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The Business risk: internal strategies and external management through insurance contracts

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Introduction

"If you don't risk anything, you risk everything" (Mark Zuckerberg)

I want to start this thesis with this quote given by one of the most influential entrepreneurs of the last decade because, in my opinion, it gives the best representation of two important aspects.

First, it reminds us that in our life, but also in the life-cycle of a firm, there are many risks that have to be faced to improve the performances. All these risks, even if they seem hard to tackle, represent the steps that allow one to become successful.

The second reason for choosing this quote is that it underlines an important characteristic of risk. As we will see in this thesis, risks do not always imply negative consequences: there's a part of risk that implies a negative outcome, which require the implementation of coping strategies, but there's also a part of risk that represents an opportunity for the firms, if they are able to manage it properly. For this reason, the decision to transfer risks or face risks could be itself a strategic decision.

This approach to risk management unfortunately has been ignored by the companies for many years, but in the last years has come to the attention of the entrepreneurs, that started to pay attention to this matter.

The aim of this thesis is to give a complete overview about what risk is, focusing in particular on the risks affecting a business, and to analyse which are the best tools that a company can use in order to manage risks.

In the first chapter we aim to define what risk is, and we will try to sum up those definitions that seem to be the best for our case. In fact, as we will see, there is not a single definition of risk, and even between the sub-categories of risk there is a large debate and so there are different opinions and classifications. Once we defined the business risk, we will provide a classification of risks and we will see more in details their aspects.

This first chapter is necessary to understand and develop the following topic, that will concern the strategies of risk management. In particular we will see the internal

strategies and the external instruments that can be used to face the risks we analysed in the first chapter.

In the third chapter we will focus on the most used risk management strategy in the actual contest: the Enterprise Risk Management (ERM). We will provide the evolution of the model, analysing its qualities and limits and we will discuss about the phases that characterize the process. After this, we will provide the frameworks given by the two main standard setters form the ERM: the COSO framework and the ISO 31000 standards.

In the fourth chapter we will discuss about the Insurance Management, and the insurance contracts that can be useful in order to transfer part of the business risks. For the redaction of this chapter, we will use in particular the knowledges achieved during the internship sustained by SMB Scala & Mansutti Broker, jointly with the websites of some insurance companies, the Italian Civil Code and other institutional sources.

The fifth chapter will provide an analysis about the theme of risk management. In particular we will do a comparison between the macroeconomic scenario, using the FERMA reports about the risk management in Europe, and the Italian scenario, providing the results of the CINEAS surveys. This will help us to understand how the firms implement the ERM in their organisation and which are the most important risks that the companies faced between 2016 and 2020.

Our last analysis will be conducted in the sixth chapter, where the focus will be on the Covid-19 pandemic. In particular we will see how the global pandemic affected the perception of the risks inside the companies and we will also bring evidence of the different impact that the virus had on businesses, depending on their production and organisation.

Chapter 1

THE ENTERPRISE *RISK*

Due to the problems that have affected the markets since 2000, companies and firms have gradually developed a growing interest about the topic of risk. In particular, companies understood the importance of risk management as a tool to mitigate the damages that the risky event would bring with it upon its occurrence. For this reason, they started to concentrate on the elaboration of forecasts and ex-ante analysis. This sensitivity to the issue of risk led to the development, over the years, of various models and processes, which have defined basic rules for risk management, encouraging also the development of internal units specialized in this practice.

The main goal of this first chapter is to identify a modern and complete definition of risk. In order to do that, we will elaborate an historical and literary excursus, trying to emphasize the evolution that the term has taken over the course of history. Once this terminology research has been carried out, it will be easier to understand the subsequent analysis of the particular aspects of risk and the analysis of the risks that a company should take into account during the course of its activity. These analyses will be used in the next chapters to assess current different risk management policies.

1.1 Definition of risk

The main problem we face when trying to provide a unique definition of risk is that there is a wide range of risks and this inevitably implies that a single definition would consider certain aspects, but on the other hand would exclude others.

In an attempt to implement a sort of filter, in this elaborate the focus will be only on the business risks, which include all those risks that could hinder the company in the achievement of its goals and its mission[1]. Although this risk class is well defined, it is composed of several elements, and therefore even in this case it is not possible to identify a clear and univocal definition.

[1] The mission indicates the macro-goal and therefore the reason why companies carry out their business.

In the beginning, the concept of corporate risk was completely detached from management, and indeed was considered as an independent phenomenon.

This school of thought is attributable to neoclassical finance, which assumed the existence of perfect and complete markets[2] and that risk is an element managed exclusively by the investor through the process of portfolio diversification, not contemplating the figure of the entrepreneur. History then taught us how much markets are imperfect and incomplete. This led to a change of mentality even in financial theories, which began to consider the topic of risk management, introducing in succession the concept of Risk Management and Enterprise Risk Management (ERM).

In order to find the best definition of corporate risk, we have to start by stating the distinction between uncertainty and risk. In particular, we believe it is necessary to start with the theories of Frank Knight, American economist. From his point of view, uncertainty is composed by a non-measurable part and a measurable part, which coincides with risk. With regard to the risk, Knight said that it is evident in the case of repeatable events and therefore possibly subject to statistical estimates (KNIGHT, F. (1921), *"Risk, uncertainty, and profit"*, Signalman Publishing). To summarize, Knight gives risk two key connotations: objectivity and measurability. Finally, although he is one of the proponents of the separation of risk and uncertainty, he believes that in the measurable component these are the same thing.

A different point of view is provided by David Stark, an American professor of economic sociology at Columbia University, who defines risk as *"the distribution of outcomes that can be expressed in some probabilistic terms"*(STARK, D. (2009*), "The sense of dissonance: accounts of worth in economic life"*, Princeton University). As opposed to this, uncertainty can be considered as any event that may occur but that can't be expressed in probabilistic terms. It is a completely random factor.

[2] Complete market: it is a market in which you can buy both the portfolio already defined in the market, and the individual securities that compose it, as the market balance is still guaranteed by perfect competition.
Perfect market: it is a tax-free market, without transaction costs and regulatory constraints, where players cannot influence prices because they behave perfectly rationally and where information is instantly received as there is information efficiency.

These two definitions, although relevant, express concepts that tend more to philosophy than to economics. So, let's move on to a collection of risk definitions that can be considered in a more economic context. The first definition is the one proposed by Michel Crouhy, whose thought is as follows:

"The risk is the volatility of returns leading to unexpected losses, with higher volatility indicating higher risk. The volatility of returns is directly or indirectly influenced by numerous variables […] and by the interaction between them" (CROUHY M., GALAI D., MARK R. (2006), *"The essentials of risk management"*, McGraw-Hill)

Doherty adds an additional element, explaining that the reason for the risk existence lies in the irrationality and inability of the human being to predict the future perfectly. He states the following:

"Risk refers to the variation in the range of possible outcomes: the greater the potential variation, the greater the risk. […] Risk is implied by our inability to predict future." (DOHERTY N.A., *"Integrated risk management: techniques and strategies for managing corporate risk"*,McGraw-Hill, 2000).

To conclude we report the thought of DeLoach and Segal, which introduce the concept of positive and negative risks, meaning that some risks cause a decrease in the performances of the firm, but there are also some risks that bring a boost in the performances.

In particular, Segal argues that, when it comes to risk, the following three aspects should be considered: (SEGAL, S. (2011*), "Corporate Value of Enterprise Risk Management"*, Wiley)

- Risk is uncertainty. The risk is present in any situation where you don't have 100% certainty that an event can happen as expected.
- Risk includes upside volatility. The risk consists of an up-side part, which identifies the positive aspect, and a downside part, which identifies the negative aspect. It is precisely from this concept that the dual impact that can be generated by a risk comes from. In this regard, Segal states*: "A single event*

that is downside risk event for one business might be an upside risk event for a second business segment."

- Risk is deviation from expected. Risk tends to be seen as a possible loss as it expresses itself as the differential between the expected results and those actually achieved but in reality, the risk expresses the deviation from expectations both in a positive (gain) and in a negative sense (loss).

In these first pages we reported the thoughts of some exponents regarding the topic of risk, since it is impossible to give a unique definition of the term. However, putting together all the mentioned definitions we are able to give a definition that seems quite complete to us.

The risk can be considered as the positive or negative change of a future result due to events that prevent the achievement of previously imposed goals. The risky event is normally predictable but uncertain about its manifestation and its impact.

As already mentioned, the risk has two faces, the upside risk and the downside risk, and for this reason it deserves special attention in its management, in order to be able to take advantage of the positive opportunities. Given this distinction, the firms have to set a tolerability level, that represents the limit of risk that the organisation is willing to retain. Normally, firms do not transfer the down-side component completely, but just a part of it, retaining the up-side risk and a part of the down-side risk. The remaining part of down-side risk is transferred trough different techniques that we will discuss later.

1.2 The different typologies of risk

As already mentioned in this chapter, there is not a single definition of risk and therefore, there is not even a single classification of risks. In this paragraph, with the help of studies carried out by famous experts we're going to define a business risk classification that's as comprehensive as possible.

Figure 1: Business risk classification

Source: Chapman, R. J. (2006), "Simple tools and techniques for enterprise risk management", John Wiley and Sons, Chippenham, Wiltshire; Conti, C. (1996), "L'esposizione dell'impresa ai rischi finanziari", Egea, Milano; Crouhy, M., D. Galai, R. Mark (2006); Del Pozzo, A. (2009), "Controllo finanziario e rischio di default", Franco Angeli, Milano; Dowd, K. (1998), "Beyond value at risk. The New Science of Risk Management", John Wiley and Sons, Chichester; Prandi, P. (2010), "Il risk management. Teoria e pratica nel rispetto della normativa", Franco Angeli, Milano.

How can you tell from the Figure, it is possible to split the risk that affect an enterprise into four categories: operational risk, financial risk, strategic risk, and compliance risk.

1.2.1 The operational risk

In the literature, there are multiple definitions of operational risk, but perhaps the most complete is given directly from the Basel Committee, which defines the operational risk as follows:

"Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events". (BASEL COMMITTEE ON BANKING SUPERVISION (2004), "*International Convergence of Capital Measurement and Capital Standards. A Revised Framework"*, Bank for International Settlements, Basel, Switzerland.)

From the previous definition, it is clear that this risk class includes subcategories of risks within it, but these are attributable to a single case: the erroneous use of company resources, whether they are related to personnel, physical resources or any other form of resources.

In other words, we can talk about operational risk for all those endogenous or exogenous events, which affect the company in terms of efficiency and effectiveness.

Once we have done this introduction, let's start our analysis of which are the operational risks of the company. To avoid a simple and long list of risks, we will use the Chapman model (2006), which brings together operational risks into four macro-classes:

- Operational risks related to the strategy;
- Operational risks related to the people;
- Operational risks related to processes and systems;
- Operational risks related to external events.

Operational risks related to the Strategy.

When we talk about operational risk related to the strategy, we talk about risks that the company is undergoing when setting up and implementing a business strategy. In particular, we mean all those events, which lead to errors or that, more generically, undermine the pursuit of objectives, causing a mismatch between the achieved goals and the standard that have been set.

Among the examples that we can include in this category, we put all those risks that relate to the definition of business objectives, the drafting of the business plan, the use of company resources, the relationship with stakeholders, the expansion to new business units (CHAPMAN, 2006) and more generically all those risks that affect the sphere of business strategies. (PRANDI,2010)

Operational risks related to People.

Operational risks related to people are all those risks that are associated with the management of human resources, and therefore all those risks related to the rights and obligations of workers, as their compensation, their skills, and the safety of the workplace. Unfortunately, as we will see in the following chapters, this type of risk is often underestimated by companies, but it should be an essential element to consider.

To better understand the importance of a proper analysis of this risk, consider the impact that a staff management would have on the whole company, for example with the use of unskilled workers, with insufficient knowledge or inexperience. In the same

way, a plant with poor maintenance and poor or no hygiene or safety standards can be extremely risky. If a company decides not to pay enough attention to these issues, it will run significant risks from an economic point of view, but in some cases, even criminal.

Risks related to processes and systems.

The operational risk linked to processes and systems relates to the failure of a process due to greater complexity than expectations or due to the inability to manage properly that process or system.

The risks are therefore generated by the processes and systems used by the company for the production, control and support phases. In few words, the risks arise from a failure to comply with procedures and operative rules of systems and processes. In this case, the consequences can be an inefficient production, or even the failure in the launch of a product, customer dissatisfaction and then a number of risks associated with information processing. For example, if a company does not enter the information correctly into its system, it will run enormous risks, as the information in question will be non-existent or will be transmitted incorrectly, affecting other business activities as well.

Take, for example, the case of a company that manufactures and distributes a particular good. If a customer's address information is entered incorrectly or is missing, it will affect the company-customer relationship, with a substantial drop in the trust that the customer will place in the company.

An even worse scenario could be that of a misspecification and communication of the rules related to the production of a good. Think of the same company as the previous example. A standard of conduct with a slight margin of discretion regarding a process or the use of a production machine could cause incalculable damage to production, leading to a stop in the production or to a defective product, which can also damage employees during the production, or the final consumer.

It is therefore easy to understand the importance of proper planning and control over business processes and systems.

Risks related to external events.

Finally, let's look at the last class of risks, that of external events that can in some way endanger the enterprise. One of the biggest operational risks in this category is competition. In fact, it can seriously hinder the development of a company, putting it in a state of difficulty that leads management to reflect on the corporate organisation chart.

1.2.2 The Financial Risk

Let’s now move on to the second macro-area of risks, namely the one related to financial risks. Always based on Chapman's definitions, we can define financial risk as:

“the exposure to adverse events that erode profitability and in extreme cases bring about business to collapse”. (CHAPMAN, 2006)

This category of risk considers both endogenous and external factors, and in particular we will discuss about five components:

- Liquidity risk;
- Credit risk;
- Interest rate risk;
- Exchange rate risk;
- Price risk.

The Chapman model considers just the liquidity risk and the credit risk, which are endogenous, as part of the financial risks, while the other three external components are considered as part of the market risks. However, for our analysis we don’t need to do this distinction and we consider financial risk every risk that affects the financial stability of the firm.

Liquidity risk.

Liquidity risk identifies the risk that the company will not be able to meet its maturities and will be therefore obliged to sell and often write down its assets or increase its debt to meet these payments.

The basic principle for a proper balance between assets and liabilities in a company is that the financing of short-term assets has to be carried out through short-term financial instruments. Similarly, the use of medium-term financial resources has to be preferred for the financing of assets whose incomes will occur in the medium term. Violation of this principle can cause problems for the company, as it may find itself in a situation where it cannot cope with its debts and duties, falling into a liquidity problem.

However, it is also important to point out that a liquidity problem can arise for multiple reasons and not just for an imbalance in the ratio of assets to liabilities. Consider, for example, late payments or uncashed-up credits, both of which are very common in today's context. It is therefore vitally important that companies, during the phase of allocating funds to various activities, take a liquidity margin into account in order to meet any future and unforeseen financial needs. (PRANDI 2010)

Credit risk

A necessary foreword that has to be made before addressing this issue is that with the expression “credit risk” one can mean the Risk of a Counterparty (or credit risk), but also the Country Risk, which arises when the competent authorities of a given State temporarily or permanently block its business relations with another country.

With this in mind, we continue to treat credit risk as a counterparty risk. When we talk about credit risk, we mean the risk of a loss resulting from the debtor's non-compliance with the contractual obligations that he has towards the creditor.

As the British economist Kevin Dowd said, when we talk about credit risk, we need to consider three key aspects:

- Probability of default, i.e. the probability that the other party will not meet its debt.
- Recovery rate, an indicator of the recovery rate that the creditor will be able to obtain in the event of a default.
- Credit exposure, i.e. the loss to be incurred in case the counterparty goes into default.

(DOWD, 1998)

Choosing a bad and not creditworthy customer base is very risky, as the credit risk that may arise could soon turn into a liquidity problem, and subsequently lead to the company's bankruptcy.

With regard to the choice of customers, looking at the three elements mentioned just now, the principle is that a company should not grant credits to persons with a certain probability of default. Of course, this principle clashes with the business reality, because a company, many times in its lifetime, will find itself in the situation of granting credits on the basis of medium to long-term strategic decisions that clash with the principles of economic value that we have seen just now.

This reasoning brings to light another fundamental principle for a company: stated the importance of monitoring and owning a good credit portfolio, for medium- to long-term operations it is essential to identify the best short-term hedging strategies.

Interest rate risk

First of all, it’s important to specify that the risk on interest rates is a speculative risk, and therefore, it can generate losses, but also of the extra gains for the company. Looking at the negative component of this risk, we can say that the interest rate risk is the possibility that a change in interest rates will generate higher financial costs for the company, impacting in a negative way on the profitability and value of the enterprise.

Interest rate risk is mainly concentrated in two phases of the business, in the financing and investment phases.

For these two phases, the company has two options: the use of fixed rates and the use of variable rates. If the company decides to finance itself at the variable rate, it may over time see an increase or decrease in the financial burden on it depending on the fluctuations in the market. On the other hand, if the company opted for a fixed rate, the gain would be made if, at a certain date, the variable rate on the market is higher than the fixed rate that the company has committed to pay. This same reasoning, but speculative, also applies to the variable and fixed rate investment phase.

Of course, there is no better or safer choice. Each company will have to analyse its economic, capital and financial situation, as well as that of the market and the

economy as a whole. Finally, companies should consider the overall impact of the operations they have in mind, and not the impact of individual operations.

Ultimately, it must be said that the trend of interest rates directly influences also the value of the company. Please note that in the Capital Asset Pricing Model (CAPM), assets and liabilities are discounted at a rate that also depends on the rates on the market, and for this reason, the fluctuations of these interest rates, affect directly the value of the company.

Exchange risk

In this case, the potential losses result from a negative change in foreign exchange that influences any open position of the company in foreign currency. Of course, an unfavourable change in exchange rates is perfectly normal and the company cannot rotate its business choices around exchange rates alone. Let us therefore say that exchange rates, although they are not one of the main leverages on which the company relies, can be a useful tool to earn or at least not to lose.

Price risk

Price (or market) risk implies an increase in financial burdens due to a change in the price of raw materials. This inevitably leads to lower business value.

We can say that the companies that are most at risk are companies that work closely with these commodities. However, market risk somehow affects all companies, as a change in commodity prices triggers a number of consequences across the production chain, leading to a higher final product cost.

This risk is difficult to address because the commodity market is influenced by multiple factors that are difficult to manage. Therefore, the most adopted strategy is to intervene ex post.

1.2.3 The Strategic risk

The strategic risk is a macro-area that contains all those risks that affect the firm in its strategic positioning. It's a macro-area that has to be carefully analysed by the firm in order to gain a better position with respect to competitors. When we talk about strategic risk, we can refer to many risks, but in this case, we will focus on the ones

related to the market, to the reputation and to technologies. The reputational and the market risk are strictly connected, since an error in one of them can imply an error also in the other. The firm during its life has to maintain a good reputation among its clients and to do so, it has to take track of the needs of the Demand and update its product in order to satisfy those needs and to gain a competitive advantage with respect to the competitors. In addition to this, the reputational risk is also influenced a lot by internal scandals that can imply lower sales and potentially significant losses. A practical example of the importance of strategic risks is the Diesel Scandal (2015) that cost to Volkswagen over than $18 billion and that implied a loss of $6 billion for the 2015. An important aspect that is becoming crucial in the actual scenario is the technology. Technology is important for every aspect of a firm, but in particular for the strategic one, since in many occasions allows the firm to gain a competitive advantage. Technological risk is one of the most important business risks and concerns the possibility of technological overpassing of the company by its competitors. In fact, it can happen, especially in a medium-to-long-term design, that competitors can enter in the market with better technology that reduces production time or costs. Another case of technological risk is the inability to grasp an innovation, or the company's willingness of not innovating as it considers itself perfectly profitable.

Technology in the current context takes on a fundamental significance as it intervenes more and more decisively in the design and development phase of production. Technology and Information and Communication Technology (ICT) are therefore now two key factors for the survival of most companies. Continuous ambition for development and innovation is becoming the beacon to be followed to impose itself overwhelmingly on a market, even if, on the other hand, it makes the competitive environment very chaotic. In fact, innovation generates innovation, and the more technological grades of a company grow, the more it prepares for other innovations.

In a context like the current one, only those who can adapt and anticipate technological developments, making the right choices, can survive.

1.2.4 The Compliance risk

The last aspect that we face discussing about business risk is the compliance risk. The compliance is a topic that worries a lot of businesses, even if in the last years the focus has been moved to risks which are more related to the enviroment and technology. The macro-area of compliance is composed by many laws and standards that the company must meet. Some examples of rules and standards are the following:

- National and international law
- Product standards
- Workplace rules and standards
- Enviromental standards

Chapter 2

RISK MANAGEMENT STRATEGIES

In the first chapter, we framed the concept of risk and analysed its characteristics. Now let's move on to an analysis of the strategic operations put in place by the Chief Risk Officer or anyone involved in risk management within the company.

An important premise to make is that risk management is tailor-made, therefore it's a non-standardized activity, and that varies from company to company, but also from moment to moment. In addition, it is an activity that requires a high rate of adaptation as sometimes to be implemented requires tricks and changes within the company.

Despite this low degree of standardization, there are more frequent management policies within companies, and we will discuss them soon. These policies will then be deepened in the third and fourth chapter with insights into the risk management system and insurance support.

We will therefore first look at internal management strategies, which involve a simple change in the rules or in the procedures, and then we will deal with external risk management strategies that involve the figure of a third party in the process.

Let's start by identifying possible risk management strategies. To do this, we rely on the studies of Crouhy, Galai and Mark, which identify four possible strategies for risk management:

- Do not carry out any activity. In this way the company avoids the risk associated with them;
- Transfer risk to third parties through insurance, coverage or outsourcing;
- Exploit preventive controls to mitigate risk;
- To bear the risk understanding that it could create value for shareholders.

(CROUHY et al., 2006)

Obviously the first situation is not optimal, as it can mean the loss of excellent opportunities for the company. By adopting this technique, in fact, the company renounces all forms of investment because of the risks that this entails. It is the

position generally taken by a risk-averse person. The second option, that of risk transfer, is valid but obviously involves costs, involving third parties. The third alternative is to prevent risks through internal management of the company, while the last option, opposite the first, is the position taken by a risk lover, as he considers only the up-side risk, that is, the positive aspect of the risk, and therefore is willing to make a risky choice in order to try to achieve a return.

