY RISK**
* **Demand inflation risk**

Inflation risk, also called purchasing power risk, is the chance that the cash flows from an investment won't be worth as much in the future because of changes in purchasing power due to inflation (“Inflation risk”, 2018).

Demand inflation risk arises due to increase in price, which result from an excess of demand over supply. It occurs when supply fails to cope with the demand and hence cannot expand anymore. In other words, demand inflation occurs when production factors are under maximum utilization (“Types of risk”, 2016).

* **Cost inflation risk**

Cost inflation risk arises due to sustained increase in the prices of goods and services. It is actually caused by higher production cost. A high cost of production inflates the final price of finished goods consumed by people (“Types of risk”, 2016).

**UNSYSTEMATIC RISK**

Unsystematic risk is due to the influence of internal factors prevailing within an organization. Such factors are normally controllable from an organization's point of view.

It is a micro in nature as it affects only a particular organization. It can be planned, so that necessary actions can be taken by the organization to mitigate (reduce the effect of) the risk.

The types of systematic risk are business risk/liquidity risk, financial/credit risk and operational risk (“Types of risk”, 2016).

* **BUSINESS RISK**

A **business risk** is a future possibility that may prevent you from achieving a business goal. The risks facing a typical business are broad and include things that you can control such as your strategy and things beyond your control such as the global economy.

There is a strong relationship between risk and reward. It's generally impossible to achieve business gains without taking on at least some risk. Therefore, the purpose of risk management isn't to completely eliminate risk. In most cases, risk management seeks to optimize the risk-reward ratio within the bounds of the risk tolerance of your business. The following are common types of business risk (“20 Types of Business Risk”, 2017).

For example business risks are:

* **Competitive risk**

The risk that your competition will gain [advantages](https://simplicable.com/new/competitive-risk) over you that prevent you from reaching your goals. For example, competitors that have a fundamentally cheaper cost base or a better product. Competitive risk is the chance that competitive forces will prevent you from achieving a goal. It is often associated with the risk of declining business revenue or margins due to the actions of a competitor (“20 Types of Business Risk”, 2017).

* **Economic risk**

Economic risk is the chance that macroeconomic conditions like exchange rates, government regulation, or political stability will affect an investment, usually one in a foreign country (“Economic Risk”, 2018).

* **Compliance risk**

Compliance risk is exposure to legal penalties, financial forfeiture and material loss an organization faces when it fails to act in accordance with industry laws and regulations, internal policies or prescribed best practices (“Compliance risk”, 2017).

* **Strategy risk**

Strategy risk is that your company’s strategy becomes less effective and your company struggles to reach its goals as a result. It could be due to technological changes, a powerful new competitor entering the market, shifts in customer demand, spikes in the costs of raw materials, or any number of other large-scale changes (“The Main Types of Business Risk”, 2014).

It is a possible source of loss that might arise from the pursuit of an unsuccessful business plan. For example, strategic risk might arise from making poor business decisions, from the substandard execution of decisions, from inadequate resource allocation, or from a failure to respond well to changes in the business environment (“Strategic risk”, 2017).

* **Reputational risk**

Reputational risk, often called reputation risk, is a risk of loss resulting from damages to a firm's reputation, in lost revenue; increased operating, capital or regulatory costs; or destruction of shareholder value, consequent to an adverse or potentially criminal event even if the company is not found guilty. Adverse events typically associated with reputation risk include ethics, safety, security, sustainability, quality, and innovation. Reputational risk can be a matter of corporate trust (“Reputational risk”, 2016).

* **Program risk**

A program risk is a potential outcome that causes a program to fail to meet a goal. It is related to individual project risks with a focus on risks that have cross-project impact. For example, integration risks between projects are commonly tracked at the program management level (“20 Types of Business Risk”, 2017).

* **Project risk**

Project risk management is an important aspect of project management. According to the Project Management Institute's PMBOK, Risk management is one of the ten knowledge areas in which a project manager must be competent. Project risk is defined by PMI as, "an uncertain event or condition that, if it occurs, has a positive or negative effect on a project’s objectives (“Project Management Institute”, 2017).

