



DIEGO FIORITO

RISK MANAGEMENT:

how to achieve personal and business goals

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Brief introduction to risk

At the end of 2019, the appearance of an acute respiratory syndrome was detected in the city of Wuhan, Hubei province, in the People's Republic of China. On the last day of the year (December 31, 2019), the Wuhan health authorities reported the appearance of twenty-seven people diagnosed with a severe acute respiratory syndrome of unknown origin so far. The disease was caused by the coronavirus 2 virus and was called SARS-CoV-2 (coronavirus). Apparently, it would have been transmitted from an animal host to a human one.

During the first months of 2020, as individuals traveled from Wuhan to other countries, thousands, hundreds and millions of people began to be infected. The virus is transmitted from person to person when they are in close contact, but also through contaminated surfaces.

Different governments, almost all over the world, reacted to this “risk”. Understanding it as a risk that people will be easily infected, become ill, need medical hospitalization and that, depending on their circumstances, could die.

To protect themselves against the pandemic and avoid contagions, several governments took actions to manage or mitigate the risk: they closed borders, restricted activities and decided that people would remain at home. With these actions or “controls”, governments tried to avoid the increase in infections, build medical capacities, test and track cases to eradicate the disease.

The “impact” of the materialization of the risk was contagion, the lack of beds or intensive care units, poor health systems to attend people and the eventual death

of infected people. The “probability” of contagion is high (if one has close contact with an infected person) and the probability of death is around 4% if one becomes infected (and higher for vulnerable people, older or with other conditions).

The “risk management” of this disease created a new risk as the mandatory isolation spread: the risk of confinement. As the isolation spread and lasted, the psychological risk of people increased and even the risk of physical deterioration.

With this example, what I mean is that we all manage risks in our lives. When we buy home insurance or auto insurance we are transferring the risk of something happening to our car or house to a third party. When we carry an umbrella we cover ourselves from the risk of getting wet. When we leave our house an hour before to reach a destination on time, we manage the risk of being late.

This book seeks to help people identify the risks that could affect them and give them tools to properly manage them. Likewise, examples will be used to make it didactic and that it can be useful both for a person new to the subject and for a person with knowledge of the subject.

The risk management process presented here is based on the methodology established in the standard codified by the International Organization for Standardization, also called the International Organization for Standardization (ISO). The purpose of ISO 31 000 is to provide principles and guidelines for risk management.

Chapter I.
General concepts

What is risk?

“If it’s all a matter of luck, risk management is a pointless exercise. Invoking luck obscures the truth, because it separates an event from its cause”.

Peter Bernstein

The word risk derives from the Old Italian term *risicare* which means “to dare”. As Peter Bernstein quotes in his best seller *Against the Gods*, risk is a choice rather than a destiny. The action we dare to take is what risk is all about; that action or decision is what brings us the risk.

The risk has to do with the future or the uncertainty. It is not something that has happened nor is it something that we have today. It has to do with something that has not happened yet, that can happen and that can affect us in some way.

Figure 1. Risk



Source: Concepto Definición, Riesgo (2020). Available in:

<https://conceptodefinicion.de/riesgo/>

We define risk as the effect of uncertainty on objectives. In this sense, it refers to potential events and their consequences. Generally, we express a risk in terms of its impact and probability of occurrence.

Let's see some examples of risks in our everyday life:

- Risk of contagion of the coronavirus: as long as I am not infected, the risk of contagion will remain latent. The probability of contagion will be negligible (close to zero) if a person is kept locked in his house without contact to any other person (assuming that he should not leave his house to obtain any food or supplies). On the other hand, the probability of contagion will be very high if the person constantly leaves his home, works in an office, does not take the corresponding health protection measures and constantly interacts with other people. In terms of impact, it could be anything from non-impact (asymptomatic with no effects), respiratory problems and even, death. There will also be risk factors that mitigate or aggravate the eventual impact (age, health conditions, respiratory problems, diabetes, among others).
- Credit risk: a financial institution is dedicated to the intermediation of financial resources and assumes credit risk each time it makes a loan to an individual or company. The probability of suffering a loss will depend on the credit quality of the counterparty and its ability to repay. The impact of the loss will depend on the amount lent and the guarantees that would have been established. We also face credit risk when we pay something in advance.