Starting from the fundamental assumption that the company has no convenience to manage all the risk, but only the share exceeding the tolerability threshold, the best strategy turns out to be a mix between the last three options, especially considering risk transfer and prevention. The risk lover position should be evaluated with caution, while the risk-averse position does not solve the problem as it leads to the failure of the company. Of course, every strategy also has problems, so we must also give the right weight to the consequences that the choice can entail.

In addition to these strategies and considering the degree of risk to which the company is subjected in certain situations, it may be useful to create an internal function specialised in the identification, control and management of risks. This business function, being so specialised in this issue, will develop over time and get more and more information and skills, becoming fundamental for the company as a whole. This would not happen if the risk management activities within the individual units were set up, as they would be auxiliary activities to the main ones and therefore less transversal and with a lower knowledge base. (JORION P., *"Value at risk: the new benchmark for managing financial risk"*, McGraw Hill, 2007)

Ultimately, this risk management activity also protects all stakeholders in the company, as it goes to control supplies, employees' work and thus ensures customer satisfaction. (DOWD,1998)

2.1 Internal management strategies

In this chapter we will look at the various internal risk management policies. To do this, we will study the individual risks.

Let's start with the operational one, which, as mentioned above, stems from inefficiencies and inadequacy of processes. There are various solutions to prevent this risk, which are then obviously adapted to the company under consideration, the type of problem and so on. The standard tools that firms use for this risk are:

- Loss reduction;
- Loss prevention;
- Exposure avoiding.

Loss reduction is achieved through mitigation of costs resulting from inefficiencies or errors in the performance of the business. Therefore, in order to make the production process more efficient, it is essential that these costs are identified and communicated.

The second strategy is to prevent losses, but it is not a simple strategy to implement, as it requires careful planning, as well as a suitable production structure, with machinery and processes that limit costs and waste.

Let's now move on to the last strategy that can be used to deal with operational risk internally: avoid exposure. According to Jorion, it can be considered as the loss prevention activity, but considered in an extreme way, as it suggests the total exclusion of activity if it can generate losses. (JORION, 2007)

As the operational derives from business inefficiencies, the first step to be put in place for internal risk management, is the development of productive efficiency, which consists in the research, identification and communication of all those elements that lead to a higher cost to the company than the standards imposed in the planning and budget phase. The budget phase covers a key role, as it defines how resources will be found and how they will be used, thus carrying out a risk prevention activity in addition to a planning of activities.

The product design phase can also be useful in preventing risks by setting quality standards for raw materials, defining procedures and the production process in a way

that limits costs, imposing controls on product quality and so on. If this phase is developed in the correct way, ex-post intervention will be avoided, which will inevitably be more onerous and potentially not enough to solve the problem.

For an ex-post assessment of possible deviations, it is important to involve the company as a whole, in order to carry out an assessment and define the best strategy to remedy to any problem.

At this stage we can see the importance of some of the factors that we have outlined in the first chapter of this process. In particular, good communication between the various units and the selection of qualified and professional staff are essential, as they will provide opinions and suggestions on the improvement of production. If this procedure is done correctly, it helps to prevent risks and reduce the costs and impact that any problems could cause.

Another aspect to be considered very carefully is the definition of a good corporate culture, which allows each member of the company to know and remember which are the rules and values within the company. A good corporate culture provides greater cohesion, greater precision, and therefore reduces inefficiencies, mistakes, and opportunistic behaviours that can cause problems for the company.

Let us now turn to the problem of costs, and their structure. In this context, each company operates differently, and there is no one-of-a-kind solution to problems of this type. A company with high variable costs will inevitably be concerned about the price, while a company with high fixed costs will pay more attention to the quantity of goods produced. In the latter case, one possible solution is outsourcing, which mainly reduces internal fixed costs by turning them into variable costs. In addition to this the outsourcing process avoids technological risks, thanks to the establishment of synergies within the supply chain. On the other hand, the outsourcing has several risks, and in order to be efficient it requires good supply chain management.

Coming to the relationship with third parties, it is important to remember that maintaining a business relationship involves a cost for the company, especially in the case of specific and ad hoc supplies for the company. The tailor-made supply is a constraint for the company, which is not always able to find another vendor capable of

performing such a custom service. In these cases, therefore, it is necessary to carefully consider whether the benefits of an ad hoc supply are greater than the constraints that result from it and the risks that the increase in the supplier's bargaining power entails. (VOLPATO, G. (2006), *"Economia e gestione delle imprese: fondamenti e applicazioni"*, Carocci)

Let's now move on to the risk generated by inventory management. This activity, in fact, involves many costs, ranging from storage to obsolescence, which of course have to be added to the cost of buying for raw materials. The existence of these costs means that inventories can generate risks, which is why they are treated by risk management. The risk can be limited through a warehouse management that can operate in two ways, management based on stock and management based on need. Stock management has a medium-term approach, as the company sets a minimum inventory limit to be held and makes orders at fixed quantities or at fixed periods. In fixed quantity reordering, the company must determine the minimum stock for the production of a given period. Whereas in fixed period reordering, a fixed inventory level is defined, and at the end of each period is placed a supplementary order that re-establishes this level. The inventory model therefore allows you to give continuity and planning to your production process. Demand management, on the other hand, works through orders of goods based on demand, in order to limit inventory costs and to have zero inventory. To achieve these objectives, there are two ways, management at planned needs and management at actual needs. In the first case, the order is based on the quantities required for production, while the management at effective need (which is part of lean production) consists of placing orders only when it is needed. In both cases, while the company can save on warehouse costs, a whole range of risks related to the relationship with suppliers emerge. One of the basic requirements, in fact, is to have a strong relationship with suppliers to avoid the risk of a stock break, that is an interruption in the production process due to the lack of raw materials.

The decision on the policy to implement is not simple, and it's up to the company to choose the most suitable one based on its relationship with suppliers and on the characteristics of the production process.
The choice of the best management policy is left to the company, which will have to

assess the characteristics of the relationships with suppliers and the production process.

It should not be forgotten that according to Emanuele Facile, there are two additional strategies that the company can use:

- create speculative inventory, i.e. by running inventory management that minimizes costs and/or maximizes the selling price. Since in this case the key element is the price and not the relationship, companies often change suppliers in order to find those with a better price.
- the definition of agreements, typically maturing in the short to medium term, by which a price with customers and/or suppliers is defined. In this case, the protection of the relationship is more important and therefore there is a need to create it stable and sound. In this regard, clauses are often inserted in favour of the buyer to protect it. (FACILE, E. (1996), *"La gestione dei rischi finanziari nell'azienda industriale: controllo e gestione strategica dei rischi di cambio, di interesse e di materie prime: valenza competitiva, tecniche di gestione e misurazione dei risultati"*, Il Sole 24 Ore Libri)

The two strategies are particularly reliable when combined with the use of derivatives. The use of derivatives only can generate the so-called basis risk, that is, the difference between the hedging price and the purchase or sale price found on the market. The difference between these prices stems from the fact that the price of derivatives is defined by derivative market parameters, which are different from those that affect the physical market. To remedy this discrepancy, companies adopt a mixed system by agreeing a price with the supplier and at the same time signing a future for the excess part. (PRANDI, 2010)

It is important to note that the operational hedging can be used as a cover tool even for the operational risk (SHI, D. (2004), *"A Review of Enterprise Supply Chain Risk Management"*, Journal of Systems Science and Systems Engineering, Vol. 13, No. 2, June). This tool is based on a transformation of risk through a change in company policies and strategies, and not through the use of financial instruments, as in the mechanisms analysed so far.

To sum up, we can say that one of the best methods to manage operational risk is to increase or at least ensure efficiency. This can be achieved through a reduction of waste, a clear definition of rules and the division of responsibilities.

Since here we analysed operational risk, but now we move on to the analysis of the internal tools that can be used to manage liquidity and credit risk. These two risks are managed jointly since the basis of both risks is the definition of a correct monetary cycle, that is, the planning of the periods in which monetary receipts and expenditures will be made. Monetary balance is crucial, as many companies make the mistake of granting too many payment deferrals and then find themselves in a state of scarcity of resources generated by current management, finding difficulties to pay their suppliers.

In order to overcome this problem, companies must try to bargain between the various deferrals they have granted in order to remain as quickly as possible exposed to this situation. It should be noted that the maturities between debts and receivables vary a lot, in fact, companies usually pay off debts first and then collect credits. This aspect, however, varies depending on the type of activity: in fact, if we take for example an industrial company, it will never be able to cash in before paying its debts, and therefore will have a strategy in the deferrals totally different from that of a large-scale company, which normally collects before paying its suppliers.

To sum up, for the proper management of the monetary cycle, it is crucial to find a balance between the deferrals granted and those obtained, in order to limit the company's exposure as much as possible.

A further aspect that needs to be considered with regard to liquidity risk is the balance between investment and financing maturities.

As already mentioned, the basic rule states that short-term investments have to be made with short-term financing, while medium- to long-term investments have to be financed with similarly maturing loans. Let us, for example, suppose a long-term investment by financing it in the short term. This generates a mismatch in the maturities between investment and financing. The company may not only run into a liquidity problem but may find itself periodically incurring extra costs related to the

new credit lines it will have to open until long-term gains mature. In the opposite case, i.e. a short-term investment with long-term financing, the additional costs will come from the burden of the mortgage, which will be particularly high as the long-term maturity. All this will obviously prevent the development of other financing as the company will have already consumed part of its credit availability.

The imposition of a proper monetary cycle is also important with regard to credit risk, as the greater the deferrals granted, the greater the risk of not collecting that credit at maturity. Therefore, for good credit risk management, the company will have to carry out an analysis of the relationships it owns, giving each customer a rating. After this, the decision about giving a payment deferral will be conducted basing on this rating. This task is the responsibility of credit risk management, a function that establishes rules and procedures for deferrals, and which intervenes directly in the case of large credits. (LAM, J. (2003), *"Enterprise Risk Management: from incentives to controls"*, Wiley)

Another technique for reducing credit risk is that suggested by Dowd (1998), which is the compensation technique, where, instead of keeping two open positions, one on credit and one on debt, it is much cheaper to maintain one which is the result of the two individual compensations. Let's say company X owes company Y a debt of 15,000 euros, and at the same time Company Y owes company X a debt of 10,000 dollars. According to the principle of compensation, to reduce some of the risk of insolvency, these two positions can be summarized in a single position where Company X holds a debt of 5,000 euros to Company Y. In this way, Company Y recovers part of the credit through the non-payment of the debt it had to Company X, and therefore the risk of insolvency for the Y company will no longer be about 15,000 euros, but on 5,000 euros.

Let's now move on to the analysis of internal risk management strategies regarding market risk, consisting of price risk, interest rate risk and foreign exchange risk.

Let's start with the exchange rate. For this type of risk, a viable strategy is to make choices that limit the number of transactions with foreign countries, maintaining and undertaking only the important ones. Maintaining a limited number of foreign currency transactions in fact prevents the company from constantly changing currency

for each trade. In addition, the cost incurred by the company for currency exchange is directly proportional to the number of transactions it puts in place: therefore, the lower the foreign currency transactions, the lower the cost that the company will have to bear in order to remunerate the intermediary who makes the exchange.

An alternative to this strategy may be to relocate the production, however, it is a strategy that is not suitable for all situations and therefore needs to be carefully considered. Of course, it is a useful practice for those companies that have a considerable turnover with another country, but it remains a strategy to be carefully considered as relocation can lead to obvious benefits in terms of foreign exchange risk, but on the other hand, it is a very expensive operation.

Let's now talk about price risk. In this case, one of the internal risk management strategies may be to determine the price level of products taking into account fluctuations in the cost of raw materials. For example, you can opt for the use of different materials to ensure that your business has a set level of mark-up. Alternatively, there are two techniques that can be decisive in price control, which are multiple sourcing and parallel sourcing. Both rely on multiple suppliers in order to have more control over the price. In multiple sourcing the same asset is purchased from multiple suppliers, while in parallel sourcing a single component is purchased from one supplier or the other depending on the product line. Suppose that good is a particular type of screw, necessary for the company to produce both washing machines and ovens. According to the concept of parallel sourcing, the screw, which is identical for both productions, will be purchased by Company A in terms of washing machine production, and by company B for the production of the ovens. These two techniques allow for monitoring and cost-limiting, especially as it establishes a climate of competition between suppliers that can be exploited to the advantage of the company. (VOLPATO, 2006) The negative aspect of this technique is the lack of customization and a stable relationship with the supplier, as the competitive climate generated by price dynamics means that these opportunities are missed.

Another useful strategy is to define customer relationships that allow price changes in certain situations. This is a very useful strategy for those companies that normally set prices for very long periods and may find it difficult to change it. One example of this is

that of companies working on commissions. The risk here is related to the manifestation of the results, which takes place ex-post. Therefore, in this case, a relationship with the customer such as the one described could be decisive to meet any unbudgeted cost. In fact, in the work on the contract, a budget and a price for the work is decided when the contract is defined. If any issues that impose a higher cost on the company arise may be very difficult for the customer to accept this change, as the quote prospectus becomes an integral part of the contract.

One final aspect to consider when it comes to price risk is that the price is not only about finished products, but also about raw materials. However, for raw materials, it should be kept in mind that the strategies described above are ineffective because the price of these materials is defined by the reference market and therefore it's the same for everyone.

As far as interest rate risk is concerned, external hedging tools are usually chosen. However, there are internal arrangements that can help you better manage asset and liability durations, thus trying to balance the durations of incoming and outgoing cash flows. (FACILE, 1996)

To carry out this type of policy, the company will have to use liquidity by investing it in assets if the objective is to increase the duration of the asset, and on the contrary, make early repayments to reduce the duration of liabilities. However, these are not easy measures to undertake because they both have negative aspects: the first transaction is risky as the company does not always have extra liquidity and in any case the market may be little liquid. With regard to the early repayment of funding, it often provides for a penalty and therefore an extra cost to the company.

Let's now move on to the last type of risk, which is business risk. In particular, we will focus on the technology risk, which we have discussed before. As mentioned, it may arise either from a non-investment or from an obsolescence of the company's fixed assets, such as machinery, plants and so on. In the latter case, it should be pointed out that when a company buys a machine or plant, it does so in order to use it for the duration of its useful life. The problem that often arises is that of technological risk, which can manifest itself, for example, with the invention of a new instrument that

makes that of the enterprise obsolete. At this point, the company will have to consider whether to follow this technological change or maintain its structure.

One methodology for measuring technology risk is to estimate the remaining useful life of a fixed asset. The result, obtained as a ratio of total net fixed assets to depreciation of the current year, expresses the number of years of life remaining in the fixed assets. Therefore, amortisation expresses a dual function: first, it defines what is the useful life of the good. Second, it defines the number of years that are required to recover the cost of the fixed asset through production. In a relatively new machine, the ratio described above will take on a fairly high value, and the higher this value will be, the greater the level of technological risk to bear.

So far, we have considered the technological risk linked to production and therefore to machinery and plants, however, the technological risk also operates against the final product. If technological overpasses occurred in the final product offered by a competitor, the company would find itself in a difficult situation with the possibility of loss of market share. To prevent this, the company will need to pay attention to the needs of the demand and the behaviour of competitors. Last but not least, there's an alternative that consists in developing a better process of design for new products that takes a short time so that it can quickly adapt to market or competitor developments.

2.2 External management strategies

Until now, we have analysed what are the internal risk management tools, but for every type of risk examined so far, there are also external cover tools, which usually rely on derivatives and insurance.

It is therefore crucial to evaluate individual cases separately and decide which is the best strategy for risk management, taking advantage of the positive effects and eliminating or reducing the negative ones. To do this, the company may need a solution that includes internal management strategies and external management tools.

The use of derivatives as hedging instruments is very suitable for financial and market risks. On the other hand, operational and business risks are usually addressed through insurance contracts.

With regard to credit risk, we have two different strategies: forfaiting and factoring.

The first is a contract where a commercial credit with payment deferral, is cashed immediately in advance by an intermediary with a clause of non-recourse. (PRANDI, 2010) Being the loan without recourse, in the event of a default, it will be the intermediary who will have to intervene. There is therefore a complete transfer of the risk.

Factoring has a very similar concept, but it is not about the individual credit, but about the entire credit portfolio and the duration is shorter than forfaiting. This operation accepts credits in both forms, the one without recourse and the one with recourse. In this case, the transferee guarantees not only the existence, but also the solvency of the credit, and therefore if the factor advances the amount due, he will be able to ask a reimbursement to the seller to obtain the advanced sum. The case therefore represents a partial divestment of the credit risk.

2.2.1 The Derivatives

Financial hedging is defined as the activity by which the company protects itself from risks through derivatives, which are financial instruments that arise from bargaining between the parties and that allow the transfer of risks. They are defined as derivatives because their value is constrained to that of an underlying asset, which can be represented by a commodity, an interest rate or a currency. The gain or loss therefore comes from the price fluctuations that this underlying asset has on the market.

In most cases, when derivatives are used, no exchange of capital occurs between the subjects, at most the exchange of the underlying can be agreed. In any case, the definition of capital is necessary to establish returns and losses achieved.

Derivatives are contracted on two different platforms: regulated markets and over the counter (OTC) markets, which are secondary and therefore unregulated markets. The characteristics of the two markets are highlighted in the table below.

Figure 2: Differences between Regulated markets and OTC markets

Characteristics	Regulated markets	OTC markets
Type of contract	Standardized	Non-Standardized
Default risk of counterparty	Absent thanks to the Clearing House	Present
Calculation of profits and losses	Daily calculation	Definition at the end of the contract
Guarantees	Initial Margin deposit	None

Source: personal elaboration from Hull, J. (2006), "Options, Futures and other derivatives", 6th edition, Pearson

As can be seen from the table, regulated markets are characterized by the presence of the clearing house, which is an institution that stands in half between the parties to ensure the proper implementation of the operations. In particular, it verifies that the rules and the principle of transparency are respected and finally monitors the inputs and exits from the market with the aim of eliminating the risk of counterparts.

The latter is the risk that the counterparty will default, a risk that persists in the OTC markets, whereas in regulated ones the figure of Clearing House is synonym of protection. In fact, in each transaction it requires the deposit of part of the transaction in its register. This sum is used to credit or charge daily accrued income. In regulated markets, the "marked to market" technique is used, which allows the value of the financial instrument to be constantly adjusted according to current market prices. The margin deposited serves precisely to intervene in the gains and losses that the instrument achieves. If the margin is reset during the course of the contract, the Clearing House will have to ask the other party to reinstate the predetermined sum.

The advantage of the secondary market is therefore the extreme customization of the contract, which can be adapted according to the needs and will of the parties. On the other hand, since they are not standardized instruments, they are difficult to exchange and to define in price.

It should be noted that financial hedging is an expensive activity due to transaction costs and the strong use of management to identify the best and least risky strategy. (CHAPMAN, 2006)

It may seem quite controversial but hedging activity is a risky activity, and each strategy has its own return risk ratio. A misjudgement, or incomplete assessment by management can have the opposite effect as hoped, increasing the initial risk instead of reducing it. (CROUHY et al., 2006)

The most commonly used financial instruments for the financial hedging business, which we're going to delve into below, are forwards, futures, swaps and options, which can include cap, floor or collar clauses.

The forwards

The forward is a derivative through which two counterparties agree to exchange a certain amount of underlying asset at a future date and at a predetermined price.

In this contract the losses can fall on both the buyer and the seller, unlike what we will see later with the options. The loss will fall on the buyer if, at maturity, the price agreed between the parties is higher than the market price. In fact, in this case, the buyer will be forced to obtain the goods from the seller at the predetermined price despite the good on the market being at a lower price at that time. On the other side, the loss will be attributable to the seller in the reverse case, i.e. if at maturity, the contract price is less than the market price. In this case, the seller will be obliged to sell the underlying at a discounted price compared to the market price.

The exchange can only be made when the contract expires and there is no premium to be paid to the buyer. It is a customizable contract based on an agreement concerning an exchange of goods at a future date and at a certain price. The character of the customization makes this derivative a non-standardized contract and therefore operating on the market over the counter (OTC). While personalization is a plus point for this tool, the absence of an intermediary such as Clearing House in the OTC markets puts the parties at risk of defaulting on the other party. Precisely for this reason forwards are much riskier tools than futures, which we will discuss later.

Forwards can be used to handle multiple risk cases. Among them we can find the interest rate risk, which can be managed through the Forward Rate Agreements (FRA). This type of forward provides for an interest rate to be set, rather than a price. At maturity, the settlement will be based on the differential between the FRA and the

reference rate, which is usually Libor. This differential is collected by the buyer if the FRA rate is less than The Libor, otherwise it will be cashed by the seller.

Forwards can be used not only to address rate risk problems, but also other types of risks, such as foreign exchange risk or commodity risks.

In the first case, namely the exchange risk case, the two contractors will agree on an exchange rate at which they agree to exchange a certain amount of money in different currencies from the national one. The buyer of this forward will get a gain if there will be an appreciation of the currency, while the seller will make a profit if exchange rates depreciate.

With regard to this type of forward, we can identify knock forwards and flexible forwards. (PRANDI, 2010). Knock forwards are contracts in which a forward exchange rate is agreed but also a rate beyond which the duty is no longer needed. This clause is aimed at limiting the interbank rate to peaks that are very different from the agreed rate, thus generating very high gains for one party and large losses for the other. Flexible forwards contain a clause for which it is possible, throughout the contract life of the instrument, to request or deliver in advance the sum provided by the contract. As you can easily guess, this clause makes the contract much more expensive than other types of forwards.

Finally, as already anticipated, forwards can also be used to limit the price risk related to commodities. However, the most widely used derivative for this type of activity is the future, as, being a standardized tool, it protects the parties more.