* **Innovation risk**

Risk that applies to innovative areas of your business such as product research. Such areas may require adapting your risk management practices to fast paced and relatively high risk activities (“20 Types of Business Risk”, 2017).

* **Country risk**

Country risk is the potential for losses due to investments or business activities in a particular country. Each country has a different risk profile with some nations having a highly stable political process and mature economy and others that have unstable politics and severe economic fluctuations (“What is Country Risk?”, 2016).

* **Quality risk**

Quality risk is the potential for losses due to quality that fails to meet your quality goals. Quality defines the value of your products and services and can include a wide range of factors (“What is Quality Risk?”, 2016).

* **LIQUIDITY RISK**

Liquidity risk is, in essence, the risk of economic loss suffered in attempting to secure the cash that is so vital to continuing business operations. It is helpful, for instance, to distinguish between funding liquidity, asset liquidity, nad joint liquidity. We also consider liquidity risk in the context of internal and external forces (Banks, 2005).

* **Asset liquidity risk**

Asset liquidity risk is due to losses arising from an inability to sell or pledge assets at, or near, their carrying value when needed. For e.g. assets sold at a lesser value than their book value (“Types of risk”, 2016).

* **Funding liquidity risk**

Funding liquidity risk exists for not having an access to the sufficient-funds to make a payment on time. For e.g. when commitments made to customers are not fulfilled (“Types of risk”, 2016).

* **FINANCIAL/CREDIT RISK**

Financial risk is also known as credit risk. It arises due to change in the capital structure of the organization. The capital structure mainly comprises of three ways by which funds are sourced for the projects. These are as follows:

* Owned funds. For e.g. share capital.
* Borrowed funds. For e.g. loan funds.
* Retained earnings. For e.g. reserve and surplus.

The types of financial or credit risk are depicted and listed below (“Types of risk”, 2016).

* **Exchange rate risk**

Exchange rate risk is a financial risk that exists when a financial transaction is denominated in a currency other than that of the base currency of the company. Foreign exchange risk also exists when the foreign subsidiary of a firm maintains financial statements in a currency other than the reporting currency of the consolidated entity. The risk is that there may be an adverse movement in the exchange rate of the denomination currency in relation to the base currency before the date when the transaction is completed (Maurice D. Levi., 2005).

* **Recovery rate risk**

Recovery rate risk is an often neglected aspect of a credit-risk analysis. The recovery rate is normally needed to be evaluated. For e.g. the expected recovery rate of the funds tendered (given) as a loan to the customers by banks, non-banking financial companies , etc (“Types of risk”, 2016).

* **Credit event risk**

A credit event occurs when a person or organization defaults on a significant transaction. He or she is unable to honor the terms of the contract entered, and the borrower’s ability to pay comes into question. Because the marketplace recognizes such events as related to one's credit worthiness, credit events can trigger specific protections provided by credit derivatives (“Credit Swap Valuation”, 1999).

* **Non-Directional risk**

Non-directional risks involve non-linear exposures or exposures to hedged positions or volatilities (Financial risk management, 2007).

* **Sovereign risk**

A nation is a sovereign entity. Any risk arising on chances of a government failing to make debt repayments or not honouring a loan agreement is a sovereign risk(“Definition of 'Sovereign Risk'”, 2016).

* **Settlement risk**

Settlement risk is the risk that one party will fail to deliver the terms of a contract with another party at the time of settlement. Settlement risk can also be the risk associated with default, along with any timing differences in settlement between the two parties (Investopedia, 2018).

* **OPERATIONAL RISK**

Operational risk summarizes the risks a company undertakes when it attempts to operate within a given field or industry. Operational risk is the risk not inherent in financial, systematic or market-wide risk. It is the risk remaining after determining financing and systematic risk, and includes risks resulting from breakdowns in internal procedures, people and systems (Investopedia, 2018).

* **Model risk**

Model risk is a type of risk that occurs when a financial model used to measure a firm's market risks or value transactions fails or performs inadequately.