- Risk of loss of an asset: owing any asset (house, car, computers, livestock), the risk is to lose the asset or the ownership of that asset. The causes could be several: theft, fraud, destruction, fire, among others. Generally, risk mitigation occurs through the purchasing of insurance.

To have a uniform structure, it is preferable to have the risks structured (written) in a consistent way. Here is one way of phrasing them: as a result of <defined cause / causes>, <this unexpected event> could occur, which could produce <this effect on targets>.

- Cause: a definite and know fact.
- Risk: an uncertain event or circumstance.
- Consequences / Impacts: a direct effect on the objectives.

Figure 2. Phrasing of a risk

Case - Risk Event - Impact

Source: Own elaboration.

Let's see this with a graphical example:

Figure 3. Graphic example of proposed wording for a risk



Source: Dreamstime. Available in: <https://www.dreamstime.com/pedestrian-accident-vector-illustration-man-smartphone-crosswalk-danger-road-careless-young-dangereous-way-safety-internet-image181892738>.

Let's explore the phrasing of the risk shown in the above Figure:

As a result of <crossing the street and being distracted>, <you could suffer an accident>, which could result in <physical injury and medical costs>.

Below are some of the variables that come into consideration for the identification and risk management:

- Threat: is anything that can exploit a vulnerability. It is an external risk factor. In the case of the example it is the car that is approaching.

- Vulnerability: an own weakness that can be exploited by a threat. It is an internal risk factor that could allow a risk to materialize. In the case of the example, the person is distracted.

Other risk concepts:

- Exposure: it is the maximum damage or loss that can be suffered if an event occurs: what is the maximum that can be lost? As the exposure increases, the risk increases. For example, in the case of a loan, the exposure or maximum possible loss is the amount of the loan. In the case of market (or price) risk, the

calculation will be different and will depend on the exposure and the volatility of the asset's price.

- Volatility: refers to how uncertain the future will be. Volatility is the variability of possible outcomes. The higher the volatility, the higher the risk.
- Stop loss: Maximum loss that we can suffer.
- Impact: in terms of impacts, consequences or effects, we can identify:

a. Human life losses or accidents.

b. Economic losses. May include reprocesses, loss of time. It includes fines for noncompliance or regulatory or legal breaches or damages to third parties.

c. Opportunity cost. It is the “cost” incurred by not enjoying the benefit associated with the best alternative choice. It is the money that was not invested during the weekend (represents an opportunity cost for the two days of lost interest).

d. Reputational loss: lower stakeholder confidence in the organization and its activities.

We have already said that risk represents the effect of uncertainty on the

achievement of objectives. Generally, risk is determined as probability per impact. As detailed in the next formula:

- Probability of Occurrence: refers to the possibility of a risk event occurring that will result in a loss. The probability of an event is the division between the favorable cases over all the possible cases of its occurrence.