The Futures

Futures, such as forwards, also expect an underlying asset to be traded at a certain expiry date and at an agreed price. What distinguishes this tool from the forwards is the target market. As we have seen before, forwards are treated on over-the-counter markets and are therefore non-standardised contracts. In contrast, futures are standardized financial instruments belonging to regulated markets and subject to the Clearing House regime. The presence of this institution has the advantage of eliminating the risk of default, since profits and losses are calculated and regulated daily through the margin filed by the parties at the Clearing House at the conclusion of

the contract. On the other hand, the disadvantage associated with the figure of this tool is related to its standardized structure, which may not be optimal for risk management, unlike a forward, which can be tailored to the specific need of the customer. In addition to this factor, there is also the problem related to the State rating, if futures were used to defend against rate risk. In this case, in fact, futures rely on government bonds, the yield of which is dictated by economic conditions and the rating assigned to it. (FACILE, 1996)

Another case where the use of futures can be useful is that of commodity futures. These, as we said in the forwards paragraph, are the contracts most useful in managing commodity price risk, being standardised and being traded on regulated markets. In addition, they are widely used at speculative end, and at maturity usually end with the purchase of a position inverse to the initial one. The actual exchange of the underlying therefore almost never takes place. Therefore, if the company expects a rise in commodity prices, a commodity future will be bought, if the company expects prices to fall, it will have to sell a future.

Let's move on to the exchange risk. In this case, currency futures, which similarly to the forwards analysed above, can be used to establish an exchange rate. What changes are the deadlines: being a standardized contract, it will not be possible to agree on the closing date of the contract, and indeed the deadlines are usually set quarterly in March, June, September, and December.

As with the other tools we have seen, at the expiration date the contract ends either with the delivery of the underlying or by signing an additional derivative of the opposite sign to close its position.

It is important to emphasise once again that derivatives have not only a precautionary and risk-protection objective, but also a speculative one.

The Options

An option is a contract that provides for the possibility, for one of the two parties, to buy or sell an underlying asset, subject to payment of a premium.

The fact that this derivative includes both the purchasing and sales power, means that there are two different types of options: the call options, related to the buying phase of the underlying, and the put options, related to the sales contracts of the underlying.

The peculiarity of this derivative lies in the ability to buy or sell. In fact, there is no obligation to exercise the option for those who buy. On the other hand, the seller, if the buyer wants to exercise his right, will be obliged to carry out the service.

An automatically question that rises up is "when should the buyer exercise an option?". The answer is that the buyer benefits from the exercise of the option when it is "in the money", that is, when the ratio of the market price of the asset to the option price benefits the buyer. Of course, if we take a call option for example, it will be exercised when the option price is lower than the market option. This is because the buyer will be able to obtain the expected amount of the asset at a lower price than the market price. On the other hand, for a put option, the buyer will exercise the right when the option price is higher than the market option.

The role of the seller in an option contract, is a disadvantaged role as it tends to imply unlimited losses, determined by the obligation to sell the asset at a lower price for a call and the purchase of the underlying at a higher price in a put. If he had decided to make a normal bargaining using the direct market, instead of a bargaining through options, he could have sold and bought the goods at the most appropriate time obtaining lower costs or cashing in a higher sum.

So, let's summarize what are the essential components of the options: the underlying asset, the expiration date, the strike price, and finally, the premium paid.

The exercise of the option defines two additional types of options: European options, which can only be exercised on the specified expiry date, and American options, which can be exercised at any time until the option expires naturally.

There are clauses that can be included in the rate options, and they distinguish the following types of options: cap options, floor options, collar options.

The cap clause provides for the imposition of a maximum rate, and consequently if the variable contractual rate exceeds the set level, the greatest value will not be paid.

The floor clause operates exactly in reverse, imposing a minimum rate below which the variable rate cannot fall. If the variable rate falls below this threshold, the difference will be entirely borne by the intermediary.

Finally, there are collar options, which are a combination of the previous two types, and impose a minimum and a maximum cap.

Finally, let's look at one last aspect of the options, namely the case of the straddle strategy, a technique with which a put option and a call option with the same strike price and expiration date are purchased simultaneously. In this way, the volatility component of the rates is eliminated, as the person implementing this strategy will be covered by both hikes and rebates and will have the power to exercise either or neither of the options depending on the situation in which strike price and rate will be found. (CHORAFAS, D.N. (1995), *"Managing derivatives risk: establishing systems and controls"*, Irwin).

With this technique, the maximum loss in which the company will be able to incur is the sum of the premiums paid to purchase the two options.

The Swap

Swaps are more complex contracts than those seen so far, as they establish an underlying liquidity exchange for both parties on set dates.
The main application of this tool is the Interest Rate Swap (IRS), a contract under which a person can change the rate type for his or her investment or financing.

For example, an individual who owns an investment with a fixed return may prefer to switch to a variable rate. In this case, you will have to swap in that rate and buy a variable one. This swap will then be subscribed and a face value, a fixed rate and a variable rate will be defined. At various maturities, fixed and variable rate quotes will be calculated at this face value and gain or loss will result.

If the IRS is defined correctly, the contractor will be able to eliminate the rate risk, as the tool will prevent the subject from paying variable rates higher than the market rates.

As already mentioned, IRS can be used both by borrowers, to protect themselves from an increase in interest payments, but also by those who have made an investment, with the aim of obtaining higher returns.

A person who subscribes to a fixed-rate loan will enter into a swap where he will give up his fixed rate for a variable, as he hopes that a fall in interest rates can occur. On the contrary, if the loan was made at a variable rate, the subject, if he fears a rate hike, will subscribe to a swap in which he gives up that variable rate to obtain a fixed one.

Before signing up for an IRS, the company must also consider the downsides of this tool. First of all, this instrument often requires forms of guarantee, which therefore limit the lines of credit available to the company, therefore blocking further investments. Another problem, which unites all the instruments traded on the OTC markets, is that of the difficult divestment and trading, particularly when the interest rate market is in a turbulent situation. (FACILE, 1996)

We have seen that Interest Rate Swaps are useful for addressing rate risk. However, there are also other types of risk that can be faced with swaps, such as foreign exchange risk. For this type of risk, the so-called Currency Swap (CS) is used, which involves the exchange of two different currencies. This exchange takes place in two phases. The exchange of the two currencies takes place immediately. While, in the intermediate phase of the contract, at predefined maturities, the exchange of interest on capital takes place, and finally at the end of the contract the second conversion takes place, with the reverse exchange of capital. (PRANDI, 2010)

In order for this contract to be concluded, the parties must have an opposite view of the future development of exchange rates.

Finally, we have Credit Default Swap (CDS), which are tools that allow you to manage credit risk through the divestment of the risk of insolvency. With this contract, one of the parties sells its own credit and in return obtains a swap that provides for the return of face value only in case of declared ineligible of the credit under consideration. For the duration of the CDS and up to a default event, the buyer will have to pay periodic flows.

The advantages of using a swap lie in the high degree of customization, the increase in flexibility in risk management and the fact that no creditor authorisation is required for the transfer of the loan.

2.2.2 The Insurances

Insurance is one of the cornerstones of external risk management strategies, because they cover a very high number of risks that the market cannot manage, and in some cases also cover risks due to the presence of the markets themselves. Insurance is a contract that involves transferring a certain risk to an insurer, which, after the payment of a periodic premium by the policyholder, agrees to compensate it in case the risky event protected by the contract occurs. The premium in a nutshell represents the cost of the service that is provided by the company. If the insured event occurs, the policyholder will request a refund from the insurance company, which, after assessing the damage, will proceed to reimburse a percentage established at the low contract.

Among the many benefits of using insurance contracts, we remember that they allow to obtain resources for reconstruction investments and absorb the risk. (DOHERTY, 2000)

Taking out an insurance contract also facilitates the obtaining of additional financing for the company and is a reliable source of coverage. In fact, most companies have a significant background and therefore play a decisive role in directing the company towards an optimal policy.

The same insurers must protect themselves and cover themselves from their risks through portfolio management. In fact, they invest in various risks. On the one hand they have insurance that tend to generate gains as the manifestation of the risky event is very rare. On the other hand, they have insurance which is more frequent. By investing in different types of insurance, both for object and risk, companies are able to reduce their overall risk.

We continue our analysis of insurance companies with an in-depth look at the cost of subscribing to this tool. It is calculated considering not only the administrative costs

incurred by the company, but also any opportunistic behaviour of the customer. Among these the most recognized are moral hazard and adverse selection.

The first manifests itself when the customer, believing himself to be protected by the company, engages in a series of risky behaviours, because he believes he is covered by the insurance reimbursement regardless of his actions. The adverse selection instead consists of the false statements of the customer in order to obtain a contract with a more advantageous premium or at least on better contractual terms respect to the ones that he would have obtained if he declared the truth.

A particular type of insurance is the one that protects against credit risk. In this case, the company will still be able to grant payment deferrals, but it will have to notify the company of any insolvencies in a timely manner. Once the insolvency occurs and the customer informs the company, a credit recovery procedure will be initiated that will be conducted by the customer or the company as stipulated in the contract. If the recovery is not practicable, the company will be obliged to compensate the customer, and will also proceed through legal actions to recover the uncollectable credit. A necessary condition to reach the conclusion of this type of contract is a careful analysis of the company and its customer portfolio.

Insurance contracts are typically used for operational risk management, as in this risk class we have all those risks related to damage, system problems and process interruption. (JORION,2007)

In this case, however, the company must carefully consider whether outsourcing risk through insurance is the best choice. In particular, it will have to relate the costs of entering into the insurance contract with those arising from the adoption of an internal risk management strategy. In many cases, a good internal risk management strategy allows you to solve a problematic situation without having to bear the cost of insurance.

From this chapter we were able to understand that risk management is a fundamental but at the same time very complex activity, as it requires a constant analysis of the business situation with regard to the risks and techniques used to deal with them. It

also requires a high level of competence, to avoid summary and non-risk-specific management.

Given the complexity of the topic, in the next two chapters we will first analyse the Enterprise Risk Management process in all its phases, and then we will delve into what are the most important insurance contracts for a company.

Chapter 3

THE ENTERPRISE RISK MANAGEMENT

So far, we analysed the concept of risk and the tools that a company has at its disposal to deal with risk. The aim of this chapter will be to shift the focus to one of the most important tools that a company can really have at its disposal, Enterprise Risk Management. We will therefore start with an excursus that justifies the evolution and transition from the more traditional forms of risk management to the current form of ERM. In addition, after explaining what the stages of this important process are, we will focus on the rules and standards that have been imposed for its correct implementation in the business context.

3.1 Evolution of the risk management process

Risk management activity consists in the identification of risk factors, the measurement of the exposure to risk and constant monitoring with the aim of assessing the convenience of carrying out risk transfer operations on the financial and insurance market or corrective interventions on the original positions (POTRICH, B. (n.16 - 2002). *"Il risk management nelle medie imprese del nord est.",* ALEA Tech reports). Another definition that we consider important, is that provided by Urciuoli and Crenca, which define risk management as "the process that tends to safeguard the company's assets against losses that may affect it in the exercise of its business, through the use of various tools (prevention, retention, insurance, etc.) and in the best cost conditions" (CRENCA, G., URCIUOLI, V. (1989), *"Risk Management: strategie e processi decisionali nella gestione dei rischi puri d'impresa",* Edizioni Isba). In order to better understand the conditions that led to the current context, we believe it is necessary to carry out a brief excursus on the phenomenon of risk management, the beginning of which we could attribute to the first half of the twentieth century. In fact, since the 1920s, international literature has begun to recognize the close relationship between business management and risk. It should be pointed out that in this context, the risk is understood in a negative sense, as a condition of uncertainty from which the danger of failure in the company's actions may arise.

During this period Henry Fayol, a well-known French entrepreneur, identified the need

to set up a corporate body that would constantly be dedicated to the management of insurance policies and related risks. On the starting point, companies adapted their organisational structure and risk management began to be seen as a process, i.e. a set of interconnected activities aimed at protecting the company from possible risks. (HENRY, F. (1916), "*Administration industrielle et gènèrale.",* Paris: Dunod)

The next step in the evolution of risk management can be identified in the 1950s, when, in the USA, the first modern concept of risk management is defined. In this period we move from a culture of insurance management, to a risk management culture. The goal of risk management was to provide a set of tools useful to reduce coverage through insurance contracts, to move to internal risk management.

In the 1960s the concept of Risk Management began to expand, reaching Europe as well. We can say that the concept of risk management that arrived in Europe at this time was still rather embryonic, and purely defensive, oriented towards reducing losses in the short term. In this sense, risk management was linked only to pure risks, i.e., those risks that cause a damage to the company, and therefore was carried out mainly by entities operating in the insurance sector. With the spread of risk management in the old continent, the first guidelines and interpretations also arrived. In particular, the founding fathers of this process in Europe were Robert Mehr and Bob Hedges, who in 1963 published "Risk Management in the Business Enterprise", the first text that sought to maximize the efficiency of the company through the identification of the different phases of the risk management process. (MONDA, B., GIORGINO, M. (2014), *"Dal risk management all'Enterprise Risk Management"*, PoliFinance Publishing Ltd, London)

The following decade, that of the 1970s, was characterized by the first operational approaches to this subject, which represented the second evolutionary phase of the risk management process. In this period, characterized by numerous financial shocks (e.g., oil crisis of 1973), the focus was not only on pure risks as in the previous decade, but also on the volatility of financial markets. As mentioned previously, during the 1970s the first forms of integrated risk management were implemented, with the distinction between pure risks, i.e., those risks that represent only a damage to the company, and entrepreneurial risks, which instead consist of a positive side (upside

risk) and a negative (downside risk). (GAUDENZI, B. (2006). *"Nuovi approcci di gestione dei rischi di impresa",* Sinergie n.71)

This increased awareness of risk and its management has led to the birth of two currents of thought: the first establishes financial risk management, the other requires better management of business processes in order to reduce or eliminate risk. These two orientations represented only the starting point, as over the following years, new models and schools of thought were implemented that we will analyse later.

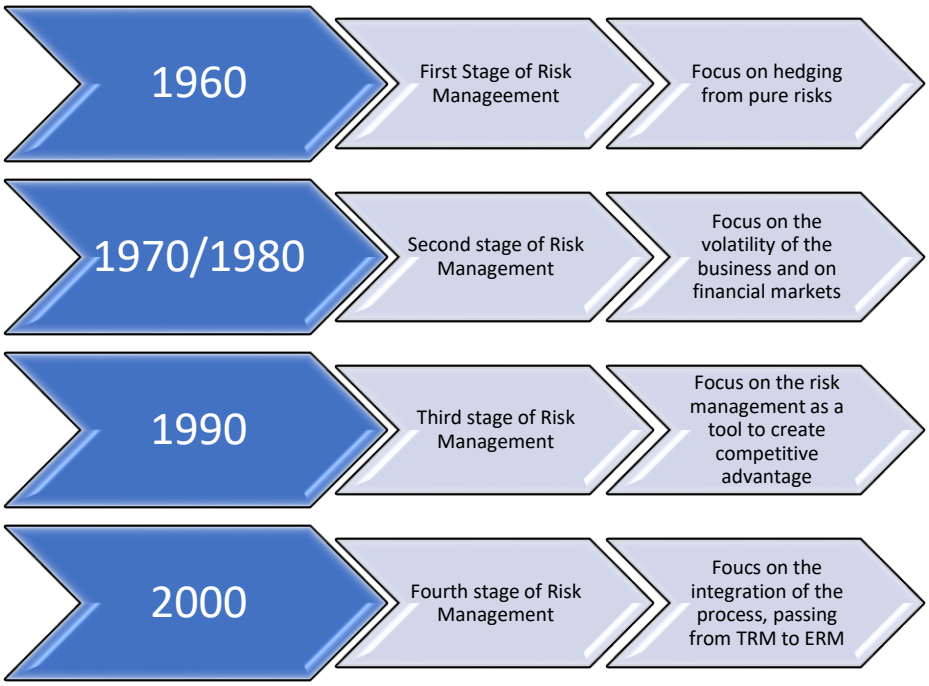
This process of growth and diffusion of risk management continued even in the 1980s, leading to an increasing awareness that, careful management of business risks, represented an important tool for the company to reduce costs and grow in the medium term.

The 1990s led to the third phase of risk management development, focused on improving company performance. In particular, at this stage there was an increasing integration of the process, as well as an increasingly rational strategy for the identification and transfer of risks. For the first time, risk is no longer seen only as something to protect itself from, in fact risk management begins to be considered an important competitive leverage to be exploited to the best.

The advent of the new millennium led to the last evolutionary stage of the concept of risk management. Thanks also to the event of the Dotcom bubble, companies around the world once again understood the importance of proper risk management. In particular, during recent decades, there has been a strong accentuation of a phenomenon that began in the 1990s: the integration of the risk management process. The risk management process therefore goes from being a strictly sectoral activity, to a much more integrated concept, including a greater number of identifiable risks and stakeholders. Since 2000, therefore, the transition from so-called Traditional Risk Management (TRM) to Enterprise Risk Management (ERM) has taken place.

The concepts expressed so far are summarized in the following table in a more concise and clear way:

Figure 3: Evolution of RM process



Source: Personal elaboration from "Nuovi approcci di gestione dei rischi di impresa." Sinergie n.71 *Gaudenzi, B. (2006).*

3.2 Objectives and structure of the RM process

The Risk Management process is defined by FERMA[3] as an integral part of the strategic management of each company. It is the process by which organisations address the risks associated with their activities with the aim of obtaining valuable benefits within each activity. The basis of good risk management is the identification and treatment of these risks.

As for the structure of the Risk Management process, over the years different currents of thought have been developed, however we can say that the approach defined by FERMA represents the standard technique from which the subsequent ones developed.

The phases that characterize this process are the followings: risk identification, risk analysis, risk measurement, risk treatment e risk monitoring. The first two activities can be summarized in the concept of risk awareness.

[3] FERMA is a team composed of the most important risk management companies in the UNITED Kingdom and represents a pillar with regard to the definition of objectives and strategies in the field of risk management at European level.

3.2.1 Risk Awareness

Let's move on in this analysis of the processes that characterize the concept of risk explaining the concept of risk awareness. To do this, we will take inspiration from author James Lam, who considers risk awareness as the initial stage of any risk management process, where the goal is to ensure that every person operating in an organisation is able to identify and communicate potential risks, considering their consequences and peculiarities.

It is therefore necessary to carry out what the expert Michel Crouhy defines as the process of risk mapping, identifying all the risks that the company faces in order to classify them and estimate their present and future consequences.

In a changing environment such as the current one, one of the biggest mistakes a company could make is to not consider also the external sources of risk, such as technological changes, economic trends, the regulatory and environmental topics and so on.

As already mentioned, in the risk awareness phase, the company must take all necessary steps to identify and disclose the possible risks. What we have not yet examined in depth are the means available to the company to identify these risks.

Normally the company can use three types of analysis to achieve its goal: historical analysis, scenario analysis and process mapping.

Historical analysis takes advantage of the tracking of all the events that have occurred during the history of the company. Basing on this event log, the company is able to define what are the biggest risks it has encountered, how often they have occurred and what impact they have had on the company. This allows the definition of a probability distribution that can be used in combination with the simple risk mapping. The pros of this technique lie in the ability to analyse risks on the basis of the business and sectoral environment of the company. On the other hand, however, it is an inefficient model as the risks of great impact and low manifestation do not receive sufficient attention.

The scenario analysis examines different economic scenarios and studies the influence that they would have on the company. For this reason, foreach scenario considered,

the risks that could arise are identified. This allows the company to predict with reasonable certainty a large part of the risks, and the consequences that the company may face in the future.

Finally, there is the process of process mapping, which is divided into two phases: in the first, all the internal processes of the company are mapped, and then all the risks faced by the organisation in the performance of each of its activities are estimated. This process is very specific and can therefore vary significantly from company to company.

From one point of view this process guarantees a better internal organisation by allocating specific skills to risk managers for each activity. On the other hand, it maintains shadowy areas between the internal activities and could therefore fail to recognise cross-cutting risks between them.
As we have noticed, it is not possible to identify which process is better with respect to the others, as they have three different points of view. The choice of the method to apply will depend on the company's ability to collect and elaborate information.

In principle, looking at the aim of each process, we can say that the history analysis and the process mapping are more specific and tailor made, while scenario analysis is more useful for a general mapping of risks, taking more into account also industry and market risks.
Once the list of all possible risks has been drawn up, including their impact, the company will have to decide which ones will be insured, which will be covered through appropriate strategies, and which will be kept uncovered.

3.2.2 Risk Measurement

The risk measurement phase is crucial, as it is the stage in which values are assigned to each element that can trigger a risk. The aim is therefore to define an overall amount of risk that has to be managed.

As we mentioned above, the company, after carrying out this quantification of the risk, will have to define a threshold of tolerability, which will separate the risks that will be internalized from those that will be transferred outside. The transfer of your risks to third parties obviously involves an outlay, and therefore the lower the tolerability limit,

the greater will be the share of risks to transfer and therefore the greater will be the outlay.

In order to measure risk, the company may resort to a quantitative analysis, which is based on probability distributions of events, or, in absence of sufficient information, a qualitative one. In this case, the company collects information about possible risks and uses experts' estimates and judgments about the probability and impact of such events.

This stage ends with a report in which the company communicates the results of the previous phases, specifying the amount of risk that the company potentially has to manage and the tolerability threshold.

3.2.3 Risk Treatment

Let's move on to the fourth phase: the risk treatment phase. After identifying and measuring the potential risks that the company faces, it has to define the best strategy to manage that situation. At this stage, a risk management strategy is therefore defined, in conjunction with the tools to be used. Independently from the tools that the company chooses, these measures have to guarantee:

- An effective and efficient functioning of the company
- An efficient internal audit
- The compliance with the law

Normally the choice falls on insurance contracts, derivative financial instruments or internal risk management policies, depending on the type and number of risks that need to be transferred. The first two are examples of risk transfer to third parties, while risk management policies do not transfer risk to other parties except in particular cases, such as in the case of subcontracting. (PRANDI, 2010).

In this regard, as already mentioned, the risk may be transferred in full, for one share, or may not be transferred. If the company decides for the total transfer of risk, however, it must consider that transferring it entirely, it will transfer both the positive risk share and the negative risk share, thus excluding possible extra gains for the company.

3.2.4 Risk Control

Let's now move on to the last phase, the risk control phase, which is the final stage of any risk management process. It implies an evaluation of the choices taken, in terms of application and effectiveness of the instruments chosen. If the company has made the right choices, it will not only avoid losses, but it can even make extra profits.

On the other hand, there is the possibility, due to the presence of up-side risk, of coverage that generates lower results than the non-coverage scenario. This scenario should not be interpreted as an ineffective management policy: in fact, this choice would still allow the company to cover entirely the down-side risk. It is therefore a situation caused by the uncertainty ex ante, which does not allow to know whether the impact of a given event would be positive or negative.