Model risk is considered a subset of operational risk, as model risk mostly affects the firm that creates and uses the model. Traders or other investors who use the model may not completely understand its assumptions and limitations, which limits the usefulness and application of the model itself (Investopedia, 2018).

* **People risk**

People risk is difficult to define, it covers a wide field of activities and impacts a diverse range of stakeholders (Blacker Keith, 2016).

People are the single most important asset in any business but they are also the most vulnerable asset. People can breakdown and suffer damage just as in the case of machinery and property. However people can be harder to repair and the consequences can be more serious. People also age and will one day wish to retire from work. Planning ahead with financial provisions and succession plans will make that transition easier (“People Risk”, 2010).

* **Legal risk**

Legal risk arises when parties are not lawfully competent to enter an agreement among themselves. Furthermore, this relates to the regulatory-risk, where a transaction could conflict with a government policy or particular legislation (law) might be amended in the future with retrospective effect (“Types of risk”, 2016).

* **Political risk**

Political risk is a type of risk faced by investors, corporations, and governments that political decisions, events, or conditions will significantly affect the profitability of a business actor or the expected value of a given economic action. Political risk can be understood and managed with reasoned foresight and investment (“Political Risk Analysis”, 2017).

 **PHASE OF RISK MANAGEMENT PROCESS**

**1.1 The multiple Facets of Risk**

A major difficulty in identifying the risks a company face sis that risk itself is rarely properly defined at the outset.Risk is:

 Hazard, danger, exposure to mischance or peril.

 The change or hazard of commercial loss, specifically in the case of insured property or goods. Also the change that is accepted in economic enterprise and considered the source of profit

In fact, nobody strictly agrese on one definition. Risk approaches have to be customized for each company. In its simplest mathematical representation, risk is defined by the following equation:

Risk = Probability x Damage

**1.2 A typology of Risk**

A good risk manager will keep all recognizable, substantial risks in mind at all times and have each risk properly classified and eliminated, minimized, or transferred. Then risks that cannot be dealt with will just have to be accepted. And if such risks are too great, then that should be a sign that the company is in the wrong line of business at that time. This section provides the method for identifying and evaluating the myriad risks a comapny faces. When a risk manager identifies, evaluates, maps, and ultimately acts on the results, the manager usually follows a typology, or „road map“. A typology of risk can be displayed as follows: ( ragni re, E., & Sullivan, G.,c2007).

**1 - A typology of risk**

****

**Source: Sullivan, G.,c2007**

As you see in this typology, the initial step is to identify all the strategic risks and the to break them down into financial and non-financial/operational risks. Strategic risk corresponds to every kind of uncertainty linked to the realization of objectives.

The financial risks are further subdivided into liquidity, market, and credit risks. Non-financial/operation risks are subdivided into fraud/legal, political,IT,natural perils, and ope-rations. Once these risks are dealt with properly, the final outcome and dexisions will have an effect on the company´s reputation and compliance risks.

These factors can apply to any business of any size, from a small retailer or service company to the largest companies. It is a wonderfully universal map for all business owners and ma-nagers to use ( ragni re, E., & Sullivan, G.,c2007).

**1.3 Risk attitude**

Risk attitude is defined as the chosen response or positioning of a person in relation to a refe-rence point. From here it is a simple step to define risk attitude, which describes the position we adopt in relation to a particular risky situation. It is common to speak about only a few specific risk attitudes, such as risk-averse, risk-seeking,risk-tolerant or risk-neutral. But in fact risk attitude exists on a continuous spectrum with an infinite number of possible positions. Faced with a given risky situation, a particular individual or group might exbibit a risk attitu-de anywhere on this spectrum. They might adopt a risk attitude explicitly or their position could be driven by habit, but i tis important to remember that a different risk attitude can always be chosen (Hillson, D., & Murray-Webster, R.,c2012).