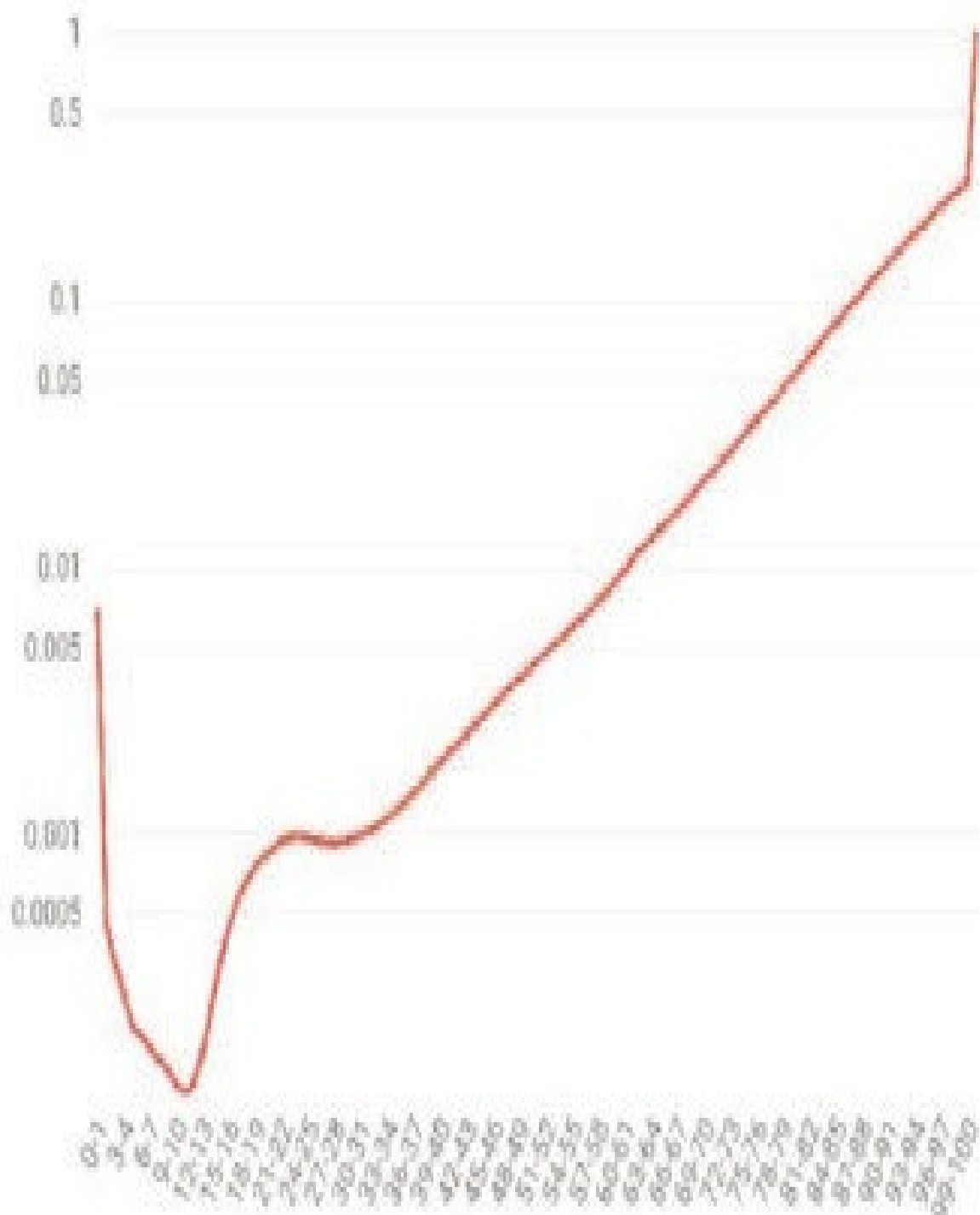
$$\text{Probability (x)} = (\text{Number of favorable outcomes}) / (\text{Number of total outcomes})$$

Let's see some examples:

- The probability of rolling a 1 with a die is 16% (1/6).
- The probability of drawing a heart from a deck of 52 cards is 25% (13/52).
- The probability of drawing the Ace of Spades is 2.5% (1/40) in a forty deck card.
- The probability that your home will be damaged by fire in the next year is 0.000028 or 0.0028%.
- The probability of dying in the future (based on science) is 100%, although there is a different probability of dying according to age. As shown in the following Figure.

Figure 4. Probability of dying in ages between x and y

Probability of dying between ages x to $x+1$



Source: Microsiervos

The above graph shows the probabilities of dying throughout a person's life. The horizontal axis shows the different ages of a person while the vertical axis represents the probability that goes from 0 to 1 (100%, certain death), as usual. Figure 4 shows the known effect that mortality in the first year of birth is relatively high (almost as high as for adults aged 54-55 years). The timing of birth is critical, and a number of babies die during childbirth or from complications of various kinds shortly after birth.

- Impact: refers to the effects that the materialization of the risk could have. The probability that the newspaper boy will throw the newspaper into the bushes or away from the door during the year is high; however, its impact is low (inconvenience of searching and eventually cleaning the journal). The probability that lightning will destroy your house is low, but the economic cost (impact) would be considerable.
- Materialization of the risk: refers to the occurrence of the event that was previously determined as uncertain.
- Risk management: refers to coordinated activities to identify, direct and control risk.

Jumping from the terrace of a building in Dubai with a parachute is one of the riskiest human activities (the fatality rate is 1 in 60 participants). It is a high-risk activity that is only practiced by a limited number of people.

According to statistics, the probability of accident or death is 5 to 8 times higher than doing normal skydiving. So why would a normal person take so much risks? Because those who practice the activity have a very high desire to seek new activities; they seek originality or novelty. These people get bored relatively quickly with the things they do and therefore seek new challenges. They also have a low sense of avoiding damage or accidents. Therefore, they are very confident in the face of danger and optimistic about their results with low levels of effort. Some studies even point to a genetic characteristic in risky behaviors and activities¹.