Another step to be taken at this stage is to optimize the risk-return ratio, thus avoiding that risk management policies, which can represent a high cost to the company, go to hinder the development of the company itself.

As we already said, the proper and efficient development of the previous phases is essential. In fact, the transfer of all risks, or the wrong choice of the risks to be transferred, can adversely affect the company, which will therefore be incurring in significant costs that will limit or completely block its development.

Ultimately, it is important that at this stage, in addition to the control of the procedures adopted, to intercept any change in endogenous and exogenous variables.

For example, failing to recognise a mutation in the underlying economic environment inevitably causes damage to the company, which on one hand could continue to protect itself excessively from a risk that has decreased, and on the other hand may find itself in a situation of insufficient coverage for a risk that has become much more significant.

What can be seen from this analysis, is that the final objective of risk management is to protect and enhance the company and its stakeholders, through the following tools:

- The preparation of a methodology that allows a coherent and controlled execution of any future activity;
- The improvement of decision-making phase and planning phase through a comprehensive and structured analysis of the commercial activity, volatility and positive/negative elements of the project;
- The contribution to a more effective use of capital and resources within the organisation;
- The reduction of volatility in non-essential areas of activity;
- The protection and enhancement of the company's assets and image;
- The development and support of people and knowledge base of the organisation;
- Optimizing operational efficiency.

3.3 Approaches to Risk Management

As mentioned above, the phases and operations that characterize the risk management process are shared by many schools of thought. The discriminating factor between the various approaches thus becomes another: the objective of the enterprise and the different weight it attaches to each stage of the process. Analyzing every single approach to the subject present in the literature is unthinkable, so we will go to face those approaches that are useful to understand the evolution of risk management from its initial stage to the current concept.

A first point of reflection is provided to us by Barbara Gaudenzi, who points out that already in the Fifties two schools of thought had established themselves, that of Business Risk Management (BRM), and that of Financial Risk Management (FRM) (GAUDENZI, 2006). The first considered the risk manager as a person who had to manage all business risks through an integrated and transversal approach, while the FRM identified in the risk manager a figure predisposed to the treatment of only insurable risks. In this case, therefore, risk management was considered a purely

financial and insurance discipline. These two approaches, and in particular that of Financial Risk Management, suffered further changes. In particular, the FRM began to consider not only pure insurable risks, but also financial ones, leading to the Integrated FRM, which can be considered an ancestor of the current ERM. (GAUDENZI, 2006) Starting from these two schools of thought, we are going to analyse four different approaches that will take us to ERM. The approaches in question are the followings:

- Traditional risk management
- Financial risk management
- Project risk management
- Control risk management

Traditional risk management (TRM)

Traditional risk management deals with the identification, estimation and management of pure risks, excluding the totality of company risks and taking into account only those that, with their manifestation, bring only negative effects on the company.

The main goal of this process was to create value for the company, and for this reason too it could be considered an ancestor of ERM. However, this belief is unfounded since, in order to be similar to ERM, Traditional Risk Management should assess risks jointly with an integrated approach. In addition to this factor, pure risks should play a secondary role in the analysis phase compared to operational, financial and strategic risks. Therefore, to be similar to Enterprise Risk Management, TRM would have to completely distort itself.

Let's now move on to the phases that characterize the TRM, which as we will see follow those of the risk management process established by FERMA. In fact, the Traditional Risk Management process develops in the following activities:

- Identification of potential risks that could harm the company. This is done through an information system able to clearly and comprehensively describe the risk profile to which the company is exposed;

- Assessment of the risks to which the company is exposed. In particular, a risk analysis and a selection of the most effective management strategy takes place at this stage.
- Risk management. At this stage, the strategies identified in the previous point are applied;
- Control risk. It is a process that consists of continuous monitoring of the results achieved in terms of risk prevention and limitation and identification of new risk scenarios.

Financial Risk Management (FRM)

We have already mentioned something about this current of thought in recent pages, however, for the sake of completeness we go to analyse it more specifically. Financial Risk Management is an approach focused exclusively on the management of financial risks, in particular those concerning the operating environment (weather changes, changes in commodity prices and so on) and the financial and market area (change in interest rates, exchange rates, etc.) (PRANDI, 2010). From this interpretation given by Prandi, we can derive that the objective of the FRM is to ensure an optimal allocation of company capital, thus accepting risk conditions that allow to achieve a return without, however, endangering the company.

Since this approach is closely linked to the financial sector, there are two banking and insurance techniques that are very useful: Asset & Liability Management and Capital Management. Asset & Liability Management aims to manage the company's income statement, preventing financial shocks (changes in interest rates, exchange rates, etc.) from negatively affecting the company's income statement. Capital Management's technique, on the other hand, monitors the company's performance with respect to management constraints in order to anticipate critical situations and implement the consequent capital reserves.

Let us now move on to the stages of the FRM process, which are the following:

- Definition of a time horizon and consequent identification of possible scenarios;

- Determination of cash flows of assets and liabilities by type and maturity;
- Forecast of the future development of interest rates and flows by means of statistical and financial techniques based on the use of historical company information.

In conclusion, we can say that the FRM has the same objectives as the ERM, but what differentiates the two models is the scope of operability, since the FRM deals only with financial risks, leaving aside aspects of the operational and strategic scope.

Project risk management (PRM)

As can be seen from the name itself, PRM is a management technique that deals mainly with the identification, analysis and management of risks associated with large supply operations. Precisely because of its conformation it is often used in the construction or mechanical industry. The type of risk addressed by this model assumes a high technical degree, shifting the focus to the qualitative aspect of the risk, and no longer to the quantitative one.

The success of a project is assessed on the basis of production times and costs and on the basis of the quality of the final product, so any factor that affects these three variables is considered as a potential risk.

When it is decided to use PRM, the primary objective thus becomes to complete the work, and not to limit the costs that could result during the implementation phase.

As we have seen so far, this type of strand is found to be significantly at odds with ERM and integrated risk management, both in type of approach and objectives.

Control Risk Management (CRM)

Control Risk Management is a way of risk management that has as its primary interest to ensure that the company's activities are carried out in line with the rules and modalities defined by the company. What differentiates it from Enterprise Risk Management is that CRM focuses primarily on the downside component of risk and changes its connotation depending on the subject it targets.

3.3.1 The switch from RM to ERM

In the previous paragraph we presented some risk management techniques that contributed to the development of the current ERM. What we are going to do now is explain the actual transition from a sectorial management technique such as those identified above, to an integrated technique such as that of ERM. From 2000 to the present, due to some events that we are going to analyse shortly, companies have realised that the traditional risk management model was not efficient. Some of the factors that have contributed to this change of course are:

- A new concept of risk, which involves the inclusion of the upside risk component, leading to an idea of risk that can be seen both as a threat and as an opportunity;
- The pressures arising from new regulations which were developed during the reference period. At both national and Community level, a whole series of regulations have been developed over the years which have led to an integrated view of risk and no longer by compartments;
- A series of historical events that highlighted the need for 360-degree risk management. These include the 2008 financial crisis, the collapse of the Twin Towers (2001) or tragic natural events such as tsunamis, hurricanes, fires; (SEGAL, 2011)
- A growing awareness of the importance of risk. This fact stems from the growth in quantity and complexity that the risks have suffered. In fact, companies have had to face new and very important risks, related to technology, globalisation, and so on. (CASUALTY ACTUARIAL SOCIETY, (2003), "*Overview of enterprise risk management."*)

The approaches seen above managed risk in a sectoral way and formed so-called silo risk management. (Definition provided also by CROUHY et al., 2006; PRANDI, 2010; SEGAL, 2011; CHAPMAN, 2006; LAM, 2003; MC SHANE, M.K., NAIR, A., RUSTANBEKOV, E. (2011), *"Does Enterprise Risk Management Increase Firm Value?"*, Journal of Accounting, Auditing & Finance, vol. 26; LIEBENBERG, A.P, HOYT, R.E. (2003), *"The determinants of Enterprise Risk Management: evidence from the appointment of chief risk officers"*, Risk Management and Insurance Review, Vol. 6, No. 1, 2003)

Each risk was therefore managed within its own business unit. At the base of this approach was the desire to limit the costs of risk management. However, this belief is wrong, as such a model involves:

- An exclusion of the relationships between the risks of different units;
- A short-term perspective;
- The consideration of the downside risk only;
- A major communication problem within the company.

To sum up, we can say that the models prior to the current ERM are inadequate as they are incomplete, ineffective and inconsistent. (SEGAL, 2011)

With the term incompleteness we go to identify the error that is made in assessing the risks individually without considering the relationships between the various risks.

The inefficiency of the model is due to the communication problems that can arise between the various units, and which can lead to a higher cost.

Finally, we use the term inconsistency to refer to the situation in which each unit is detached from the others and operates in its own way, contributing to a very fragmented risk management, and without a well-defined guideline.

These criticisms, accompanied by the factors seen above (historical events, different conception of risk...) have led to Enterprise Risk Management, which has allowed better risk management, as it is based on the analysis of the structure as a whole. The fact of having as its starting point the overall structure, allows to study the evolution that it has over time and also allows to anticipate new emerging risks, which the other approaches did not allow, since they are retrospectives. The dynamism of the ERM model is what characterizes it compared to other models, and is an essential element for effective risk management, because it allows the company to adapt and anticipate future risks.

What we're going to do now, to conclude this paragraph, is to analyse the differences between a Traditional Risk Management process and an Enterprise Risk Management process. This theme has been addressed by many experts, so we for our analysis will mainly resort to the studies of Deloach and those of Olson & Wu.

The ERM model, as mentioned above and as shown in the table below, exceeds many limits of the TRM. In the first place, it allows us to leave behind the vision of silos risk management, in which the various risks were managed according to the business unit of competence. The integrated version provided by ERM allows to give the correct weight to the relationships between the various risks. In short, the risk as a whole is assessed in the ERM, with a perspective that we could compare to the one used to manage a portfolio. Communication is a fundamental requirement for good risk management in the ERM process, as only with good vertical and horizontal communication can the company manage the business risks as a whole.

A further aspect that changes with the transition from TRM to ERM is related to the concept of risk. As we have seen before with ERM, the risk also takes on positive consequences and it also begins to be considered as an opportunity. An approach that is no longer defensive, but proactive, allows the company to identify potential new risks in advance and thus allows better management. But this approach is not only important at the management level, but also at the market level as it becomes a leverage to distinguish itself from the rest of the competitors. All the distinctive elements that we have identified in the course of this paragraph can be summarized in the following table:

Figure 4: Differences between TRM and ERM

TRM	ERM
Silos framework	Integrated framework
Defensive	Proactive
Risk is treated individually	Risk is treated as part of the business strategy
Risk Mitigation	Risk Optimisation
Discontinuous process	Continuous process

Source: OLSON, D.L., WU, L. (2020), "Enterprise Risk Management Models", 3rd Edition, Springer

3.4 Defining the ERM Process

So far, we have analysed the characteristics and differences between an ERM process and a traditional one. What we're going to do in this paragraph is instead focus on the ERM process by trying to explain which are the steps to implement it. As we will see below, the implementation of an ERM system represents an important change in the management of a business, with an important expenditure of financial resources and human capital.

Before we go into this, however, a clarification must be made. As we have seen with regard to the definitions of risk and risk management, there is a wide variety of studies in this regard, and therefore there is not a single definition of ERM. For this reason, we will analyse the definitions provided by scholars, some of whom we have already named in past chapters, such as Deloach, the Casualty Actuarial Society, to provide an overview of this concept of Enterprise Risk Management.

De Loach defines ERM as *"A structured and disciplined approach: it aligns strategy, processes, people, technology and knowledge with the purpose of evaluating and managing the uncertainties the enterprises faces as it creates value".* (DELOACH, J., TEMPLE, N. (2000), *"Enterprise-Wide Risk Management: Strategies for linking risk and opportunity"*, Financial Times Management)

The Casualty Actuarial Society gave a different definition of ERM, stating that it is *"the discipline by which an organisation in any industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organisation's short- and long-term value to its stakeholders".* (CASUALTY ACTUARIAL SOCIETY, 2003)

James Lam on the other hand, defines Enterprise Risk Management as *"an integrated framework for managing credit risk, market risk, operational risk, economic capital, and risk transfer in order to maximize firm value".* (LAM, 2003)

Miccolis and Shah gave a similar definition, saying that ERM is *"A rigorous approach to assessing and addressing the risks from all sources that threaten the achievement of an organisation's strategic and objective. In addition, ERM identifies those risks that represent corresponding opportunities to exploit for competitive advantage"*.

(MICCOLIS, J., SHAH, S. (2000), *"Enterprise risk management. An analytic approach"*, Tillinghast-towers Perrin monograph)

We therefore come to what can be considered the most relevant definition, which was provided by the Committee of Sponsoring Organisations of the Threadway Commission (COSO), and which will be deepened specifically later. This figure was fundamental in the affirmation of the ERM process, as, as we will see later, it was able to provide a framework for the development of this process. COSO has defined the ERM process as *"a process, affected by an entity's board of directors, management and other personnel, applied in strategy-setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives".* (AIIA & PWC (2006), "*La gestione del rischio aziendale."* Milano: Il Sole 24 Ore)

As you can see, although there are subtle differences within the various definitions, they all highlight the integrated and proactive nature of the process, as well as the concept of risk as a threat but also as an opportunity.

In addition to the contribution of academics and industry experts, there are three aspects on which it is vital to focus when addressing the issue of Enterprise Risk Management. These elements are: (MONDA, B., GIORGINO, M. (2013), "*An ERM maturity model"*, ERM Symposium 2013 Monograph,Chicago.)

- The risk culture;
- The organisation;
- The process.

The risk culture

The risk culture is the necessary starting point for the good application of ERM systems. This importance is also certified by COSO, which considers an efficient internal structure between the pillars of the system.

With the concept of a culture of risk, we go to identify the set of values, norms and behaviours that are shared and carried out by all the members of an organisation.

Having a good risk culture is important as it allows you to influence decisions at any level and achieve the goals set by the company. (MONDA & GIORGINO, 2013)

The problems arising from an inefficient risk culture are many and can lead to more or less unpleasant situations. In fact, an organisation of this type will often operate contrary to the established values, rules and procedures, and this can have a negative impact both at operational and strategic level, with the failure to achieve the objectives, but also at the reputational or financial level, which are much more serious.

Among the fundamental principles for a good risk culture, we certainly have the Commitment of the Board and management and the establishment of a good risk policy. Commitment is interpreted as the good conduct of the Board and the managers towards the organisation. It is therefore important that these people are the first to behave correctly, acting as an example and guideline for the rest of the organisation. The definition of a good risk policy is the next step for good management but in particular for the integration of business risks. In the case of ERM, an ERM Policy will be established and communicated, in which the objectives and means by which the company undertakes to manage the risk are defined and subsequently communicated. In particular, we find information about:

- Risk appetite
- Risk objectives
- Risk reporting and forecasts
- Organisational structure of the company
- Hedging tools that the company considers adoptable
- Accounting principles and rules
- Business performance measurement and communication tools

Since these policies are considerably important when talking about the risk management, they must be drafted in a clear and comprehensible way, with easily applicable measures, and they must of course be constantly updated so that they are always feasible.

The organisation

The second element to take into account when talking about an ERM process is the

organisation, since an efficient organisation is required in order to integrate the risks properly.

In order to achieve a good organisation, ERM activities should consider the following aspects:

- Appoint a Chief Risk Officer (CRO) and set up a working group to support him;
- Build an independent function specialized in ERM;
- Identify a risk-identifying entity, called a risk owner;
- Effectively establish and communicate tasks and responsibilities in the field of risk management;
- Integrate the ERM process into all business functions and units;
- Engage all employees, at all levels, in the ERM process.

The Process

We have already talked about the theme of ERM process, entering into the merits of its phases, which represent the focus of all the different currents of thought regarding ERM. What we are going to make clear in this paragraph is not the stages of the process, which have been analysed previously, but a series of measures concerning the process as a whole, which must always be borne in mind by the company. These include:

- Integration of ERM into strategic and business plans;
- Creation and maintenance of a risk register;
- Classification of risks in the reference categories (e.g. strategic, operational, financial, market etc.);
- Quantitative and qualitative risk assessment through a predefined process;
- Integration of all risks into a single portfolio and subsequent assessment of the equations between them;
- Definition of a treatment strategy for each risk;
- Development of appropriate contingency plans, i.e. plans that allow the company to have the means and procedures to be applied when a risky event occurs;

- Continuous monitoring of risk exposure, ensuring that it remains in line with the agreed limits;
- Creation of a periodic reporting system;

3.5 The Guidelines and the International standards

So far, we have tried to clarify as much as possible the characteristics, opportunities, and limitations provided by the ERM model. In this chapter, however, we will specifically analyse the international guidelines and standards provided by the main international organisations, namely the Committee of Sponsoring Organisations of the Treadway Commission (COSO) and the International Standard Organisation (ISO). The framework defined by these bodies represents the basic model that has allowed the development of ERM systems, as it establishes definitions, structures, processes to be applied. Let's start with the presentation of the framework provided by COSO, and then move on to the theme of ISO.

3.5.1 COSO ERM framework

The Committee of Sponsoring Organisation of the Treadway Commission is a U.S. Independent Commission that has produced various risk management frameworks throughout its existence. The first structure provided by this organisation was the Internal Integrated Framework of 1992, but it is particularly remembered for the framework provided in 2004. The 2004 framework is specifically aimed at the ERM process and represents one of the first international standards related to this theme, as well as one of the most used.

The ERM Framework 2004 aims to determine the risk quantum that the company can bear while maintaining the dual objective of creating value and managing its risks effectively and in an integrated way. We have previously reported on the definition of ERM provided by COSO, but here we will go into this definition and highlight key aspects. Let's start by reporting again the definition provided by COSO:

“The ERM is a process, affected by an entity’s board of directors, management and other personnel, applied in strategy-setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.” (AIIA & PWC, 2006)

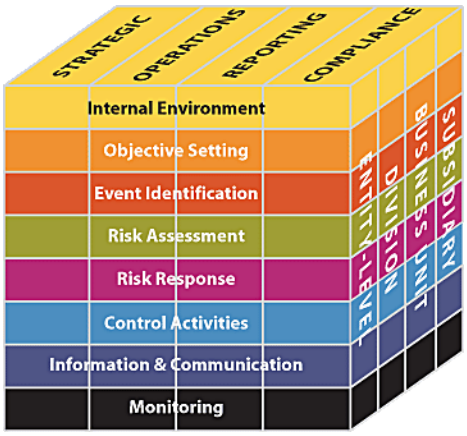
From this we can see that ERM is a continuous and multi-directional process, as it involves all participants in an organisation. As far as objectives are concerned, it is designed to identify risks and opportunities and to manage risk with an efficient allocation of resources, respecting objectives and strategies decided by the top management.

The components of the COSO ERM Framework

We now move on to the explanation of the framework proposed by COSO in 2004. According to this vision, ERM can be seen as a cube whose dimensions are defined by: (AIIA & PWC, (2006); COSO, (2004), *“Enterprise Risk Management-Integrated Framework: Executive Summer”,* available at the following website: https://www.coso.org/Documents/COSO-ERM-Executive-Summary.pdf)

- 8 components of the ERM, which are the cube lines;
- 4 types of objectives (strategic, operations, reporting, compliance), which constitute the columns of the cube;
- 4 organisational levels (subsidiary, business unit, division, entity-level) that consist of the intersections of the other two dimensions.

Figure 5: The COSO framework (2004)



Source: www.coso.org

Now let's analyse the 8 components of the ERM, represented by the cube lines.

- **Internal Environment:** represents the identity of an organisation and forms the foundation of all the other components of the ERM as it provides discipline and structure: it is on the basis of the internal environment that objectives, strategies and procedures are defined. The internal environment consists of many elements including corporate ethical values, staff skills, managerial style, risk management philosophy, the division of powers and responsibilities. It is important because it determines the ways in which risk is conceived, assessed and addressed. It also establishes the risk management philosophy, the tolerability threshold and so on. The process begins with the identification of the company's organisational units, defining actions to promote the culture of risk management and to design an organisational structure for risk management.
- **Objective setting**: The process then continues with the definition of business objectives according to the internal environment and alternative strategies and in line with the vision of success for the company. Proper identification of objectives is essential for the correct identification of risks. In fact, any event that might affect business objectives is considered as a risk. First, therefore, the objectives must be set, which will represent the level of risk appetite, and then the risks associated with them will be defined. Specifically, the company will define its mission first, followed by the strategic objectives useful to achieve it.

Once the strategic objectives have been defined, the company will have to define specific strategies and objectives by which it intends to achieve the set standards. It should be remembered that mission and strategic objectives are normally fixed, what can vary are individual strategies and specific objectives, which are influenced by changes within or outside the company. ERM ensures a correct definition of objectives, which are consistent with the mission and business strategies and that respect the level of tolerability chosen by the company.

- **Event Identification**: Once the objectives have been set, events are defined that positively and negatively affect the company's performance. Management, when identifying these events, does not have the knowledge to define whether these will occur and possibly with what kind of impact. Therefore, at least at an early stage, management will consider these events as possible, without providing a marked positive or negative sense. A peculiarity to which management will have to pay attention, are the related risks. In fact, risks are not always autonomous events, they are often interconnected with other risks. While a single risk can have an almost insignificant impact on an organisation, a number of related risks can pose a major problem for a business. Precisely for this reason, the task of management is also to intercept these correlations during event identification.
- **Risk Assessment**: at this stage the study, evaluation and classification of each risk identified in the previous phase takes place. The analysis takes place on the basis of probability of occurrence and impact, resulting in a risk management strategy.

  Typically, risks with low probability of occurrence and low impact are not treated, unlike those with a significant impact and a high probability of manifestation. The risks that lie between these two opposing poles are difficult to classify and must be assessed on the basis of the impact they would have on business outcomes. In this evaluation phase, management will have to distinguish possible events from unexpected events. Possible events are those events that, due to their very high frequency, are already considered within operational and budget programs. Unexpected events, on the other hand, are

unexpected and it is therefore important that in addition to a correct identification of the same, they are carefully evaluated in their possible impact.