**1.4 Risk management**

Risk management is a system for handling risks. It is the proces of undestanding and mana-ging risks that the entity is inevitably subject to in attempting to achieve its coporate objecti-ves. A more detailed definition says: Risk management as a port of the company management represents the totality of organizational measures and processes that aims at the identification, assessment, treatment, and monitoring of risks (Stoll M.,2016).

**1.5 Risk management process**

Here is a four-step process you can follow to manage your risk.

1) Assess the Risk

2) Categorize the Risk

3) Consider Your Options

4) Implement Your Strategy

**Assessing risk** is determining which, if any, are present. Risks stem from hazards and a ha-zard is anything which can cause harm. Leaving an open paint container in a place where a toddler can access it is a hazard. Leaving a loaded gun in a place where a child can get it is another.

The next step is to **categorize the risk.** A risk can be minor or severe. A risk can also be common or rare. The following exhibit illustrates these principals. Notice there are four quad-rants numbered one through four. The vertical axis measures the probability that the risk will occur and the horizontal axis measures the severity of the risk (Patton M.,2014).

**Obrázek 2 - Risk Management Decision Matrix**

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**Source: Patton M., 2014**

After determining the appropriate category for a risk, the next step is to select the proper method to address it. The following exhibit illustrates the four primary methods for dealing with risk. They can be remembered with the simple acronym: ATRR or AT Railroad. Can the risk be avoided? Can it be reduced? Can the risk be transferred? All remaining risks must be retained (Patton M.,2014).

**3 - Risk Management Techniques**

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**Source: Patton M., 2014**

Here's a brief description of each quadrant. Certain risks can be avoided. For example, if you never drive drunk or skydive or bungee jump, these risks pose no threat. Again, certain risks can be avoided. Next, can the risk be reduced? For example, if you eat right, get plenty of sleep, exercise, avoid unhealthy habits, etc., you may be able to reduce your chance of a pre-mature demise. We also realize that smoking causes lung cancer. Therefore, if we quit smo-king, we can reduce the chance of getting lung cancer. Quadrant three, transferring risk, in-volves strategies such as buying insurance or lowering our deductible. By paying a premium, we can transfer all or part of a risk to the insurance company. Finally, for those risks which cannot be avoided, reduced, or transferred, we have no option but to retain them. You should never spend a lot of money to manage a risk which has a minimal consequence. In fact, it may be best to ignore risks which fall into category one.

**Conclusion** -This is a basic framework for managing risks. As mentioned, risk management is not only for companies, but for individuals as well (Patton M.,2014).

**1.6 How to do a risk assessment**

Five steps to risk assessment can be followed to ensure that your risk assessment is carried out correctly, these five steps are:

1. Identify the hazards

2. Decide who might be harmed and how

3. Evaluate the risks and decide on control measures

4. Record your findings and implement them

5. Review your assessment and update if necessary (Rausand M.,c2011).

**Step 1: Identify the hazards**

In order to identify hazards you need to understand the difference between a ‘hazard’ and ‘risk’. A hazard is ‘something with the potential to cause harm’ and a risk is ‘the likelihood of that potential harm being realised’.

Hazards can be identified by using a number of different techniques such as walking round the workplace, or asking your employees.

**Step 2: Decide who might be harmed and how**

Once you have identified a number of hazards you need to understand who might be harmed and how, such as ‘people working in the warehouse’, or members of the public.

**Step 3: Evaluate the risks and decide on control measures**

After ‘identifying the hazards’ and ‘deciding who might be harmed and how’ you are then required to protect the people from harm. The hazards can either be removed completely or the risks controlled so that the injury is unlikely.

**Step 4: Record your findings**

Your findings should be written down it’s a legal requirement where there are 5 or more em-ployees; and by recording the findings it shows that you have identified the hazards, decided who could be harmed and how, and also shows how you plan to eliminate the risks and ha-zards.