It is important to distinguish the risk between different types of games. On the one hand, there are games such as roulette, dice or slot machines in which destiny has to do. On the other hand, there are games such as: betting on horses, backgammon or poker, where choices are made or decisions are what determine our success or not. The use of information and knowledge of the probabilities improves our decision-making capacity and thus improves our probability of winning.

Risk in our daily life

Risk is present in our lives in many ways. For this reason, in this chapter, I want to detail some examples of everyday items.

A) Bible

Almost a dozen quotes appear in the Bible that contain the word “risk”. A good part of these appointments involve a risk that is associated with death. On other occasions, an action is shown, which although it should be associated with a consequence, is said to have no associated risk. Let’s take a look at some of these examples^{2 3}:

1. Quotes that present serious consequences:

- «The people of Zebulun risked their very lives; so did Naphtali on the terraced fields». (Judges 5:18)
- «Remember that my father fought for you and risked his life to rescue you from the hand of Midian». (Judges 9:17)
- «Jonathan and Ahimaaz were staying at En Rogel. A female servant was to go and inform them, and they were to go and tell King David, for they could not risk being seen entering the city». (2 Samuel 17:17)

- «Far be it from me, Lord, to do this!» he said. “Is it not the blood of men who went at the risk of their lives?” And David would not drink it. Such were the exploits of the three mighty warriors». (2 Samuel 23:27)

- «God forbid that I should do this!» he said. “Should I drink the blood of these men who went at the risk of their lives?” Because they risked their lives to bring it back, David would not drink it. Such were the exploits of the three mighty warriors». (1 Chronicles 11:19)

- «We get our bread at the risk of our lives because of the sword in the desert». (Lamentations 5:9)

- «Men who have risked their lives for the name of our Lord Jesus Christ». (Acts 15:26)

- «They risked their lives for me. Not only I but all the churches of the Gentiles are grateful to them». (Romans 16:4)

- «Because he almost died for the work of Christ. He risked his life to make up for the help you yourselves could not give me». (Philippians 2:30)

2. Citas en las que no se percibe que la acción tenga una consecuencia o impacto:

- «Nicanor learned that Judas and his men were in the region of Samaria, and so

he decided to attack them on a Sabbath, when he could do so without risk or any danger to himself». (Old Testament / 2 Maccabee 15:01)

- « Everyone who found them devoured them, and their enemies said: “We take no risks, because they sinned against Yahweh, a safe dwelling place, in whom their parents trusted.”». (Old Testament / Jeremiah 50:07)

B) The Constitution of the United States

A central objective of the Convention at the time it wrote the Constitution was to establish a government with sufficient power to act at the national level, but ensuring that the fundamental rights of the people were safe. This means avoiding the risk of limiting the fundamental rights of its citizens.

For that end, they separated the power of the government into three different branches and then introduced checks and balances on those powers to ensure that no branch of government gained absolute power. Their concern stemmed from the experience the delegates had had with the King of England and his powerful Parliament⁴..

Let's see some of the controls established in the Constitution of the United States of America, which illustrate the above:

- Art. 1: All legislative powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives.

- Sec. 2, 1: Establishes requirements and qualifications to be representative or senator (no person shall be a representative who shall not have attained to the age of twenty five years, and been seven years a citizen of the United States, and who shall not, when elected, be an Inhabitant of that State in which he shall be chosen).

- To modify the Constitution it is required two thirds of each House.

- Art. 2, 1-5: The executive power shall be vested in a President of the United States of America. He shall hold his Office during the Term of four Years, and, together with the Vice President, chosen for the same term, be elected. No person except a natural born Citizen, or a citizen of the United States, at the time of the adoption of this Constitution, shall be eligible to the Office of President; neither shall any person be eligible to that Office who shall not have attained to the age of thirty five years, and been fourteen years a resident within the United States.

- Art. III. Section 3: No Person shall be convicted of Treason unless on the Testimony of two Witnesses to the same overt Act, or on Confession in open Court.

The risk of fatality

As I explained before, a good part of the activities we do on a daily basis have a risk. The consequences could be an injury, accident, a loss or even death.

We are all afraid of death, which could be considered a risk (uncertainty about what could happen in the future). However, death is something that will happen without exception.

According to a 2017 study conducted in the United States by the National Center for Health Statistics, the most frequent causes of death in that country are the following (in descending order): heart disease, cancer, accidents, respiratory failure, strokes brain, Alzheimer's and diabetes⁵.