- **Risk Response**: In the previous phases we considered the classification and analysis of risks in consideration of their probability of occurrence and their impact. Once this has been done, management must develop strategies that can be implemented to manage these risks. In order to select the most appropriate actions for risk management, an assessment must be made in relation to the impact and probability of the event and evaluating the costs and benefits of the various actions that can be taken in order to bring the level of risk back within the imposed tolerance limits.
- **Control Activities**: at this stage, the company decides and communicates the control procedures that will be applied to monitor the effect of the strategies applied in the previous point. The control activities cover the entire organisation and can be divided into four categories: strategic, operational, reporting and compliance. These Control tasks also need to be carefully analysed before their implementation and must be chosen in view of the cost of implementation and of the risk that must be controlled.
- **Information & Communication**: so far, we have analysed purely technical aspects, but a very important issue that must be taken in consideration is that of communication. The ERM model, in fact, in order to perform at its best, requires efficient internal communication. It is therefore essential to identify, collect and transmit the most important information, so that within the company everyone transposes it clearly and in a reasonable time. It is therefore important that information travels throughout the structure vertically, horizontally and transversely and reaches every level of the organisation. In this regard, in accordance with the principles of ERM, the company needs an information system that accurately measures and signals risks, while also communicates the effectiveness and costs associated with the risk management process.
- **Monitoring**: this aspect is linked not so much to the monitoring of specific actions, but to the monitoring of the ERM process as a whole. It is in fact important to remember that the ERM process is dynamic by definition and

therefore to be implemented correctly, the company must constantly observe the progress of the process, in order to make corrections if necessary. Some strategies, objectives, structures, or processes may become ineffective after a certain period of time or in special cases. It is therefore up to the company to keep track of the changes that have taken place and to adapt its ERM model to new needs. Monitoring must be continuous and in real time, as it is much more effective than an ex-post monitoring and because it allows for fast adaptation and better prediction of the future.

3.5.2 ISO 31000 ERM framework

After analysing the framework proposed by COSO, we move on to the development of the framework supported by ISO 31000, which is the international standard that together with COSO represents the starting point for the development of a correct ERM process. To do so, we will focus on two references: Pomodoro & Luccini, "Enterprise Risk Management e line standard ISO 31000", and AIRMIC, "A structured approach to ERM and the requirements of ISO 31000".

Specifically, ISO 31000, which was presented in 2009, is based on the COSO 2004 framework and proposes an evolution based on three pillars: principles, framework and process. (POMODORO, C., LUCCINI, T. (2012), *"Enterprise Risk Management e linee guida dello standard ISO 31000"*, Hspi; AIRMIC, (2010), *"A structured approach to ERM and the requirements of ISO 31000"*)

The ISO 31000 principles

The first pillar on which the work of ISO 31000 is based is represented by some principles concerning the risk management process. These principles, which we will be deepened shortly, are in line with what has been said so far and there are no substantial differences with what COSO has stated. As proposed by ISO 31000, the risk management process has the following characteristics:

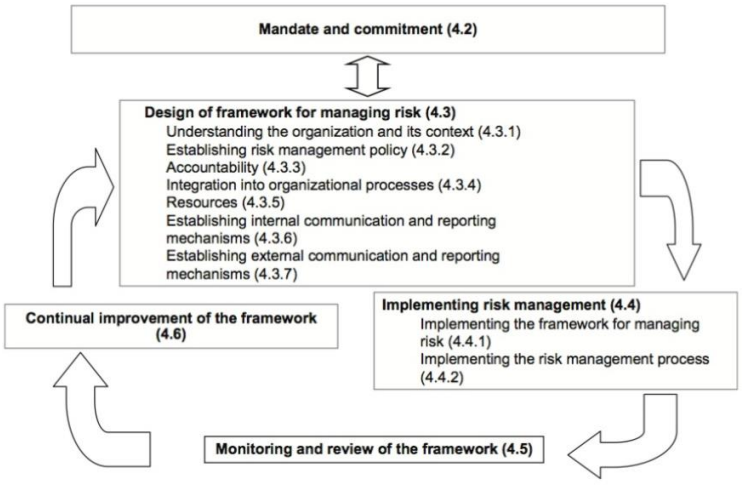
- It has the function of creating and protecting value, contributing to the achievement of business objectives;
- It should not be seen as an ancillary activity, but should be an integral part of all business processes, from management decision-making to the processes of individual units;
- It is an integral part of all decision-making processes, and is decisive in helping decision makers to make informed choices;
- It is systematic, structured and punctual, which makes it efficient;
- It is a tailor-made process, defined on the basis of the internal and external context of the enterprise, as well as on the basis of its risk profile;
- It is transparent and inclusive, as it takes into account both decision makers and stakeholders on time, making them feel involved also in the design and decision-making phases, as well as ensuring their constant updating;
- It takes human and cultural factors into account;
- It addresses uncertainty both in the analysis phase, in the decision-making phase and also in the operational phase;
- It is based on the best available information, such as historical data, experience, stakeholder feedback, direct observation, experts predictions and judgments. Despite being based on a system of qualified information, decision makers will have to carefully evaluate and study it before using it;
- It is dynamic, iterative and sensitive to change. In fact, as we have already mentioned, the ERM process must be constantly monitored in order to adapt it to new contexts, new needs, new internal and external factors that need a change in the structure of the process;
- It facilitates the continuous improvement of the organisation, since a well-structured ERM process will contribute to efficient risk management, thus allowing the company to grow and evolve in the event that new factors change the reference context.

The ISO 31000 framework

The framework proposed by ISO 31000 identifies the guideline on which to apply the ERM process that we will see shortly. The basic framework consists of five phases, which can also be found in the figure below. They are:

1. Mandate and Commitment, i.e. the phase in which company leaders establish powers and responsibilities within the ERM process;
2. Design of framework for managing risk, phase in which a decision on risk management policy takes place, organisational processes are integrated, resources are identified, the communication and reporting process is chosen, interventions and areas of competence are planned;
3. Implementation of risk management, phase in which we have the implementation of planned interventions within business processes;
4. Monitoring and review phase after the implementation of the processes;
5. Improvement of the framework.

Figure 6: ISO 31000 framework



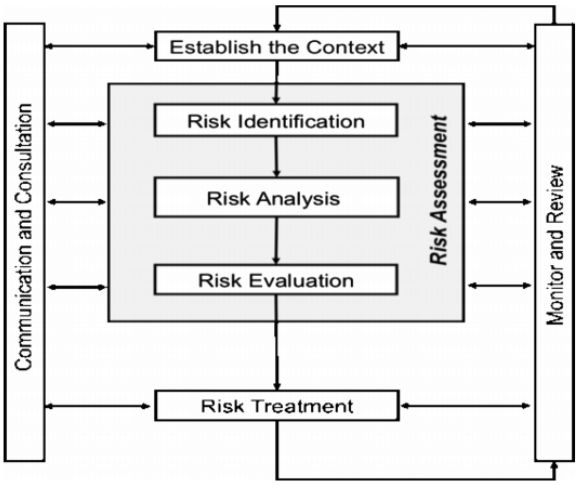
Source: Pomodoro & Luccini, 2012

The ISO 31000 process

Now let's move to the last backbone defined by ISO 31000, which is the process and its elements. As we will see, the process proposed by ISO 31000 has characteristics almost identical to that proposed by COSO. In fact, the process defined by ISO 31000 consists of the following activities:

- Definition of the reference context, defining the internal environment of the company and the environmental context in which it operates. At this stage, the risk context and the criteria for defining it are also defined;
- Risk assessment, resulting in identification, analysis and measurement;
- Risk treatment through the selection of one or more strategies
- Finally, at cross-cutting level we have a constant application of communication, consultation, monitoring and review activities.

Figure 7: ISO 31000 ERM process



Source: AIRMIC (2010), "A structured approach to ERM and the requirements of ISO 31000"

Chapter 4

HEDGING THROUGH INSURANCE CONTRACTS

In the previous chapter, we explained what the Enterprise Risk Management is and, why it is very important in the actual context. As we have said on several occasions, the topic of risk management has become crucial at the moment, as it represents not only a method to hedge against risks, but also an instrument to improve the performances and differentiate from competitors.

In this chapter, however, our focus will be on the hedging aspect and in particular on insurance contracts, an essential tool for pure risk coverage. The chapter will be developed in two parts: the first part will explain the definition of insurance contract, specifying also its elements and classifications. The second part will be focused on the main risks that affects firms and the relative insurance policies that can be used to hedge from those risks.

4.1 The Insurance contract

Insurance is the oldest form of risk-hedging, and still plays a key role in the society. However, there is no common definition at international level for this contract, so as we have done before, we will now provide the Italian definition of the term and the English definition, which is the general rule.

The Italian Civil Code, in Article 1882 defines the insurance contract as "The contract by which the insurer, upon payment of a premium, undertakes to retaliate against the insured person, within the agreed limits, for the damage caused to him by an accident, or to pay a capital or an annuity at the occurrence of an event relating to human life."

With the insurance contract, the risk of damage resulting from an accident or a risk related to human life (death or survival) is transferred from one person (the insured person) to another (the insurer). For his benefit, the insurer is entitled to obtain a cash payment called premium, which will be commensurate with the risk assumed and the insured capital. From this article of the Italian Civil Code emerges the first important distinction in the insurance field, namely the division between non-life insurance and life insurance.

Given the Italian definition, let's move to the British discipline. The first thing to say it's that there is no real statutory definition, but there is a general rule which is the standard description for the insurance contract. This definition was adopted by Channell J in Prudential V Commissioners of Inland Revenue [1904] 2 KB 658, in which the insurance is defined as "a contract whereby one party (the insurer) promises in return for a money consideration (the premium) to pay the other party (the insured) a sum of money or to provide him with a corresponding benefit upon the occurrence of one or more specified events."

The two definitions are similar and highlight the same issues, in particular the concept of premium, insured risk and compensation. These aspects are of fundamental importance and will also be mentioned in our future analysis, namely that of the essential elements of an insurance contract. Although there is no real rule governing the drafting of the insurance contract, which may vary depending on the insurance company, the type of risk or the period of taking out the policy, there are components that unite a large part of the insurance policies.

In fact, the insurance contract consists of six elements:

- Declarations;
- Insuring Agreement;
- Exclusions;
- Definitions;
- Conditions;
- Endorsements.

(KELLEHER, JR., THOMAS J., MASTIN, J.M.; ROBEY, R.G. (2015), *"Smith, Currie and Hancock's Common Sense Construction Law: A Practical Guide for the Construction Professional"*, 5th edition, Wiley)

Declarations

This section, which can be an integral part of the contract or can be issued separately and attached to the contract, aims to communicate the basic information regarding the type of contract and the parties. Specifically, in the declarations section we find information about:

- The insurer;
- The insured person;
- The type of contract;
- The coverage period;
- The sum insured;
- The prize;
- The presence of any brokers or agents.

In the Declarations section we have an indication of certain aspects of the contract which importance is crucial. One of these aspects concerns the compensation limit, which can be "per occurrence" or "on aggregate". In the case of a " per occurrence" limit, the insurance company undertakes to reimburse the policy holder whenever the insured event occurs, without a maximum aggregate limit. On the contrary, policies concluded with an aggregate base limit are characterised by a specified maximum compensation threshold. When this threshold is exceeded, the insurance company is no longer obliged to compensate the customer when the insured event occurs.

A further factor that must be specified in this section and to which we should pay attention is that of deductible or alternatively self-insured retention (SIR). These two concepts may seem identical, but they differ. Deductible can be defined as the portion of coverage that is deducted from the payment that the company undertakes to make in the event of a claim. This deductible is the responsibility of the policyholder and represents the share of coverage that he undertakes to pay in the case of claims. In contrast, self-insured retention is a portion of the coverage that the policyholder does not pay before the company intervenes. As can be seen, the two concepts seem practically identical, however there is a substantial difference, which lies in the different impact that deductible and SIR have on coverage. Deductible in fact goes to reduce the share of coverage borne by the company, while SIR does not affect the coverage, but simply defines an economic limit before which the company does not intervene.

Insuring Agreement

The insuring agreement is a section that establishes the basic conditions under which the insurer decides to cover the policyholder. This section therefore identifies the cases included in the agreement and covered by the contract, as well as the nature of the insurer's obligations at the occurrence of an event covered by the policy. In particular, the nature and role of the insurer, which can play two distinct roles, must be carefully defined. In fact, he can operate with the duty to defend, or with the duty to indemnify. In the first case, the insurance company is responsible for covering the customer from the various claims but also aims to protect him from new claims, while duty to indemnify imposes on the insurer just the activity of coverage and compensation of the customer from the claims he is facing.

Exclusions

The exclusions section is the section that expresses which situations are not covered by the insurance policy. It may be attached to the contract or be a separate accompanying document. What is important to stress is that it is a document in favour of the customer as it helps to better understand the contract, the cases covered, and which situations are excluded.

Definitions

This section is very important because it allows a complete understanding of the contract. In fact, in the definitions we find the explanation of all the terms present in the contract, in order to guarantee full awareness to the subscriber.

Conditions

The conclusions section contains all the clauses that the policyholder must comply with in order to obtain coverage. These include:

- Payment of the premium;
- Notify the insurance company of any claims;
- Provide support to the insurer regarding personal information related to the policy;

Endorsements

Usually, the endorsements section is produced separately and can be attached to the contract both at the conclusion stage and at a later time during the life of the contract. This document contains additions or changes to terms, conditions, and exclusions. It is very useful for modifying information concerning the parties (such as the inclusion of an additional insured person) or concerning the general conditions. Having a very extensive nature and use, the changes made in this section must be constantly monitored and updated.

(MARRINSON, T.A, MATHIAS, J. Jr., SHUGRUE, J.D., STRUCK, D.J. (2006), *"Components of an Insurance Policy: Insurance Coverage Disputes"*, New York, Law Journal Press.)

Insurance contracts are multiple and can protect against many risks of people and organisations. For this reason, before continuing with the study of the most important contracts for a company, let us focus on the classification of insurance contracts.

Previously, when we provided the definition of the insurance contract, we have already mentioned the issue of the two branches of insurance. The classification of insurance contracts is, in fact, common at a global level, and sees the distinction between two macro-areas: the non-life and the life insurance sector. In our analysis we will focus more on the non-life sector as it is closely linked to the business world, but first we proceed to a brief examination of these two branches of insurance, starting from the one related to damage.

The non-life insurance company protects the insured person from events that affect his assets and provides compensation in the event of such events occurring. These include:

- property policies that protect the policyholder's properties and the damages that may affect them;
- liability policies which, as the word itself suggests, concern the insured person's various civil liability. In particular, it covers the damage that the person may cause to third parties or to third parties;
- policies against financial and commercial risks that focus on the credit aspect, protecting the policyholder from market fluctuations and credit risk.

In the life insurance sector, the amount of the policy and premium are based on the probability of the life or death of the insured person within a certain period. Policies in this branch can therefore protect not only the policyholder, but also his family members or selected policyholders. Death and life are not the only event that can be insured in this branch, as we can find contracts also related to disability and old age. The coverage takes place mainly through the provision of capital (in the case of death or life) or through an annuity (widely used in the case of old age and disability)

Once this premise has been made, we can continue with a greater awareness to the analysis of the most used policies in the field of Insurance risk management. To do this, in the next chapter we will divide the individual insurance contracts according to the types of risk analysed above and in the first chapter of this paper.

4.2 Types of insurance contract

In the first chapter, to distinguish the risks that make up a business, we made a division into four categories:

- Operational risk
- Strategic risk
- Financial risk
- Compliance risk

Thanks to the internship at the company SMB Scala & Mansutti Broker, which is an insurance broker, we can now face the contracts that allow to mitigate these categories of risk.

The broker's business itself has a risk management approach, as the client's insurance needs must be carefully analysed. The insurance broker, therefore, can be defined as the intermediary who connects the client and the insurer for the conclusion of an insurance contract without being tied to any of the parties by relationships of collaboration, dependence, representation (the characteristics of independence and impartiality distinguish the figure of the broker from that of the insurance agent).

The insurance broker is therefore distinguished from the simple mediator (ex art. 1754 ss c.c.). The insurance broker, in fact, does not limit himself to connect the insurer and the client, but assists the latter in the pre-contractual phase, looking for the most suitable insurer to ensure the proposed risk and thus collaborating in the formulation of the contractual content, and sometimes also in the post-contractual phase, cooperating in the management and execution of the contract. It is clear, therefore, that in addition to the intermediation phase, there's also an activity of advice in favour of the client.

This assumption has also been confirmed by the Supreme Court of Cassation with judgment 8095 of 2007 in which it was stated that the broker is not a representative of the parties who enter into the insurance contract but is part of the so-called insurance brokerage contract concluded with the client.

Once we highlighted the figure of the broker and the important difference between him and an insurance agent, we can examine the main business insurance contracts within the risk classes mentioned above.

4.2.1 Policies to protect against Operational risk

Property policy

This policy aims to compensate for material and direct damage caused to company buildings and furniture as a result of fire, lightning and explosion and, if mentioned in the policy, also of other events (theft, atmospheric events, socio-political events, machine failures). The policy can be issued in the form All Risk or Named Perils. The first method is the one most used in the current context as it provides for coverage from all the risks that make up the property sector, excluding specific situations that are noted in the policy, while the Named Perils policy works in reverse. The contract exposes the individual risks covered, thus leaving a margin of doubt to the customer. The All-Risk policy is undoubtedly more transparent, as it protects against all risky situations that have not been indicated in the exclusions, protecting the customer more, since he will have a clear picture of the risks covered.

As already mentioned, the property policy provides direct material damage (i.e. damage caused directly by the insured event) and some consequential damages but indirect damages resulting from a certain insured event such as damage from interruption of the business activity are excluded.

Indirect damages are financial damages caused by a partial or total interruption of the company production process as a result of a property claim. These costs impact violently on the company's life because on average they are 2,5 times greater than the pure direct damage and can lead to the closure of the company.

This type of damage can be covered by indirect non-life insurance or by business interruption insurance through which the aim is to protect the net profit of the insured company from the negative consequences that the accident can have on its economic results.

Fundamental prerequisites for granting the "indirect damages" insurance are:

- that all assets and buildings on the holding are insured against material and direct damage;
- that material and direct damage is indemnible and that it is the actual cause of indirect damage;
- there should be a time-free allowance.

The insurance market offers various indirect damage insurance solutions including:

- the percentage compensation which guarantees a percentage increase in the compensation granted for material and direct damage. This formulation is useful for simple risks and small businesses, but it turns out to be ineffective for large risks and large companies, as they do not allow coverage of the loss suffered;
- the compensation in diary form, in which a set sum is compensated for each day of inactivity of the organisation. The limitations of this technique are linked to the existence of a maximum number of days that can be compensated and to the fact that the business activity is supposed to be uniform and constant over time, and therefore ignores possible seasonal trends;

- the so-called Loss of Profit compensation, a technique that is not based on a specific amount, but that refers to accounting values. With it, the insurer undertakes to compensate the insured person for the loss of gross profit which may result from the interruption of activity. The standard for determining compensation in this way is the turnover of the 12 months prior to the date of the accident. Any additional operating costs and rescue costs will also be added to the loss of turnover.

Before moving to Liability Policies, we have to talk about the ***Cyber policy***, which has already been mentioned. This policy has the peculiarity of being a mixed contract, since it is not just a property policy, but has a liability component. We place this policy among the contracts related to operational risks because we believe that most of the risks that are covered are of an operational nature, however the peculiarity of cyber risk is precisely transversality. The cyber policy covers the following risks:

- Hardware and software corruption
- Errors in the execution of processes and system operations
- System malfunction
- Unwanted programmes

Although this type of policy has been established in the American market for many years now, the European and especially the Italian market have struggled to adapt to this issue and only in recent years has awareness of the importance of protecting its business from the risks related to the use of technology.

Liability Policies

The Liability concept, in the Italian Civil Code, is legislated in Article 1917, where it is specified that "in liability policies, the insurer is obliged to keep the policyholder unscathed from what he must pay to a third party, in consideration of an event that occurred during the duration of the contract and depending on the liability deducted from the contract." It is also specified that the insurer is not obliged to compensate the insured person for damage resulting from malicious events.

In liability we will deal with the following contracts:

- The Public Liability Insurance (the Italian RC Terzi)
- The Employer's Liability Insurance (the Italian RC Operai)
- The Product Liability Insurance (the Italian RC Prodotti)
- The Professional Liability Insurance (the Italian RC Professionale)
- The Motor Liability Insurance/ Car Liability Insurance
- The Enviromental Liability Insurance

Public Liability Insurance, or Third-Party Liability Insurance (in Italy known as RC Terzi), is a business insurance that guarantees coverage of the costs deriving from claims of third parties connected to our business. In particular, this policy provides for an obligation on the insurance company to keep the policyholder free of what he is required to pay to a third party, as compensation for damage unintentionally caused to third parties by death, personal injury, destruction or deterioration of property, resulting from an accident occurrence in relation to the risks indicated in the policy. As can be seen from the definition just given, the involuntary nature of the damage, which excludes fraudolent damage, is underlined. It is also pointed out that the guarantee operates only for the risks indicated in the policy, excluding any other damage not indicated. We can say that the policy mainly covers three types of cost:

- Bodily Damages: the insurance covers the costs that the third party has to bear due to damage or injury suffered as part of the activity indicated in the policy;
- Property Damages: in this case the policy covers the damage that is caused to a third party property;
- Legal Expenses: the policy also covers part of the legal costs and up to a quarter of the ceiling and in addition to it.

The next policy that we will analyse is the Italian Responsabilità Civile Operai (RCO), which is a contract similar to the Anglo-Saxon ***Employers Liability Insurance***, except for a detail that distinguishes it from the RCO. Through the RCO, the insurer undertakes to keep the policyholder unscathed of how much he is required to pay as responsible:

- for accidents suffered by workers within the meaning of Articles 10 and 11 of Legislative Decree 30-06-1965, n. 1124 and Article 13 of Legislative Decree n. 38;
- for damage caused to workers by death and permanent personal injury not lower than 5%. It is necessary that the scenario has not been considered within the cases reported in the previous Articles. In this case, compensation is paid for the damage suffered.