**Step 5: Review your assessment and update as and when necessary**

You should never forget that few workplaces stay the same and as a result this risk assessment should be reviewed and updated when required (Burgon B., 2016)

**1.7 Quantitative and Qualitative Risk Analysis**

**Qualitative risk analysis** requires that the probability and consequences of the risk be evalua-ted using established qualitative-analysis methods and tools, describing them in terms such as very high, high, moderate, low, very low. These two dimensions of risk are applied to each specific risk event and the results may be plotted using a probability-impact matrix. It illustra-tes the simple multiplication of the scale values assigned to determine whether a risk is consi-dered low, moderate or high.,

Although qualitative risk analysis is broadly used, whether enough data are available, the risk assessment can be performed through a quantitative risk analysis. Main advantages of a **quan-titative approach** are:

 Determine the probability of achieving a specific project objective

 Quantify the risk exposure for the project, and determine the size of cost and schedule contingency that may be needed

 Identify risks requiring most attention by quantifying their relative contribution to pro-ject risk

 Identify realistic and achievable costs, schedule, or scope targets

The quantitative approach requires:

 the definition of the probabilistic value of each single risk factors occurrence

 the quantitative definition of the potential impact.

Quantitative assessment is particularly used to forecast potential project schedule and cost results listing the associated confidence level for each potential value of the considered value.

The result is to describe in terms of a probabilistic distribution the potential values of a given variable (impact areas). Whether more accurate data are not available a triangular distribution may be adopted, this requiring only the quantification of the minimum, most likely and ma-ximum value that the variable may take (Rossi P., 2007).

**1.8 Risk Management Strategies**

**1. Loss Controlling**

This is the most traditional form of risk management. It seeks to identify and mitigate the firm’s most significant risks. This includes activities such as safety programs that seek solely to reduce losses. One characteristic of these processes is that they often seek to get everyone involved. This type of risk strategy is favored by Conservator-led firms. It is particularly ap-propriate for managing risks that are acute and severe.

**2. Risk Accepting**

Many financial firms favor an approach to risk that focuses mainly on getting the price of risk correct. For banks, this can lead to complicated models of risk and reward. A Risk Accepting strategy is most often applied on a transaction-by-transaction or project-by-project basis. Non-financial companies will choose projects that will be highly profitable if they succeed. This type of risk strategy is favored by Maximizer-led firms. It works well for risks that are relati-vely benign (Underwood A., 2015).

**3. Risk Steering**

Under this approach, the major strategic decisions of the firm go through a rigorous planning process coupled with intense analysis. Risk decisions are based upon careful cost/benefit and risk/reward analyses. Perhaps this is why many think that risk steering is real enterprise risk management (ERM). Risk Steering ERM is highly favored by academics and consultants; Manager-led firms find it appealing, but companies that hold any of the other three risk attitu-des do not. This strategy is particularly appropriate for a highly complex portfolio of risks.

**4. Diversifying**

Spreading exposures among various classes of risks and avoiding large concentrations of ex-posure is another traditional form of risk management. Formal Diversifying programs will have targets to spread risk with maximums and minimums for various classes of risks. The newer ERM discipline adds the idea of interdependencies across classes, providing better quantification of the benefits of risk spreading. Pragmatists tend to favor Diversifying because it maximizes their tactical flexibility, but they avoid reliance on any particular risk mitigation process and often mistrust quantitative measurement of risk. Firms whose risks are highly uncertain often choose this strategy (Underwood A., 2015).

**References:**

* Banks, E. (2005). *Liquidity risk managing asset and funding risks*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
* Blacker Keith (2016). *People Risk Management* (1st ed.). London: Kogan Page.
* Dun & Bradstreet*(2007)Financial risk management*. (2007). New Delhi: Tata McGraw-Hill
* ed. for the International Epidemiological Association by Miquel Porta. (2014). *A dictionary of epidemiology* (Six edition). Oxford: Oxford University Press.
* Fiorenzani, S. (2006). *Quantitative methods for electricity trading and risk management advanced mathematical and statistical methods for energy finance: kwartalnik poświęcony historii i teorii muzyki oraz krytyce naukowej i artystycznej*. Basingstoke [England]: Palgrave Macmillan.
* M.A.H. Dempster. (2001). *Risk management: value at risk and beyond*. Cambridge: Cambridge University Press.
* Maurice D. Levi. (2005). *International finance* (4. ed.). London: Routledge.
* Stephen A. Ross, Randolph W. Westerfield, & Bradford D. Jordan. (2010). *Fundamentals of corporate finance* (9th ed., Standard ed.). Boston: McGraw-Hill Irwin.