Within their statistics, they present the mortality rates of different activities and there are some that can be presented as interesting for the purposes of this work.

A) Sports

According to the Deaths: Leading Causes for 2017 report, it is riskier to ski than snowboard, since the mortality rate from doing this sport is 0.455 per million people; while the death rate for skiing is 0.702 per million participants. On the other hand, as we would think, cross-country skiing has a lower risk (lower mortality rate 0.11 per million participants)⁶.

Among the sports activities with the highest risk (highest mortality rate) we find: mountaineering (0.5988 per 100 participants), hang gliding (0.1786 per 100), skydiving (0.1754 per 100), boxing (0.0455 per 100), diving (0.0029 per 100) or football (0.002 per 100).

On the other hand, the mortality rate in a car race is 1 per 100, in a motorcycle race 0.1 per 100, canoeing 0.01 per 100, playing soccer or rugby 0.001 per 100 and running or swimming 0.0001 per 100.

B) Transport

Likewise, the study presents the risks we assume when we use any means of transport. The risk of dying in a car accident is 0.0149 per 100, the risk of dying in a motorcycle accident is 0.2808 per 100, while the risk of dying in a plane crash is 0.00166 per 100. Within aviation, it stands out that the risk of a private plane is three times higher than the risk of a commercial plane.

In this sense, we see that the risk of the plane is less than that of a car or motorcycle.

Additionally, it should be clarified that the risk that has arisen is that of fatality; to which should be added the risk of accident and injury.

C) Other curious statistics:

- Men who smoke are 22 times more likely to have lung cancer than non-

smokers. While women are 12 times more likely to suffer from lung cancer.

- Smoking increases the risk of dying from a heart attack by three times.
- Obesity significantly increases the risk of dying. People who have had a medium number of years with obesity (between five and fifteen) are twice as likely to die as a person who was not overweight.
- The probability of dying while dancing is 0.001 per 100, while playing in a board game 0.000001 per 100.
- Finally, the probability of dying in one year doubles every eight years.

Injuries and accidents

According to a study done by the World Health Organization (WHO) in 2018, approximately 1.35 million lives are lost each year as a result of traffic accidents. Additionally, between 20 million and 50 million people suffer non-fatal injuries and many of these injuries cause disability⁷.

These road traffic injuries cause considerable economic losses for individuals, their families and the countries as a whole (costs of treatment and loss of productivity of people who die or are disabled by their injuries, and of working time or study that the relatives of the injured must distract to care for them).

Traffic accidents cost most countries 3% of their Gross Domestic Product (GDP), which is why I consider it important. This not only implies a high economic cost, but also implies injuries, opportunity costs for people who cannot work, suffering from relatives and friends, among other things.

Below I present the impacts of traffic accidents and some particular characteristics of their statistics:

- More than 90% of deaths caused by traffic accidents occur in low- and middle-income countries. The highest rates are in Africa. Even in high-income countries, people of lower socioeconomic status are more at risk of being involved in these types of accidents. Apparently, there would be a correlation between socioeconomic level (education) and the level of traffic accidents. On the basis of this, it follows that more educated people take the necessary precautions (or implement controls). Likewise, the roads of countries with a

higher socioeconomic level have better conditions and the traffic rules are stricter.

- People between the ages of 15 and 44 account for almost half of all road traffic deaths worldwide. It means that from the age of 44, people begin to become aware of the risk and improve their driving.

- Men are more likely than women to be involved in traffic accidents. About three-quarters (73%) of all traffic fatalities affect men under the age of 25, who are three times more likely to die in a traffic accident than young women.

In its report, the WHO recommends implementing measures that reduce the probability of traffic accidents and reduce the impacts of these accidents. So, they recommend a safe transportation system for all road users. In this regard, road and shoulder conditions, safe speeds, safe vehicles and safe road users are key.

In conclusion:

- The increase in average speed is directly related (correlated) to the probability of a traffic accident occurring and the severity of its consequences. For example, a 1% increase in average vehicle speed leads to a 4% increase in the incidence of fatal accidents and a 3% increase in the incidence of trauma accidents.

- The risk of death of a pedestrian struck by the frontal part of a car increases enormously with speed (multiplied by 4.5 from 31 miles per hour to 40 miles per hour).