The peculiarity that distinguishes the Italian contract from the English contract is the figure of INAIL, a national institute that operates with respect to injuries and workers' insurance and that personally covers the costs arising from injuries and illness of workers. The RCO policy does not protect the undertaking from the costs of accidents and damage suffered by workers, but from the compensation that INAIL may make against the undertaking. This makes the RCO a unique contract in the international context. In the event of an injury at work or an occupational disease, INAIL may claim reimbursement for benefits provided to the injured worker if some responsibilities can be addressed to the entrepreneur or more generally to one or more persons in the organisation. Where, therefore, there is a liability of the employer, or a third party, in the causes of the harmful event suffered by the employee, the insurance institution may take action against the person responsible for obtaining a refund of what has been compensated for the occupational disease or accident. With the RCO contract, the company therefore obliges to keep the employer unscathed from the cost that he should suffer in the case of a claim by INAIL, protecting him from the payment due to the worker for the greater damage suffered.

Employers Liability Insurance, on the other hand, is the Anglo-Saxon version of RCO's contract, and has similar characteristics, but with a different point of view and the absence of INAIL. In particular, it is a contract which protects the worker of an organisation by providing him with compensation and covering the legal costs which he has to bear as a result of damage suffered by him and attributable to his present or past employer. This policy therefore protects the worker from all physical (sickness or accident) and economic damage (medical expenses, legal costs, loss of earnings) that can be attributed to negligence on the part of the employer. The substantial difference

lies in the subject matter of the contract, as RCO protects the company from any actions to moved by INAIL, while Employers Liability Insurance covers the company from the costs related to accidents at work (which in Italy are covered by INAIL except in cases of reimbursement).

Product Liability Insurance, known in Italy as RC Prodotti, allows companies to protect themselves from claims for damages to third-party property or personal injury to third parties, resulting in the defect of manufactured products (not covered by Third Party Liability insurance). The RC Prodotti policy covers:

- Death damage;
- Personal injury to third parties;
- Damage to third-party property and materials;
- Destruction or deterioration of things other than the defective product;
- Damages resulting from interruption or suspension of activity;
- Collection and seizure of Recall products;
- Substitution or replacement costs.

In the scope of this policy, the insured person has the burden of declaring, at the time of taking out the policy, any circumstances of which he is aware that he may lead to an accident or claims for compensation relating to facts already occurred and relating to the subject of a policy covering the following activities:

- product design;
- manufacture of the product;
- formulation of instructions for the use of the product.

To safeguard the company in the insurance coverage of these policies there are additional guarantees for damages:

- From malicious and/or accidental contamination (Tampering) of the product;
- From the disposal of products;
- Indirect damages such as loss of business volumes and higher costs;
- Damage to the corporate image, coverage of legal fees.

Finally, it is important to stress that the Product Liability Insurance is not only useful to the manufacturer of the good or to the service provider. In fact, together with the manufacturer, those who import goods and services into the European Union, those who place their brand, name or distinctive sign on a product and also those who sell products of which neither the manufacturer nor the importer can be identified, can be responsible for damages linked to the product.

Professional Liability Insurance is a policy that covers damage suffered by a third party as a result of an error or inefficient service carried out by the firm or its worker. In particular, it turns out to be a very useful policy for those figures who provide their knowledge, advice and skills in the field of consulting, advertising, public relations, and is mandatory for some types of activities including:

- Lawyers;
- Accountants;
- Architects;
- Financial advisors;
- Certain categories operating in the medical sector;
- Experts.

The policy usually operates in claims-made and therefore goes to cover the costs incurred by third parties as a result of an inefficient performance of the company provided that the claim is reported by the expiration date of the policy. If the claim is reported after the policy is operational, the policy will not cover expenses, even if the damage dates to a time when the policy was active.

Car Liability Insurance, known in Italy as RC Auto, is the policy that covers the damage that a person may cause to third parties or third-party property while driving a vehicle. It should be specified that this policy only covers damage suffered by third parties or their property. The damage suffered by the driver is not covered by this type of policy but will find coverage with other types of personal policies. Car Liability Insurance therefore provides two different types of cover: Bodily injury, relating to physical damage caused to third parties, and Property Damage, relating to damage inflicted on

the property of a third party. In the Italian context, it represents the only mandatory policy.

Enviromental Liability Insurance is a contract covering damage caused by air, land, water and environmental damage. Environmental issues have become increasingly important over the years, with specific laws and international standards that companies must respect. This led to a change in the insurance management of companies, and consequently the use of this type of policy has increased. There are many sources of environmental risk in companies, but among them we remember:

- The transport of polluting loads;
- The fire of part of the property, which can generate air pollution;
- Damaged tanks or storage systems (e.g. oil tank);
- Production of fine dust during the production phase

Regarding the costs covered by Enviromental Liability Insurance, we remind that it covers all risks related to soil, air and water pollution, but in particular provides coverage from:

- Damage related to gradual and sudden pollution;
- Environmental damage to third parties or third-party property;
- Legal costs and fees;
- Costs of restoring structures

4.2.2 Policies to protect against Strategic and Compliance risk

In the previous paragraph we have seen business policies aimed at covering operational risk. In this paragraph we are going to study contracts which are concerned with protecting the company from strategic and compliance risks. In particular, we will analyse the following contracts:

- Directors & Officers Liability Insurance (D&O);
- KeyMan Insurance;
- Legal Protection
- Warranty and Indemnity Insurance (W&I)

The D&O policy ("***Directors & Officers Liability***") protects the personal assets of directors and other officers (board members, directors, auditors and members of the supervisory board, if existing) if they are implicated for damages. In corporations, the control and management bodies are unlimitedly liable with their personal assets in the case of a breach of obligations. This means that they respond with their personal assets if they do not comply with their obligations established by the law and the articles of association. Any shareholder, regardless of the shares held, and any customer and competitor of the company and other people may therefore take liability actions against the directors. The D&O policy is underwritten by the company and insures the President and the Vice-President, Board Members, De Facto Directors, Executives and Auditors, and possibly the members of the Supervisory Board, therefore protecting them from third party actions, which might directly attack their personal assets.

In particular, it covers compensation against directors and managers for any offence. The unlawful acts in question are as follows:

- Breach of obligations;
- Breach of trust;
- Errors;
- Negligence;
- Illicit trade;
- Misleading statements.

This policy is important in the case of companies where directors and executives have strategic responsibilities, as it covers claims made by shareholders, investors, employees or third parties regarding the work of management. The protection provided by the policy also extends to legal situations, covering defense costs and any compensation costs arising from an insolvency defense. If a company has some directors that have a strategic role and do not own this type of policy will have serious implications, such as forfeiture of the office of administrator, as well as all the possible

civil and criminal implications that can lead to compensation, legal costs financial penalties and reclusions.

Once we talked about the D&O, we can now turn to the so-called ***Key Man Insurance***. This policy is based on an important premise: in the context of an organisation there are many important assets to protect, such as machinery, plants, know-how, but in some companies, there are figures that represent the most important asset that the company has. The subject in question, known as key man, plays a fundamental role in the context of the enterprise and is therefore difficult to replace. Each company can identify the key man in different subjects: it can be the entrepreneur himself, a manager, a sales manager or any other entity whose exclusive skills are the determining factor for the success of the company. The disappearance of this figure can cause considerable damage to the enterprise, such as:

- Short-term operational deadlock or slowdown;
- Loss of know-how;
- Production freeze;
- Postponement of important decisions;
- Search for a person who can replace the key man

The Key Man policy allows this type of problem to be solved at least from an economic point of view, guaranteeing capital to the company in the event of the death or permanent disability of the insured person. Technically there is not a maximum capital that can be included in the policy, but the insurer has to define it, considering not only the knowledge and role of the keyman inside the organisation, but also the state of health, age and a whole series of parameters useful to define a reasonable value to protect the subject and the company itself.

The next contract to be examined is that of ***Legal Protection***. This contract is governed by Article 173 of the Insurance Code, which defines this policy as "the contract by which the insurer, towards the payment of a premium, undertakes to bear the legal costs or to provide other benefits necessary for the insured person for the defence of his interests in court, in any type of proceedings , or out of court, in particular for the purpose of obtaining compensation for damages suffered or to defend itself against an

application for compensation made against it, provided that it is not proposed by the insurer itself.".

The risk of legal expenses for reasons related to trials or disputes is one of the risks that most affects individuals and companies. The processes are usually very long and, as a result, the costs of carrying them out can be considerable. Through legal protection contract, on the other hand, the insurance company undertakes to bear the costs and the provision of other services in defence of the insured person in court, for the compensation of damages suffered and for the defence of the insured person from the claims for compensation suffered by him.

In the context of an enterprise, this policy offers cover from the following types of risk:

- Legal protection in cases of criminal proceedings against the company;
- Legal defense to resolve contractual disputes;
- Legal defence for disputes related to unfair administrative sanctions;
- Assistance to obtain compensation for damages suffered;
- Coverage for damages caused to third parties (in this case the Legal Protection policy supplements another Liability contract previously signed by the policyholder).

However, the policy normally contains exclusions for the following situations:

- Payment of fines and fines not insurable according to the Insurance Code;
- Insured person's fraud;
- Contractual disputes against the insurance company.

Finally, we deal with Warranty and Indemnity Insurance (W&I), a contract created to manage the risks arising from the breach of the declarations and guarantees contractually agreed between the seller and the buyer in the case of an acquisition of shareholdings or companies. The policies are intended to cover pecuniary losses resulting from breaches of guarantees and thus to transfer (partially or as a whole) to the insurer the economic risks resulting from an acquisition. They replace or complement traditional guarantee instruments, such as bank guaranty, delay of payment, trust deposit (escrow).

Prior to the development of this contract, the only form of protection was provided by the indemnity clause, which is not entirely effective as it works ex post, when the liability resulting from an R&W (Representations and Warranties) breach has already been suffered. Warranty and Indemnity's policy is very useful as it is the only contract that allows the full transfer of risk to a third party, namely the insurer. This policy has several connotations depending on whether it is taken out by the seller or buyer. If the contract is entered into by the seller, the seller undertakes to pay a premium against compensation to the buyer in the event of violations of representations and warranties. In short, if the policy is taken out by the seller, its main objective is to limit its liability to the buyer by transferring it ex-ante to the insurance company. In the event of conclusion by the buyer, he will be compensated by the seller for damages below the maximum liability limit agreed, or by the insurer for excess damages. (LANGÈ, C., MIRAMONDI, M., "*Polizze assicurative nelle operazioni di M&A"*, Studio Legale Greco Vitali Associati) The value of this contract lies not only in limiting risks on both sides, but also in speeding up acquisition times and perfectly adapting the policy to any type of M&A transaction.

4.2.3 Policies to protect against Financial risk

When a company wants to hedge through insurance contracts the Financial risk, the main instrument is the Trade Credit Insurance. This contract protects business from non-payment of commercial debts and grants:

- Protection of capital
- Improvement of repayment and loan servicing
- Maintenance of the cash flows
- Ensuring the earnings

These guarantees allow the company to feel safer against new lines of business and new customers who would otherwise have been too risky. This security factor is very beneficial for every type of organisation but especially for some business classes such as exporters, who will be able to broaden their horizons and start new lines of business, obtaining a competitive advantage over others.

In addition to the protection of the company's claims, there are other advantages which can be obtained from this type of contract and can be summarized as follows:

- Sales expansion: If your organisation has secured its accounts receivables, it will be able to sell more products or have relationships with customers who would otherwise be considered excessively risky;
- Increase in sales and profits: in connection with the previous point, we can say that the cost of a credit policy is often eliminated through an increase in sales at an unchanged level of risk;
- Reduction in bad-debt reserves: insurance allows you to free up capital, reducing the amount of debt borne by the company;
- Better Financing terms: company receivables insurance represents a guarantee for banks, which will be more likely to grant favourable financial terms and reduce the cost of funds;
- Improve in the relationship with the lender: trade credit insurance, as mentioned in the previous point, can be a guarantee for lender. In fact, many banks require specific credit guarantees before lending to organisations;
- Expansion to new markets: in the case of exporters, credit protection allows the company to evaluate new international markets on which to operate;
- Actionable economic knowledge: the company can rely on the skills and technologies of the insurer to reduce information and operational costs.

Despite the many advantages that this policy has, it should not be forgotten that Trade Credit Insurance does not replace efficient credit management. Good credit management is the starting point of every Trade credit Insurance contract and must therefore not be a substitute instrument, but a supplement to efficient credit management.

Chapter 5

THE ITALIAN AND EUROPEAN CONTEXT WITH RESPECT TO RISK MANAGEMENT

In the previous chapter we analysed individual contracts and policies that can help the risk manager and insurance manager to face business risks. What we will do in this chapter is to highlight the Italian and European situation of recent years with reference to the topic of risk management. To carry out this type of analysis we will rely on documents published by FERMA, the CINEAS Observatory on Risk Management and journals specialized in risk management. In particular, we will first address the macroeconomic framework of risk management in Europe, with an analysis of the risks that are of most concern to European companies, and then analyse the results of the same research but exclusively referred to Italy, with a survey of small and medium-sized manufacturing companies.

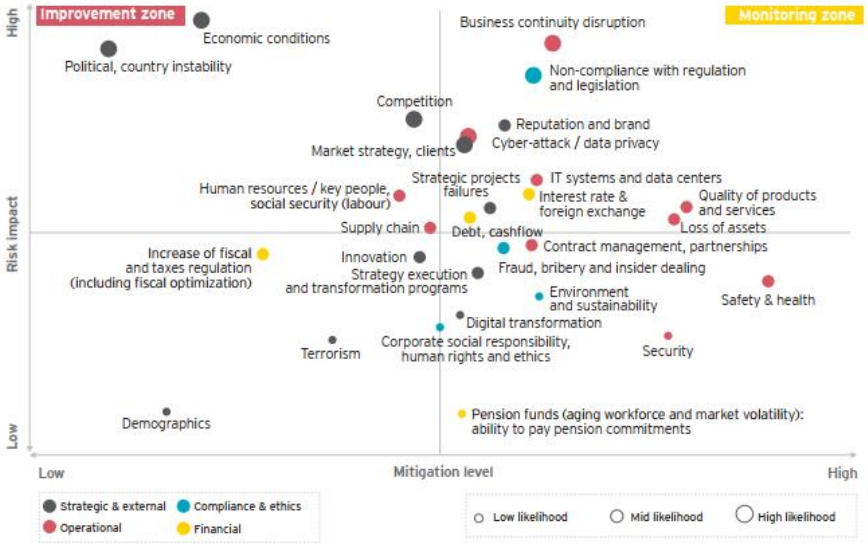
As already mentioned, we begin the macroeconomic survey with the analysis of the biennial reports conducted by FERMA, a report in which information about risk management at European level is collected and disclosed. In particular, in this first phase, we will focus on the perception of risk based on a sample of European companies, which will then serve for a comparison between the European and Italian contexts. The first aspect we want to analyse is the trend that had the most significant risks for companies during the period 2016-2020. Below we can find the evolution of the top five of risks, which we will then deepen by analysing their dynamics.

Figure 8: Evolution of Top 5 risks at European level

Source: FERMA (2020), "FERMA European Risk Manager Report 2020"

As can be seen from the table above and the chart below, risk mapping for the year 2016 is strongly linked to compliance and the concept of entrepreneurial activity. Beyond the economic conditions and geopolitical instability, the risks that are most perceived by European organisations are internal, with the risks of compliance, strategic risks such as competition and above all the operational risk related to business continuity disruption, which in 2014 was not in the top ten but which in 2016 took a huge step presenting itself in second position. The graph also shows us that the two external risks, namely the risk related to economic conditions and the risk related to geopolitical issues, despite being two of the most significant risks according to European companies, are not very measurable and therefore companies accept them to focus on the transfer of internal risks. Although they do not appear in the top five of risks, we can see that cyber risk is a very current topic in the context of 2016, with a very high likelihood and consequently a very high interest on the part of companies.

Figure 9: European Risk Map of 2016

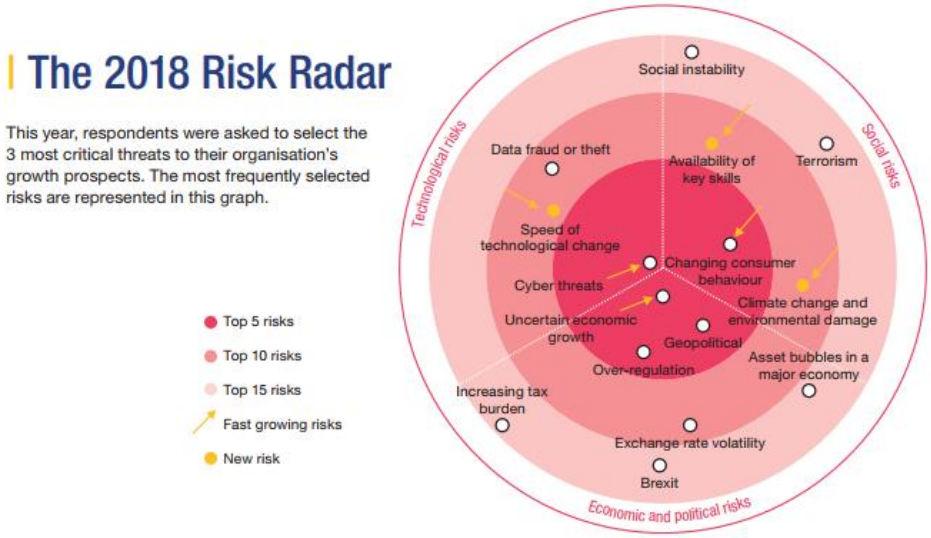


Source: FERMA (2016), "FERMA European Risk Manager Report 2016"

The 2018 report, as we can see from the initial table, sees the overbearing entry of cyber risk, which was in the top 10 risks in 2016, but which within two years makes a leap to the top. In addition to Cyber risk, we can note the entry of the risks related to changes in the consumer behaviour, which take the place of business continuity risk and competition. Looking at the graph below, which shows the risks considered most significant for the European companies surveyed, we can see some interesting elements. First of all, you can see on a graphic level the boost obtained from cyber

risks that have experienced a fast and significant increase compared to the previous two years. If the 2016 report marked the affirmation of cyber risk, the 2018 report confirmed how essential it is to pay attention to this type of risk. A similar boost has been achieved by the risks related to the change in consumer habits. Finally, the 2018 report records the entry of three new risks in the ranking (marked in yellow in the graph below), namely the speed of technological changes, the presence of key skills and the risks related to climate change and environmental damage, which are not yet in the top five, but which are strongly considered as a source of risk by European organisations.

Figure 10: The European Risk Map of 2018

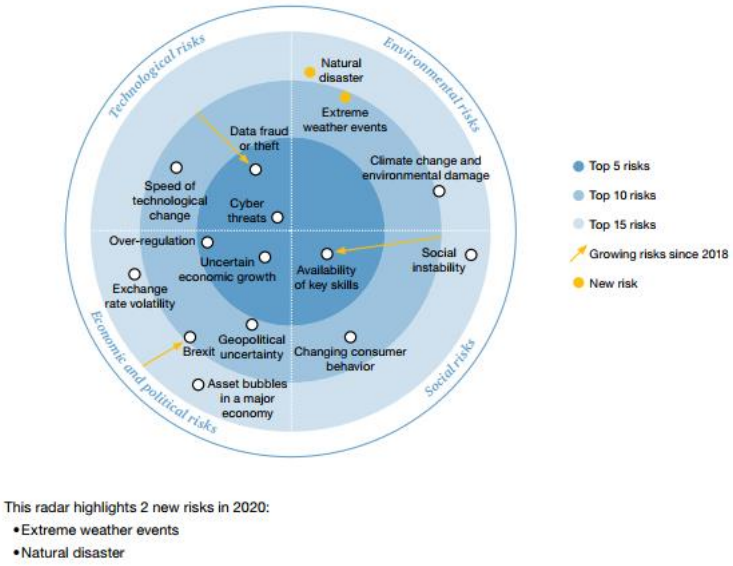


Source: FERMA (2018), "FERMA European Risk Manager Report 2018"

The 2020 report confirms the importance of cyber risk, which remains firmly at the first position, followed by the risk related to economic uncertainty. We should mention the entry of two new risks in the top five, namely the risk of data fraud and that related to the availability of key skills, which have obtained a clear boost compared to the previous report, as can be seen from the graph below. The 2020 risk map also highlights some interesting aspects, such as the increase obtained from the risk related to Brexit, but above all the presence of two new risks that have imposed themselves significantly. Both of these risks are related to enviromental risk and are the risk of natural disasters and the risk of extreme weather events. In this regard, the 23rd CEO Survey, which gathers the opinions of 1581 CEOs from 83 different countries,

underlines that the environmental and climate aspect is a category of risks that is increasingly of concern to companies (PWC (2020), *"23rd Annual Global CEO Survey: Navigating the rising tide of uncertainty"*, available at the following website: https://www.pwc.com/gx/en/ceo-survey/2020/reports/pwc-23rd-global-ceo-survey.pdf). A green transition is developing, and this affects all European and international countries. According to FERMA's report, in fact, the risks related to the environment will have an escalation similar to that of cyber risks. In particular, in the forecasts for the next three years there will be a digital transformation, in which the main risks will be the cyber one and the one related to the speed of development of technologies, while in the long term (10 years) the most relevant risks will be related to the environment and atmospheric events as in the long term it is expected to move to a system aimed at sustainability.

Figure 11: The European Risk Map of 2020



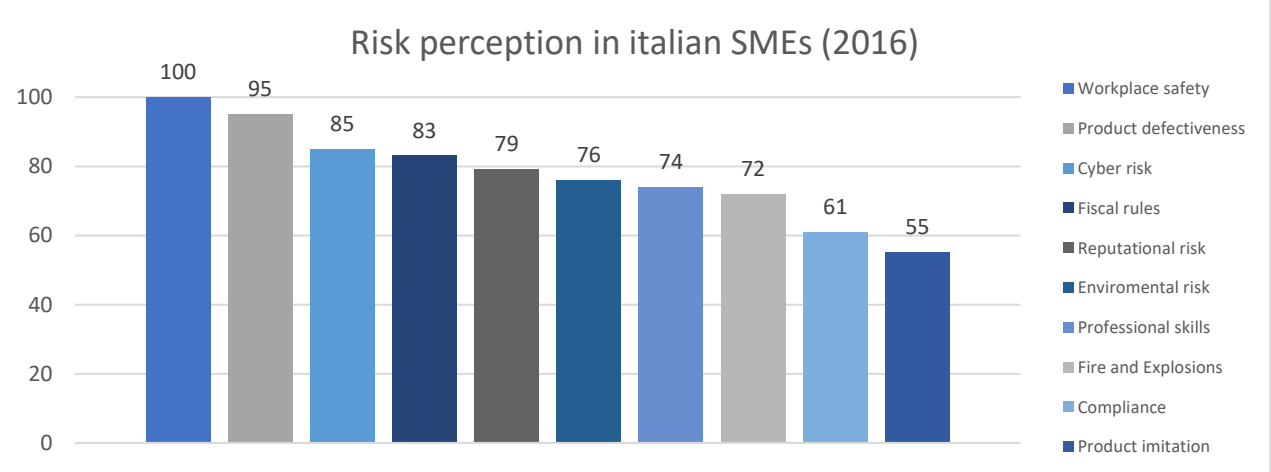
Source: FERMA (2020), "FERMA European Risk Manager Report 2020"

To sum up, the macroeconomic environment has changed considerably over the last four years. In fact, we went from a context in which the nature of the risks that worried companies were internal (compliance risk, operational and strategic), to a context strongly influenced by risks related to the environment, climate and technologies.