**INTERNETOVÉ ZDROJE:**

* Risk Management Guide for Information Technology Systems [Online]. (2012). Retrieved March 05, 2018, from <https://csrc.nist.gov/publications/detail/sp/800-30/archive/2002-07-01>
* The 5 step approach to risk assessment [Online]. (2018). Retrieved March 05, 2018, from http://www.firstpracticemanagement.co.uk/blog/posts/the-5-step-approach-to-risk-assessment/
* Relative Risk and Absolute Risk: Definition and Examples [Online]. (2018). Retrieved March 06, 2018, from <http://www.statisticshowto.com/calculate-relative-risk>
* The Main Types of Business Risk [Online]. (2014). Retrieved March 06, 2018, from <https://business.tutsplus.com/tutorials/the-main-types-of-business-risk--cms-22693>
* Political Risk Analysis [Online]. (2017). Retrieved March 07, 2018, from http://sk.sagepub.com/Reference/intlpoliticalscience/n457.xml
* 20 Types of Business Risk [Online]. (2017). Retrieved March 06, 2018, from <https://simplicable.com/new/business-risk>
* Risk management approaches [Online]. (2017). Retrieved March 05, 2018, from [https://statswiki.unece.org/display/GORM/1.4+Risk+management+approaches](https://statswiki.unece.org/display/GORM/1.4%2BRisk%2Bmanagement%2Bapproaches)
* Types of risk [Online]. (2016). Retrieved March 06, 2018, from <http://kalyan-city.blogspot.cz/2012/01/types-of-risk-systematic-and.html#Systematic_risk>
* Investopedia [Online]. (2018). Retrieved March 06, 2018, from <https://www.investopedia.com>
* Market Risk [Online]. (2018). Retrieved March 06, 2018, from <http://www.investinganswers.com/financial-dictionary/investing/market-risk-2360>
* Market risk [Online]. (2018). Retrieved March 06, 2018, from <http://marketbusinessnews.com/financial-glossary/market-risk>
* Proportions, Odds, and Risk [Online]. (2017). Retrieved March 06, 2018, from <http://pubs.rsna.org/doi/10.1148/radiol.2301031028>
* Moneyterms [Online]. (2017). Retrieved March 06, 2018, from <https://moneyterms.co.uk>
* Inflation risk [Online]. (2018). Retrieved March 06, 2018, from [www.investinganswers.com/inflation-risk-974](http://www.investinganswers.com/inflation-risk-974)
* Economic Risk [Online]. (2018). Retrieved March 06, 2018, from <http://www.investinganswers.com/financial-dictionary/economics/economic-risk-2918>
* Compliance risk [Online]. (2017). Retrieved March 06, 2018, from <http://searchcompliance.techtarget.com/definition/compliance-risk>
* Strategic risk [Online]. (2017). Retrieved March 06, 2018, from <http://www.businessdictionary.com/definition/strategic-risk.html>
* Reputational risk [Online]. (2016). Retrieved March 06, 2018, from [http://content.time.com/time/magazine/article/0,9171,960693,00.html](http://content.time.com/time/magazine/article/0%2C9171%2C960693%2C00.html)
* Project Management Institute [Online]. (2017). Retrieved March 07, 2018, from <https://www.pmi.org>
* What is Country Risk? [Online]. (2016). Retrieved March 07, 2018, from <https://simplicable.com/new/country-risk>
* What is Quality Risk? [Online]. (2016). Retrieved March 07, 2018, from <https://simplicable.com/new/quality-risk>
* Credit Swap Valuation [Online]. (1999). Retrieved March 07, 2018, from <https://www.cfapubs.org/doi/abs/10.2469/faj.v55.n1.2243>
* People Risk [Online]. (2010). Retrieved March 07, 2018, from <https://www.willis.com/Subsites/NewZealand/documents/Publications/services/People%20Risk/Willis_People_Risk_Brochure_2010.pdf>

Aven, T. (2008). Safety is the antonym of risk for some perspectives of risk. *Safety Science*, 925-930.