- In the case of a side impact between cars traveling at 40 miles per hour, the fatal risk for passengers is 85%.
- Correct use of a motorcycle helmet can reduce the risk of death by almost 40% and the risk of serious injury by more than 70%.
- The use of a seat belt reduces the risk of death of the front occupants of a vehicle by between 45% and 50%. As for the rear seat occupants, the belt reduces the risk of death and serious injury by 25%.
- The use of child restraint systems can translate into a 60% reduction in mortality.
- Driving under the influence of alcohol increases the risk of a fatal accident or serious injury. In cases of driving under the influence of alcohol, the risk of a traffic accident even begins with low levels of blood alcohol concentration (BAC) and increases considerably when the driver's BAC is higher than 0.04 g / dl
- In cases of driving under the influence of drugs, the risk of a traffic accident increases to varying degrees depending on the psychoactive substance. For example, the risk of fatal accident for an amphetamine user is about five times that of a non-drug user.

The “black swan” effect

On April 10, 1912, deck personnel loaded luggage onto the Titanic at the Southampton port. One of the people who was about to board the ocean liner asked one of the porters: “Is it true that this ship cannot sink?” The boy replied, “That’s right. Not even God himself could sink this ship! ”.

The passengers of this transatlantic, which thus began its first trip to New York, did not imagine what would happen a few days later. The same happened with the explosion of the coronavirus pandemic, which nobody imagined everything that happened during 2020. Or who could have imagined, in 2001, that several terrorists would take different planes and crash them into the two twin towers (among other targets)?

These events, according to Nassim Nicholas Taleb, an American nationalized Lebanese essayist, researcher and financier, believes that in general, people overestimate the value of rational explanations on past data and underestimate the weight of randomness in the data. Among other books written by him, The Black Swan (2007) stands out, where he explains that these extreme events are called: black swans. This concept is used to describe an unexpected and unforeseen event that has a considerable impact and that nobody expected.

While these events would be difficult to foresee in practice, having a rigorous and comprehensive methodology for managing risks can help considerably. For example, the All England Club (responsible for the Wimbledon tennis tournament) had contracted an insurance that protected it against pandemics, since the appearance of the SARS virus in 2003. By not being able to carry out the 2020 tournament due to COVID -19, Wimbledon received compensation that, in some way, made up for its losses.

On the Titanic, 2,223 people were traveling; only 706 survived. The ship had a capacity for 64 lifeboats with a capacity for 65 people each (4,160 people), which would have been able to cover all passengers. However, the ship only carried 20 lifeboats (they would have reached 1,300 people or 58% of the passengers). Likewise, only 16 lifeboats were properly used. In other words, the lifeboats management was not at all adequate.

Regarding the terrorist attack on the Twin Towers, the testimonies of the police commanders, the fire department and the Port Authority (owner of the Twin Towers of the World Trade Center) subsequently evidenced a lack of coordination between the agencies at the time when managing the evacuation after the attack and before the collapse. In addition, they lacked an emergency plan or protocols that would allow ordering the information to deal with the crisis. On the other hand, the intelligence services did not inform the local authorities of the risks of a massive attack, of which they had certain information.

What I want to show is that, beyond not knowing the future or knowing what events may happen, managing risk properly will give us tools and action plans that will surely bring us some benefit (as happened with All England Club). Undoubtedly, it has an associated cost (taking out insurance or taking regular contingency actions has an economic cost); but it will allow us better management in these eventualities. Additionally, poor management will increase the costs and losses of these events.

The relation between luck and risk

“I am a big believer in luck. And I realize that the harder I work, the luckier I get.”

Is it luck or is it proper risk management? On many occasions, we say that some person has been lucky in their life. However, is it really that they have been lucky or have they worked hard and managed the risks properly. This can apply to both individuals and organizations and that is why, more and more, organizations have specialized units or departments for risk management⁸.

As Fernando Broncano-Berrocal points out in his essay Luck as Risk (2014), there is a clear relationship between luck and risk. The higher the risk of an event, the greater the luck if the risk materializes. He comments that playing Russian roulette with a six-round pistol loaded with five bullets is riskier than playing with the same revolver but loaded with a single bullet. Surviving the first game is more fortunate than surviving the second game. His conclusion is that the greater the risk involved, the greater the luck if the event does not occur. On the other hand, it also points out the association we tend to make between luck and lack of control. In other words, we tend to associate more with luck than with events that are beyond our control⁹..