The next step is to analyse the reports conducted by CINEAS to identify similarities and differences between what has been seen so far and the Italian context. To track the progress of Italian companies in the field of risk management, CINEAS[4] since 2013, conducts every year an Observatory on the trend of risk management in Italy highlighting its main aspects. The time frame that we are going to consider in this analysis is between 2016 and 2020, but the analysis will be annual, and not biennial as in the case of the macroeconomic survey. Before starting, it is necessary to remember which is the reference sample used by CINEAS for its investigations. It has varied slightly over the years, increasingly obtaining answers (from 280 responses in 2016 to 339 in 2020), while keeping the characteristics of companies unchanged. In fact, the sample is always structured by small and medium-sized enterprises with an average turnover of 61 million Euros and operating in the manufacturing sector (there are companies of multiple categories, from food, to chemical or mechanical).

With regard to the perception of risk, the companies interviewed were asked to give a weight of 0 to 100 to different types of risk, and this made it possible to establish a ranking of the 10 risks that scare Italian SMEs the most. So, let's start the analysis on risk perception by reporting, year by year, the rankings of the most relevant risks for the organisations surveyed.

Figure 12: Italian risk perception, 2016

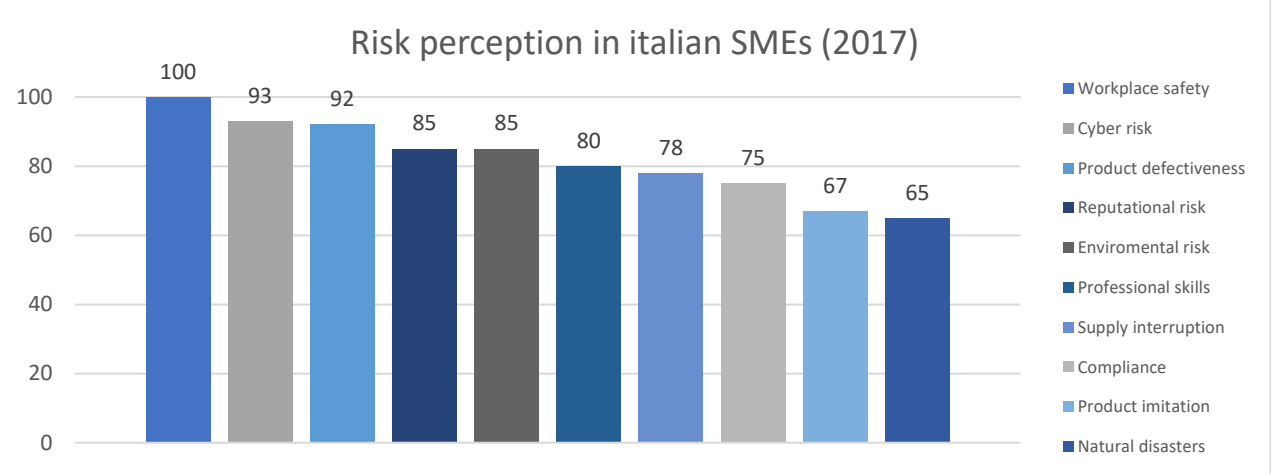


Source: CINEAS (2016), "Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"

[4] The acronym CINEAS means University Consortium for Engineering in Insurance, and is a consortium born in 1987 on the initiative of the Politecnico di Milano, some insurance companies and trade associations.

From the 2016 report we can see a factor that will be a constant of this analysis: the most important risk for Italian small and medium-sized enterprises is that related to the workplace and workers. The risks associated with working conditions are therefore the most protected aspect of companies because of the serious economic and legal implications of an accident at the workplace. An interesting factor to note is that companies are not so much intimidated by events of damage to their properties (in fact we only have the fire risk in the ranking), but by events related to the Liability branch.

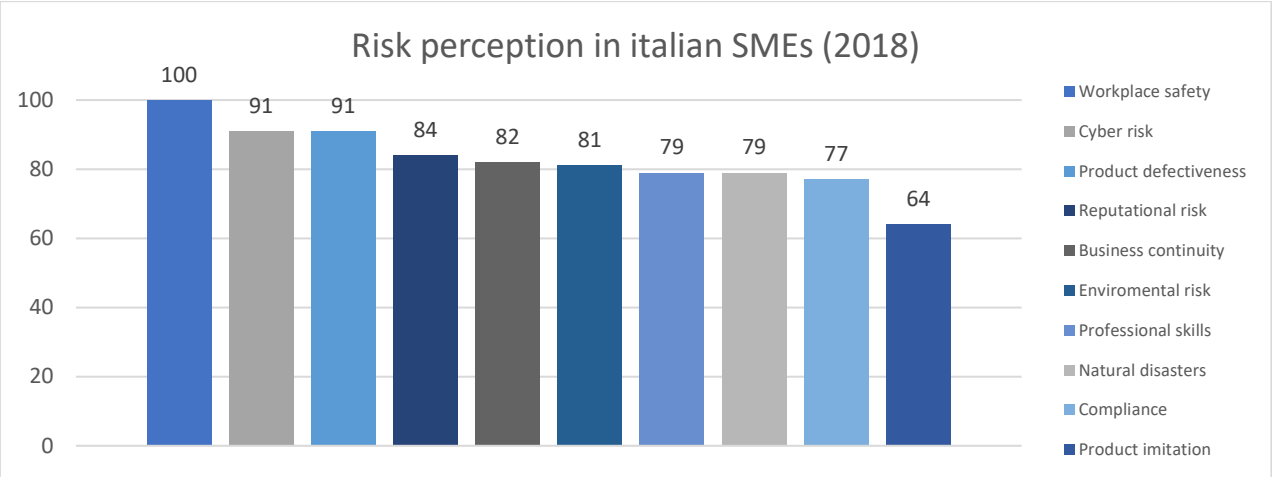
Figure 13: Italian risk perception, 2017



Source: CINEAS (2017), "Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"

Even for 2017 the importance of compliance risk is confirmed, in fact the risk related to workplace safety remains firmly in first place. However, changes are taking place in other risk components, such as cyber risk, which moves to second place (in 2016 it was in third position and in 2015 even in eighth position). Another category of risk that makes its rise is the one related to the concept of reputation, which moves to fourth place, while in 2015 it was even not included in the ranking of the 10 most relevant risks. Finally, we believe it is important to highlight the entry of the risk related to natural disasters, which has grown in importance due to the increasing number of adverse climatic events such as floods, fires, earthquakes, and the increasing attention that is being paid to the environment.

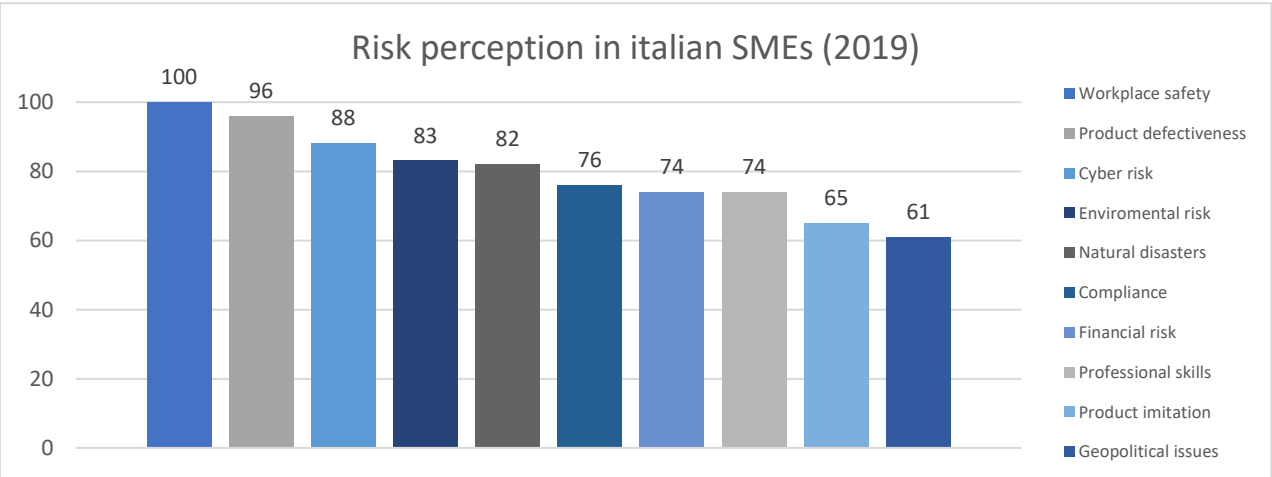
Figure 14: Italian risk perception, 2018



Source: CINEAS (2018), "Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"

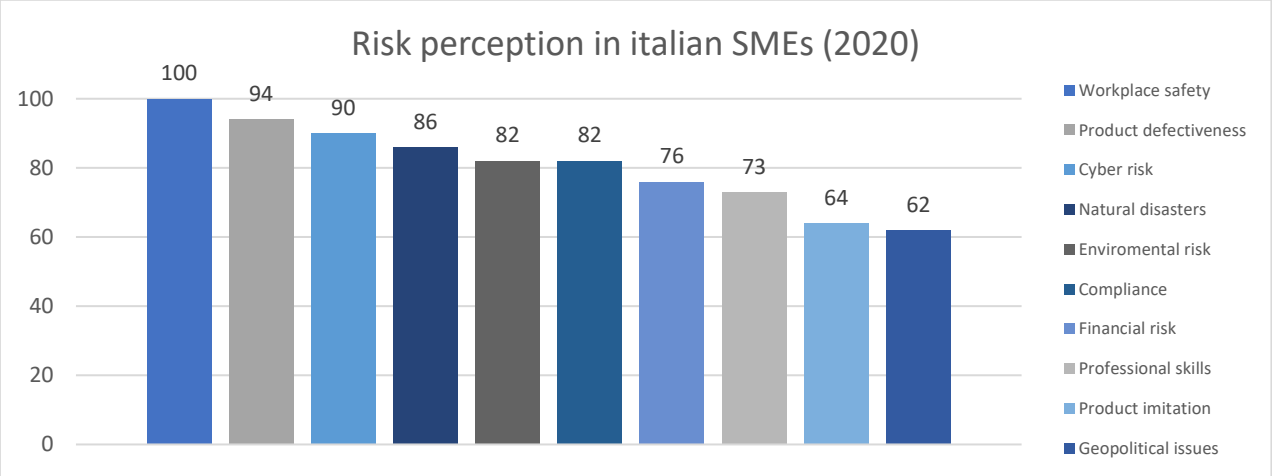
2018 maintained the 2017 trend, confirming the top four risks. A peculiarity of this graph compared to those we have seen before and those that we will see later is a substantial flattening in the perception of risks, with an increase in the values assumed by the risks at the bottom of the ranking. A final aspect to emphasize is that of the risk related to natural disasters, which continues in its growth, which will also be confirmed in subsequent reports.

Figure 15: Italian risk perception, 2019



Source: CINEAS (2019), "Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"

Figure 16: Italian risk perception, 2020



Source: CINEAS (2020), "Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"

2019 and 2020 have an almost unchanged ranking in positions, with interesting variations in coefficients. One of the most important aspects to note is the further climb of the risk related to natural disasters, which in 2017 was tenth in the ranking to finish fourth in the 2020 report, overcoming the environmental risks that occupied that position in 2019. Reputational risk, on the other hand, takes the opposite path, disappearing from the ranking from 2019, to make room for the risk related to geopolitical issues. What is evident at the end of this time analysis, is that Italian small and medium-sized enterprises are mainly concerned with risks related to compliance, strategic risks related to their product and in recent years also to risks related to the climate and the environment.

From this first survey we can see many similarities between the macroeconomic and microeconomic context, in fact in both cases the starting scenario was strongly dominated by compliance and operational risks, while over the years it has evolved with a perspective oriented to the external context, with the advent of all risks related to the environment, climate, technologies, and geopolitical situation. A risk that turns out to be very important for the context of Italian SMEs is that related to the product. In fact, every year we find in the ranking the risks related to defects and imitation of the product. The cause of this event we believe can be attributed to the type of production chain carried out in Italy. Being a country known all over the world for the quality of its products, it is not surprising that Italian manufacturing companies care

about the standards that the product must meet and avoid the counterfeiting of its product.

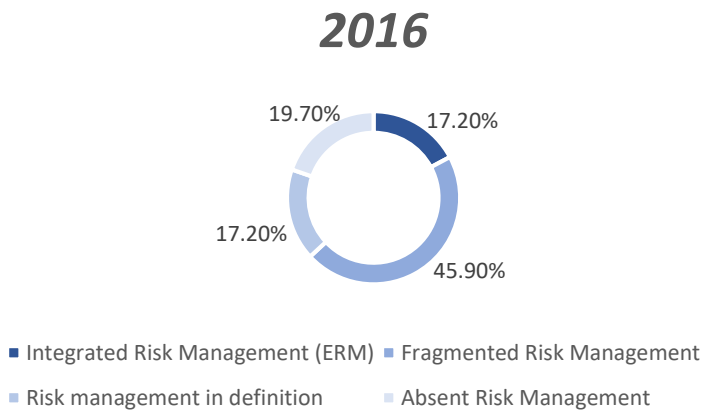
Once the results of the risk perception survey have been analysed, we think it is very interesting to pay attention to the development that risk management had in Italy in small and medium-sized enterprises in the recent years, because although today Enterprise Risk Management (ERM) has exceeded Fragmented management and is the most used model, it has not always been so, and CINEAS reports prove this.

The study conducted by CINEAS defines four risk management categories in which the companies surveyed can identify themselves:

- Integrated Risk Management (ERM);
- Segmented risk management (silo management);
- Risk management in evaluation (the company is evaluating the model to be used);
- Absent Risk management.

As can be seen in Figure 17, in 2016, out of a sample of 280 companies, almost half of them said they adopted a segmented approach for their business (45.9%), while the integrated approach was not yet widely used (17.2%). The reference scenario was well defined with the domain of Silo Management on ERM on the one hand, and on the top a large proportion of companies totally uninterested in the issue of risk management (17.2%) or at least in doubt about the method to be preferred (19.7%).

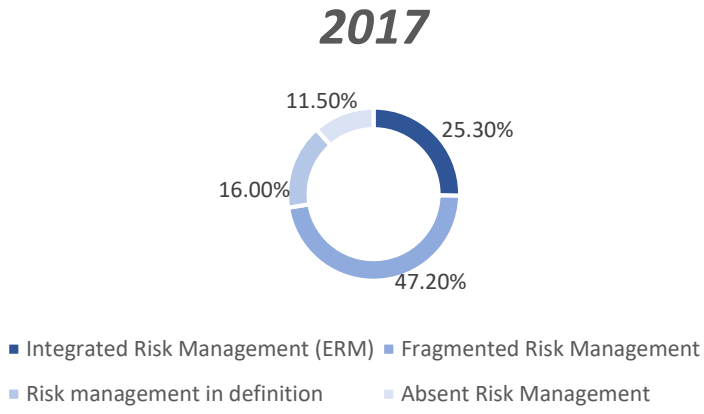
Figure 17: Risk Management approach in Italy (2016)



Source: CINEAS, 2016

The sample of 272 companies analysed in 2017 showed, on one hand, a close link between companies and the fragmented framework, which stands at 47.2%, but on the other hand saw a significant boost in the use of ERM, which rises to 25.3% (+8.1%). This increase is justified by the collapse of companies without a risk management system, from 19.7% in 2016 to 11.5%. Companies in the process of establishing a risk management system remain almost unchanged at 16.0%.

Figure 18: Risk Management approach in Italy (2017)

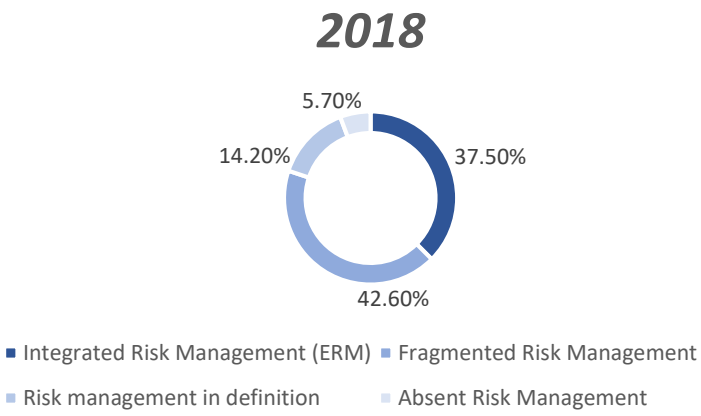


Source: CINEAS, 2017

2018 marks the beginning of the turnaround, as, out of 308 cases analysed, the component of companies using a Fragmented framework begins to decline, reaching 42.6%. On the other hand, the integrated management system is growing considerably from 25.3% in 2017 to 37.5% (+12.2%). The most significant figure of the analysis carried out in 2018, however, is that relating to companies that decide to not adopt

any form of risk management, which falls by 50%, from 11.5% to 5.7%, confirming the vision of companies increasingly focused on risk management.

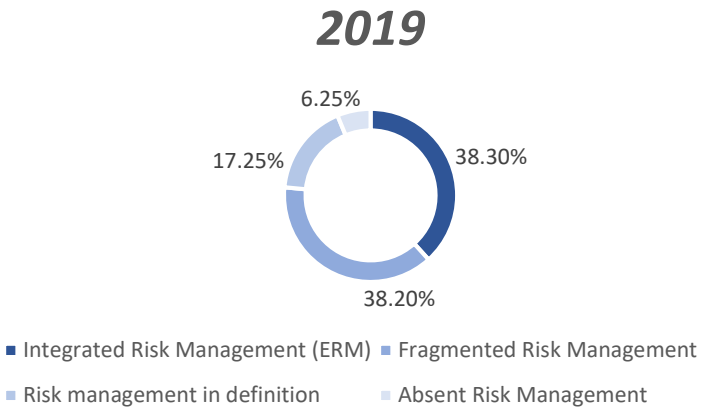
Figure 19: Risk Management approach in Italy (2018)



Source: CINEAS, 2018

The 2019 report is the last report available to us and further highlights the trend of the previous year, even overtaking the integrated framework on the fragmented one. Of the 315 companies surveyed, 38.3% said they took an integrated approach, while 38.2% opted for the silos approach. In addition to overtaking the integrated system, there was also a small increase in companies without risk management, which went from 5.7% to 6.25%.

Figure 20: Risk Management approach in Italy (2019)

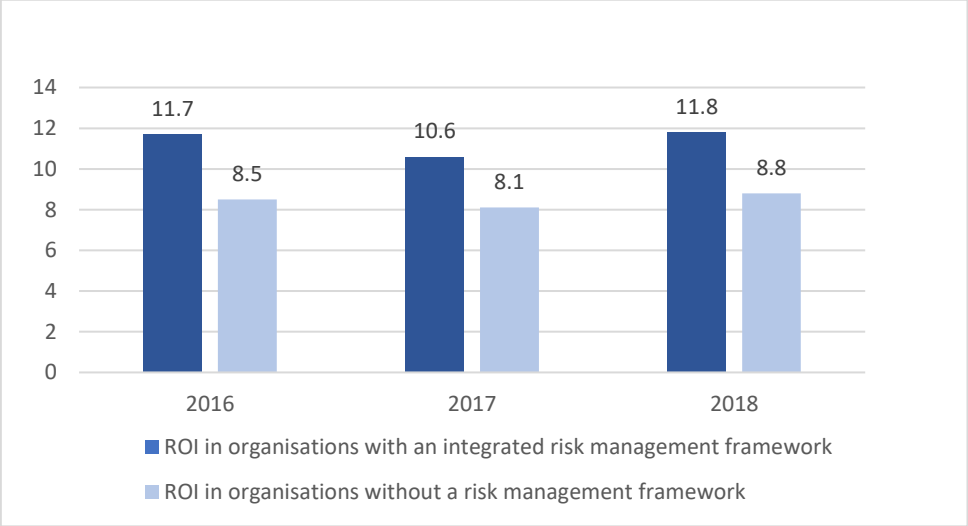


Source: CINEAS, 2019

To sum up, we can say that over the last four years we have seen many changes, including the growth of the integrated model and the consequent adjustment of the fragmented model, but the most important figure is that relating to companies

without a risk management system that between 2016 and 2019 went from 19.7% to 6.25%. This phenomenon of growth of the integrated model is due to a greater awareness of the advantages that this model can bring. One of the advantages that is most evident is that of profitability and in particular of ROI. In fact, if we compare the companies with an integrated risk management system with those that do not, the difference in profitability is evident. CINEAS reports show that in 2016 companies that adopted an ERM system achieved 38% higher ROI than companies that did not adopt any risk management system. The figure remains almost stable even in the following years, with a +31% in 2017 and a +34% in 2018. For 2019, CINEAS analysis does not provide timely data, but it does communicate that in percentage terms, this gap between ROIs has fallen to +20%. Below we will bring the evidence of the specific data from which the percentage gaps mentioned above were calculated year by year, with the exception of 2019, for which not the specific data were disclosed but only the percentage difference.