Aven, T. (2012). *Science Direct.* Načteno z Science Direct: https://ac.els-cdn.com/S0951832011002584/1-s2.0-S0951832011002584-main.pdf?\_tid=fc884fee-83fe-425d-89b3-5aa37e024993&acdnat=1523473572\_356d45aafa10367d3c5496fb61c0fc5d

Barwise, M. (2014). What is Risk? *ITNOW*, 28-29. doi:10.1093/itnow/bwu043

Chapman, R. (2011). *Simple Tools and Techniques for Enterprise Risk Management.* DOI: 10.1002/9781118467206.

Lam, J. (2003). *Ten Predictions for Risk Management.* Načteno z Enterprise-wide Risk Management: http://rmtf.soa.org/rma\_ten\_predictions.pdf

Raczkowski, P., & Tworek, K. (2016). *Risk Management in Public Administration.* doi:10.1007/978-3-319-30877-7\_1

Beasley, S., Clune, R., Hermanson, D. (2005). Enterprise risk management: An empirical analysis of factors associated with the extent of implementation. *Journal of Accounting and Public Policy*, 521-531. doi: 10.1016/j.jaccpubpol.2005.10.001.

* Fraser, S., Simkins, B. (2010). Chapter 1. *Enterprise Risk Management: An Introduction and Overview.*doi: 10.1002/9781118267080.ch1

1. Burgon, B.(2016). *The five Step Guide to Risk Assessment.* Dostupné z: htt-ps://rospaworkplacesafety.com/2013/01/21/what-is-a-risk-assessment/

2. ragni re, E., & Sullivan, G. (c2007). *Risk management: safeguarding company as-sets*. Dostupné z: htt-ps://books.google.cz/books?id=\_wBNqvvcavQC&printsec=frontcover&dq=Risk+management:+safeguarding+company+assets.&hl=en&sa=X&ved=0ahUKEwj-i8nC1azZAhXKZlAKHa5GBl8Q6AEIJzAA#v=onepage&q=Risk%20management%3A%20safeguarding%20company%20assets.&f=false

3. Hillson, D., & Murray-Webster, R. (c2012). *A short guide to risk appetite: safeguar-ding company assets.* Dostupné z: htt-ps://books.google.cz/books?id=zbzXCQAAQBAJ&pg=PA97&dq=Hillson,+D.,+%26+Murray-Webster,+R&hl=en&sa=X&ved=0ahUKEwiY9I-71KzZAhUCjqQKHRoUDQ8Q6AEINDAC#v=onepage&q=Hillson%2C%20D.%2C%20%26%20Murray-Webster%2C%20R&f=false

4. Patton, M. (2014). *Everyone needs risk management.* Dostupné z: htt-ps://www.forbes.com/sites/mikepatton/2014/11/30/everyone-needs-risk-management/#1ad54802729f

5. Rausand, M. (c2011). *Risk assessment: theory, methods, and applications*. Dostupné z: htt-ps://books.google.cz/books?id=9EHeLmbUVh8C&printsec=frontcover&dq=risk+assess-ment&hl=en&sa=X&ved=0ahUKEwi\_me34gKrZAhXBKlAKHf7RDigQ6AEIJzAA#v=onepage&q=risk%20assessment&f=false

*6.* Rossi, P. (2007). *How to link the qualitative and the quantitative risk assessment.* Do-stupné z: https://rospaworkplacesafety.com/2013/01/21/what-is-a-risk-assessment/

7. Stoll, M. (2016). *Risk management and management control systems. Similitaries and differences.* Dostupné z:

*8.* Underwood A. (2015). *How Do You See Risk – Risk management Is All About Your Perception.* Dostupné z: http://www.rmmagazine.com/2013/06/24/how-do-you-see-risk-risk-management-is-all-about-your-perception/