As we have already mentioned, risk management is the process of identifying, analyzing, evaluating, prioritizing and managing risks. The objective of risk management is to avoid uncertainty from preventing the achievement of objectives. Uncertainty has effects on the things that are important to us.

Both in private life and in business life, we have goals to meet and uncertainty that can prevent us from meeting them. The risk function is to identify and manage this uncertainty in a realistic and proactive way, thus making it possible for us to better meet our objectives. If we are reactive to the identification and management of risks, we will be moving away from meeting the objectives. A key, in this sense, is that each risk has a defined person in charge and responsible for managing it¹⁰.

In short, managing risks is preventing events with harmful effects on us or our assets or our goals from happening. It is also reducing their impact or reducing the probability that they will happen.

Likewise, risk management, by definition, is exposing ourselves to the benefits (opportunities) of uncertainty and capitalizing on them when they occur. Therefore, one way to achieve objectives in a more recurrent and consistent way is to manage risks proactively and preventively. If a person or an organization achieves its main goals more often, it is probably not a product of luck, after all. Probably, it is that they have managed the risks in a better way.

To increase our luck, we must expose ourselves to the possibilities of good luck and its impacts, and reduce the effects of negative events. Therefore, luck and risk go hand in hand and both have an effect on our lives.

The alternative to risk management is to walk through life crossing your fingers, hoping that the events that can harm us do not happen and that bad luck does not reach us. Risk management introduces rationality into the irrational world of bad luck. It is to identify negative events and protect ourselves.

We use a lot the phrase: “If it ain’t broke, don’t fix it”. However, it may bring us a problem in the future. If an airplane is not broken, it does not mean that we

will not do maintenance on it. It would be crazy. Preventive and scheduled maintenance in aviation makes it safe to fly. The chemical industry has been a pioneer in developing the concept of the near miss (near miss or near-accident), to record what has almost happened and develop a solution before it happens.

Many times we overestimate the probabilities of certain events. In our lives, the fact that our house has never burned does not imply that it cannot burn in the future. The same happens to a company that has few credit losses due to defaults that leads the company to have a lack of sensitivity to risk (and therefore, the need to improve its risk management)¹¹.

Conflict of interest

“Never ask a barber if he thinks you need a haircut”.

Warren Buffet

A conflict of interest is that situation in which the judgment of a person (his primary interest) and the integrity of the action that he must take, tend to be unduly influenced by a secondary interest (generally, economic or personal). Practically, everyone in the world has its own agenda. This could be the case of a doctor who, when consulting a patient, recommends an operation, when there could be other options. The doctor has a conflict of interest, since he is more benefited by the high fees he would have with the operation (higher than performing another consultation with the patient). Citing another example, it could be the case of a gym professor who sells certain vitamins to his students (recommends and sells).

When a person works in an organization, there is a conflict of interest when, in the performance of his (or her) work within the institution, there is a contrast between the self-interest and organizational interest.

In the case of a public official, there is a conflict of interest when there is a confrontation between the public interest and the private interests of the official; that is, when he has personal interests that could unduly influence the performance of his duties and responsibilities.

Generally speaking, a conflict of interest is any situation in which a person has a personal interest (direct or indirect) in something that improperly influences his judgment, decisions or actions. It is understood as a direct personal interest if it benefits yourself and indirectly if it benefits some of your relatives, close friends or friends.

Conflict of interest could be:

- Real conflict of interest: a person faces a real and existing conflict.
- Potential conflict of Interest: a person is or could be in a situation that could lead to a conflict of interest in the future.
- Apparent conflict of interest: a person is or could be in a situation that could be perceived as conflictive, although in fact it is not.

A conflict of interest can arise in several ways, for example, as a consequence of:

- a) A financial interest.
- b) For participation in other activities.
- c) Due to family or personal relationships.

d) Gifts and favors.

Preventing the existence of situations that can generate conflicts of interest guarantees that decision-making is adequate. Therefore, an adequate framework is required to avoid conflicts of interest: identify, manage, eliminate and communicate any conflicts of interest that may arise.

Risk appetite

“If you don’t invest in risk management, it doesn’t matter what business you’re in. It’s a risky business”.

Gary Cohn

According to the guide COSO Risk appetite - critical for success (2012), risk appetite should be an integral part of decision making process¹². You need to know in advance and determine the amount of risk you are willing to take and what you need to take to be successful.