Figure 21: ROI differentials



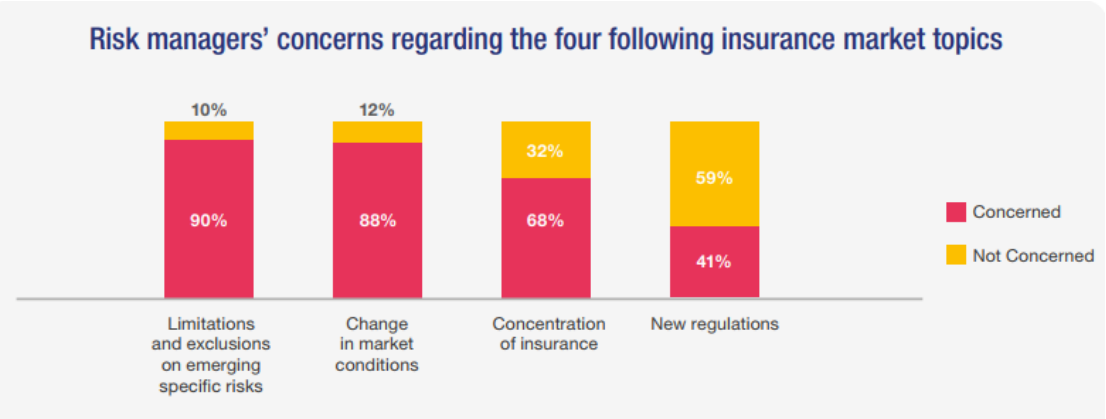
Source: CINEAS, 2016; CINEAS, 2017; CINEAS, 2018.

The 2020 report does not provide data on the ROI performance differential between the ERM model and an organisation without a management system, as it focuses mainly on the issue of the pandemic situation related to Covid-19. The risk related to a pandemic was in fact not contemplated by 97% of the sample analysed and this negatively affected the turnover of Italian but also international companies. An interesting aspect that is emphasized in the report is that the epidemic situation could

lead also to opportunities. This statement refers to those companies that, having a significant size and capital, could decide to make acquisitions or strengthen their management, thus placing themselves in a proactive position towards a more complex context. It will be interesting to analyse the performance of small and medium-sized enterprises in 2021, with particular regard to the ROI performance gap. It is impossible to know ex-ante the reaction of the sample to the epidemic, but we believe that a good risk management structure is essential for overcoming a tragic event such as Covid-19, so there could be a significant gap between companies without a risk management system, and those that resort to ERM.

Until this point, we have analysed the situation with respect to the Enterprise Risk Management, but now we can move to the Insurance Management, about which FERMA has produced some very interesting results on the relationship between managers and insurance companies. As can be seen in the table below, according to the studies for the two-year period 2019-2020, risk managers with IM skills are significantly concerned about two aspects of the insurance market: limitations and exclusions in insurance contracts (90%) and the unexpected variations in market conditions (88%). The insurance market was already experiencing a difficult period characterized by higher premiums and reduced coverage, and this scenario was further aggravated due to the Covid-19 pandemic. It is precisely the pressure caused by the pandemic that is the main cause of the greatest concern about exclusions and limitations of insurance contracts and on the market in general. In addition to the contractual issue, market conditions are also at the heart of the concerns of risk managers due to the recent merger and acquisitions that have taken place in the insurance sector, which therefore reduce alternatives to customer provisions.

Figure 22: Concerns about insurance market



Source: FERMA, 2020

To address this more limiting environment, risk managers rely on two types of intervention that are significantly growing. The first action taken by risk managers in response to this context is to pay more attention to the loss prevention. The second strategy is to negotiate long-term or roll-over contracts with insurance companies, protecting against any contractual changes due to worsening insurance market situations. A final aspect to consider is that of the risks that are unlikely to find space on the insurance market in the short term (2 years) due to this more complex situation. Most of the sample surveyed said that in the event of a risk that is difficult to place on the market, it would assume a risk retention position or rely on alternative hedging instruments. These are the two positions most used by risk managers, who believe it is more practical to consider risk or transfer it through alternative instruments, rather than relying on captive insurance or re-insurance tools.

Figure 23: Strategies to face risks which are difficult to place on the market.

Source: FERMA, 2020

Chapter 6

THE IMPACT OF COVID-19 ON THE RISK MANAGEMENT

Before moving to the conclusions, we want to discuss about an element that changed the lives of individuals and firms all over world: the COVID-19 pandemic. This pandemic was totally unexpected, and the speed of transmission made it grow into a massive problem.

The pandemic changed not only our habits, but also the vision with respect to risk and its management. In the first chapter we defined a risk classification in four categories:

- Operational risk
- Financial risk
- Strategic risk
- Compliance risk

However, the risk management function became significantly more complex due to the pandemic, since the virus affected directly at least the first three previously mentioned categories.

The operating risk was the most affected sector, as the pandemic and the prolonged lock-down had a serious impact on businesses such as:

- Inventory block;
- Production block;
- Transition to smart-working or differentiated work with low-capacity workplaces;
- Need for instrumentation suitable for compliance with the new standards (plexiglas glass, masks, gloves, sanitizing, temperature detectors).

In general, we can say that the pandemic has generated two operational problems: in the best cases a problem of production slowdown, in the worst cases a business interruption problem. In addition to the operational damage resulting from a freeze on the business, it must be considered that the firm might be unable to obtain compensation from the business interruption policy, as this contract covers only the property damage and only if it originates from material damage that can be

compensated in accordance with the provisions of the policy. (AIBA (2020), *"L'Assicurazione al tempo di Covid-19"*, available at the following website: https://www.aiba.it/)

At a strategic level, the Covid-19 pandemic has increased the gap between companies, causing poorly organized companies to suffer and on the contrary favoring companies with an efficient organisational and strategic structure. The current health situation has made it much more difficult to carry out entrepreneurial activities, with particular reference to the operational issues listed above. In this context, therefore, it is decisive to have in place the ability of the company to be able to adapt quickly to market changes, making the necessary changes to the company strategy. Companies with good internal organisation have been able to adapt to the situation and in some cases have been able to turn the negative aspects generated by the pandemic into profitable occasions. On the contrary, smaller enterprises or firms with poor business organisation have often been unable to adapt, resulting in negative economic results.

Two further aspects to consider by analysing the impact of the pandemic on business strategies are those related to acquisitions and managerial renewal. In fact, as the Director of the MedioBanca Studies Office Gabriele Barbaresco said on the CINEAS 2020 report, " The crisis could turn into an opportunity of expansion for a substantial number of companies". In this case we are talking about larger and more structured companies, with higher turnover and profitability index, which can take advantage of the crisis situation due to the pandemic to expand and acquire other companies. For this type of company, in fact, a lower drop in turnover is expected in 2020 with respect to the average. A further proactive approach to address the strategic risks related to the pandemic is that related to management. In fact, the CINEAS 2020 report underlines how many companies have opted for a renewal of first-line management by hiring those inclined to exploit the problematic situation and turn it into an opportunity rather than adopting a purely defensive vision.

The pandemic had a huge impact also on financial markets, and the banking system now faces a situation characterized by high volatility, deteriorating credit quality and more difficult challenges for the business continuity. (KPMG (2020), *"Financial Risk Management for banks responding to the challenges presented by Covid-19"*) In

particular, thanks to the report of KPMG “Financial Risk Management for banks responding to the challenges presented by Covid-19, we will analyse the impact of the pandemic on the following components: Credit Risk, Market Risk and Liquidity Risk.

Talking about the Credit Risk there are two main problems that arise from the pandemic situation:

- the deterioration of the credit quality of some sectors, which must be faced with timed updates to the credit ratings by the banking system;
- the support programs given by the governments have to be considered in the process of providing credit.

The problems related to the pandemic affected the Market risk too. In particular, there’re two issues that banks and indirectly companies have to face:

- the re-allocation of risk-based limits due to the stressed market conditions;
- the revision of stress-testing scenarios;
- the fair value adjustments for the liquidity discounts due to worse market conditions and higher volatility.

Last but not least, we will discuss about the Liquidity situation and the problems correlated to this risk. The KPMG report highlighted three particular issues:

- under-preparation for the unexpected liquidity constrains;
- limited access to alternative funding resources;
- unpracticality of stress-tests;
- lack of ad-hoc assessment

Our last analysis about the impact of Covid-19 on risk management will be on the compliance risk. Although firms have been helped a lot by Governments during the pandemic period, there is a particular issue that affected Italian firms. The Italian ex D.Lgs. 231/2001 defines specific responsibilities upon the management, the directors or the employee of a firm for crimes or violations. In particular, the firm is responsible under the ex D.Lgs. 231/2001 in the following cases:

- Presence of an injury at work that determines the death of an employee or a serious injury with a prognosis of more than 40 days;

- The injury occured as a result of the violation of rules on the protection of health and safety at work;
- The institution takes advantage from the cost savings resulting from the failure to put in place preventive safety measures that would have prevented the accident at work. (ex D.Lgs 231/2001 art. 25-septies)

Starting from the assumption that, according to the information provided by the Government, a Covid-19 contagion must be considered an injury at work, the key question in this situation concerns the possibility of triggering a mechanism of responsibility in charge of the company according to ex D.Lgs. 231/2001. The answer is that the consideration of Covid-19 contagion as an injury at work is not enough. In fact, evidence should be given that the infection is chargeable to the employer for the absence of preventive measures and that the company derived an advantage from the contagion (BONSEGNA, M., MICELI, S. (2020), *"Modello 231, ODV e contagio da COVID-19: il mito del 25-septies fra leggenda e realtà*", Rivista231). Despite this, companies should take a cautious attitude, taking all the necessary measures to avoid the proliferation of the virus within the firm, since possible extensions of responsibility that make the organisation partially responsible for the infections are not excluded. (DE BERTI JACCHIA FRANCHINI FORLANI STUDIO LEGALE (2020), *"Emergenza Coronavirus: impatti sulla responsabilità degli enti ex d.lgs. 231/2001"*)

From this analysis we can derive some important lessons. The pandemic hindered almost the totality of the companies from every sector, due to some severe operational issues. However, there are few sectors and activities that had a boost in their production during the pandemic. The analyst Cerved SpA, in its report for the years 2020 and 2021, identifies the categories that suffered more the pandemic and those that had an increase in the production. In particular, the companies that overperformed during the pandemic are the one related to the production of goods and services for the health sector, in addition to supermarkets, frozen food companies and funeral parlours. As regards the health sector, the demand of face masks, white coats, hand sanitizers had literally a boom in the first part of the pandemic. On the other hand, the sectors that suffered heavily the crisis caused by the virus are the sector of tourism, tour operators, transports and restaurants. (CERVED (2020),

"L'impatto del Covid-19 sui settori: il Cerved Industry Forecast") One of the tools to mitigate the operational issues caused by the pandemic has been the ability of the companies to change and adapt their strategies to face the new environment. The figure of the management and the ability to adapt to a new context have been two crucial features in order to mitigate the negative effects of the global crisis. On the other hand, companies with a bad management or an inability to adapt and change the strategy, experienced even more significant negative consequences. For what concerns the financial and the compliance aspect we can say that some aspects are not tangible right now but will be effective in the future. In particular, looking at the compliancy aspect, the governments tried to help a lot the companies with subsidies or fiscal breaks. This implies that in this moment the financial sector is sustaining the companies, helping them to survive this situation of crisis. The real financial impact of the pandemic on the companies can't be analysed now, since the context is not fair thanks to these extraordinary measures taken to face the pandemic. In conclusion, even if the situation is quite critical for many companies, they should try to improve their strategy and their organisation now, because when the government's help will end, they need to survive alone.

Conclusion

In the course of this thesis, we have analysed different cases of business risk. We have seen how it is composed, and what are the main internal and external strategies to manage it. In particular, we focused on the Enterprise Risk Management model, which is a very powerful framework for managing business risks, and then moved on to Insurance Management. Italian companies, have approached the risk integrated framework only recently, but they are aligning themselves with the European context dominated by the Enterprise Risk Management. The role of the risk manager within the company is therefore becoming decisive in Italy, especially in the context of the large companies, as stated by the FERMA reports. In this regard, the President of ANRA (National Association of Risk Managers and Corporate Insurance Managers), confirmed this trend for large companies, but recalling how the Italian context sees the presence of many professional figures outside companies, such as brokers, agents and consultants who carry out the risk management activity for Italian SMEs. (FERMA, 2018) The advantages deriving from the ERM model have been underlined on several occasions, also verified by the CINEAS reports, which have shown the gap between the ROI indicator between companies equipped with an integrated model and companies that do not adopt any risk management model. This could be one of the reasons for the progress made annually by Italian companies in the field of risk management. This growth is significant, but it must be contextualised by emphasising a crucial aspect: the ERM framework, does not have a purely defensive and reactive function, but rather, if properly exploited, it guarantees protection from risks in advance and above all can represent a tool through which the company can gain a competitive advantage over its competitors. What is not yet completely understood in the context of Italian small and medium-sized enterprises is precisely the opportunity for growth and development that ERM provides. The majority of companies interviewed by CINEAS in the 2019 report in this regard attribute to the term "risk management" purely defensive meanings: the 84% see risk management as a method to minimize the frequency of risks, the 39.3% understand it purely in its insurance sense and 27.2% perceive it as a tool to comply with regulatory obligations. Only 12.8% of the small and medium-sized enterprises surveyed see ERM as a competitive lever. In addition, even the activities

carried out under the ERM model are still too basic in Italy. The 2020 CINEAS report highlights the fact that, basing on the part of the sample that implemented the ERM, only the 67% carries out risk mapping, which is considered the basic activity of the model. This percentage decreases further as we approach the post-risk mapping phases. The risk monitoring, which is the phase following the risk mapping, is carried out by only 38.6% of companies, and this already represents a first signal of incorrect application of the ERM model, as it means that for a large part of the sample the integrated model consists simply of a mapping procedure. If we also introduce the activity of synthesis and sharing results to the Board of Directors, we find that only 13.9% of the sample that uses ERM carries out this activity. The fact that only a few organisations communicate between risk managers and board of directors is limiting, as it does not allow full exploitation of the potential that the Enterprise Risk Management model could provide.

The aim of this thesis was to provide an overview of the instruments available to the company for risk management, also analysing the recent situation of Italian companies related to the macroeconomic reference context, namely the European one. What has emerged is that, in the current context, the ERM model, jointly with an efficient insurance management, is of vital importance for companies but not only for risk prevention and mitigation, but above all as a business investment, since it allows better profitability and greater efficiency that allows the company to gain an advantage over its competitors. Italian companies have only understood over the last five years how efficient this model is compared to the fragmented one. The studies that we have analysed by CINEAS suggest that Italian companies, despite understanding the importance of this model, which has not by chance become the most relevant model, are not properly structured to implement it in the best way. This could be one of the reasons why Italian SMEs prefer to use an external risk management service, provided by consultants, brokers and agents.

For the future, we believe that ERM will remain the most widely used model, widening the gap with the fragmented framework. In addition, we think that there may be a further decrease in companies without a risk management model, as we believe that risk is a vitally important issue in the current context. It is possible that the trend

described by the President of ANRA continues, for which small companies prefer to resort to professionals outside their company, as the implementation of an internal ERM process requires a high energy, labour and economic expenditure. However, although expanding an internal framework has advantages deriving from the perfect knowledge of the organisation, we believe that if most Italian small and medium-sized enterprises became aware of the importance of an integrated management system, also carried out by third parties, the Italian business context could get a boost at national and European level.

Bibliography

AIBA (2020), *"L'Assicurazione al tempo di Covid-19",* available at the following website: https://www.aiba.it/ ;

AIIA & PWC, (2006), *"La gestione del rischio aziendale"* Milano: Il Sole 24 Ore;

AIRMIC, (2010), *"A structured approach to ERM and the requirements of ISO 31000"*;

BASEL COMMITTEE ON BANKING SUPERVISION (2004*), "International Convergence of Capital Measurement and Capital Standards. A Revised Framework",* Bank for International Settlements, Basel, Switzerland;

BONSEGNA, M., MICELI, S. (2020), *"Modello 231, ODV e contagio da COVID-19: il mito del 25-septies fra leggenda e realtà"*, Rivista231;

CASUALTY ACTUARIAL SOCIETY, (2003), *"Overview of enterprise risk management",* available at the following website http://www.casact.org ;

CERVED (2020), *"L'impatto del Covid-19 sui settori: il Cerved Industry Forecast"*, available at the following website: https://www.cerved.com/ ;

CHAPMAN, R. J. (2006), *"Simple tools and techniques for enterprise risk management"*, John Wiley and Sons, Chippenham, Wiltshire;

CHORAFAS, D.N. (1995), *"Managing derivatives risk: establishing systems and controls"*, Irwin;

CINEAS (2016), *"Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"*, available at the following website: https://www.cineas.it/ ;

CINEAS (2017), *"Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"*, available at the following website: https://www.cineas.it/ ;

CINEAS (2018*), "Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"*, available at the following website: https://www.cineas.it/ ;

CINEAS (2019*), "Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"*, available at the following website: https://www.cineas.it/ ;

CINEAS (2020), *"Osservatorio CINEAS/MEDIOBANCA sul risk management nelle medie imprese in Italia"*, available at the following website: https://www.cineas.it/ ;

CONTI, C. (1996), *"L'esposizione dell'impresa ai rischi finanziari"*, Egea, Milano;

COSO, (2004), *"Enterprise Risk Management-Integrated Framework: Executive Summer",* available at the following site: https://www.coso.org/Documents/COSO-ERM-Executive-Summary.pdf ;

CRENCA, G., URCIUOLI, V. (1989), *"Risk Management: strategie e processi decisionali nella gestione dei rischi puri d'impresa"*, Edizioni Isba;

CROUHY, M., GALAI, D., MARK, R. (2006), *"The essentials of risk management",* McGraw-Hill;

DE BERTI JACCHIA FRANCHINI FORLANI STUDIO LEGALE (2020), *"Emergenza Coronavirus: impatti sulla responsabilità degli enti ex d.lgs. 231/2001"*, available at the following website: https://www.dejalex.com/?lang=it ;

DEL POZZO, A. (2009), *"Controllo finanziario e rischio di default"*, Franco Angeli, Milano;

DELOACH, J., TEMPLE, N. (2000), *"Enterprise-Wide Risk Management: Strategies for linking risk and opportunity"*, Financial Times Management;

DOHERTY, N.A. (2000), *"Integrated risk management: techniques and strategies for managing corporate risk"*, McGraw-Hill;

DOWD, K. (1998), *"Beyond value at risk. The New Science of Risk Management"*, John Wiley and Sons, Chichester;

FACILE, E. (1996), *"La gestione dei rischi finanziari nell'azienda industriale: controllo e gestione strategica dei rischi di cambio, di interesse e di materie prime: valenza competitiva, tecniche di gestione e misurazione dei risultati"*, Il Sole 24 Ore Libri;

FERMA (2016), *"FERMA European Risk Manager Report 2016"*, available at the following website: https://www.ferma.eu/;

FERMA (2018), *"FERMA European Risk Manager Report 2018"*, available at the following website: https://www.ferma.eu/;

FERMA (2020), *"FERMA European Risk Manager Report 2020"*, available at the following website: https://www.ferma.eu/;

GAUDENZI, B. (2006), *"Nuovi approcci di gestione dei rischi di impresa",* Sinergie n.71;

HENRY, F. (1916), *"Administration industrielle et gènèrale."* Paris: Dunod;

HULL, J. (2006), *"Option, Futures and other derivatives"*, 6th edition, Pearson;

JORION, P. (2007), *"Value at risk: the new benchmark for managing financial risk"*, McGraw Hill;

KELLEHER, JR., THOMAS J., MASTIN, J.M.; ROBEY, R.G. (2015), *"Smith, Currie and Hancock's Common Sense Construction Law: A Practical Guide for the Construction Professional",* 5th edition, Wiley;

KNIGHT, F. (1921), "*Risk, uncertainty, and profit",* Signalman Publishing;

KPMG (2020), *"Financial Risk Management for banks responding to the challenges presented by Covid-19"*, available at the following website: https://home.kpmg/it/it/home.html;

LAM, J. (2003), *"Enterprise Risk Management: from incentives to controls"*, Wiley;

LANGÈ, C., MIRAMONDI, M. (2017), *"Polizze assicurative nelle operazioni di M&A"*, Studio Legale Greco Vitali Associati;

LIEBENBERG, A.P, HOYT, R.E. (2003), *"The determinants of Enterprise Risk Management: evidence from the appointment of chief risk officers"*, Risk Management and Insurance Review, Vol. 6, No. 1;

MARRINSON, T.A, MATHIAS, J. JR., SHUGRUE, J.D., STRUCK, D.J. (2006), *"Components of an Insurance Policy: Insurance Coverage Disputes"*, New York, Law Journal Press;

MC SHANE, M.K., NAIR, A., RUSTANBEKOV, E. (2011), *"Does Enterprise Risk Management Increase Firm Value?"*, Journal of Accounting, Auditing & Finance, vol.26;

MICCOLIS, J., SHAH, S. (2000), *"Enterprise risk management. An analytic approach"*, Tillinghast-towers Perrin monograph;

MONDA, B., GIORGINO, M. (2013), *"An ERM maturity model"*, ERM Symposium 2013 Monograph, Chicago;

MONDA, B., GIORGINO, M. (2014), *"Dal risk management all'Enterprise Risk Management",* PoliFinance Publishing Ltd, London;

OLSON, D.L., WU, L. (2020), *"Enterprise Risk Management Models"*, 3rd Edition, Springer;

POMODORO, C., LUCCINI, T. (2012), *"Enterprise Risk Management e linee guida dello standard ISO 31000"*, Hspi;

POTRICH, B. (n.16 - 2002), *"Il risk management nelle medie imprese del nord est",* ALEA Tech reports;

PRANDI, P. (2010), *"Il risk management. Teoria e pratica nel rispetto della normativa"*, Franco Angeli, Milano;

PWC (2020), *"23rd Annual Global CEO Survey: Navigating the rising tide of uncertainty"*, available at the following website: https://www.pwc.com/it/it.html;

SEGAL, S. (2011), *"Corporate Value of Enterprise Risk Management"*, Wiley;

SHI, D. (2004), *"A Review of Enterprise Supply Chain Risk Management"*, Journal of Systems Science and Systems Engineering, Vol. 13, No. 2, June;

STARK, D. (2009), "*The sense of dissonance: accounts of worth in economic life",* Princeton University;

VOLPATO, G. (2006), *"Economia e gestione delle imprese: fondamenti e applicazioni"*, Carocci.