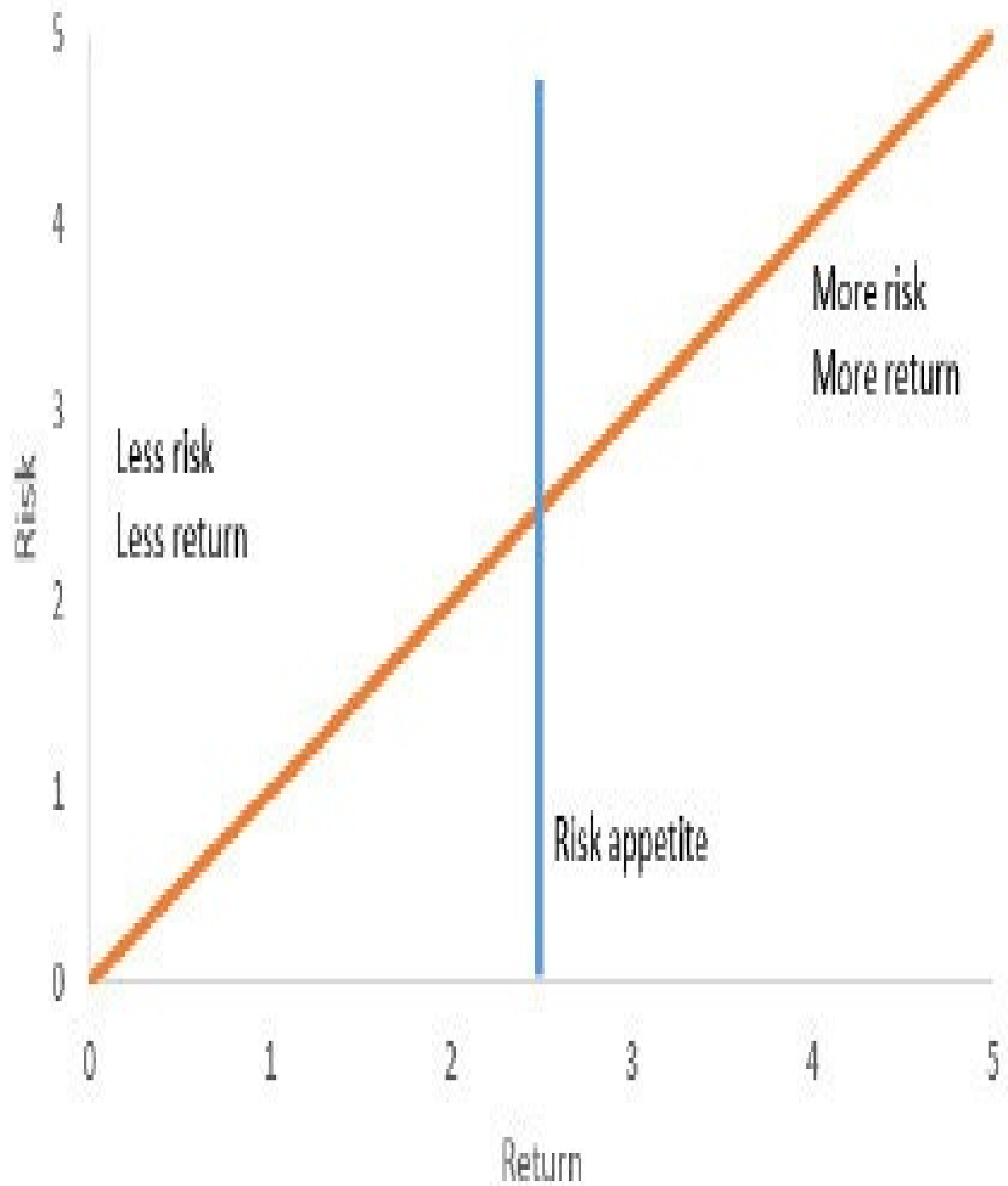
To improve our decision making, it is necessary to understand our appetite for risk. As we have seen, we all take risks in one way or another and we must know and accept the risks that we are willing (or capable) of taking in our lives.

The challenge is to know the correct amount of risk necessary according to our characteristics, situations and desires. The risk appetite is, then, the level of risk that we are willing to take.

In the following Figure, we see the relationship between return, risk and risk appetite.

Figure 5. Relation between risk, return and risk appetite

Risk - return relationship



Source: Own elaboration

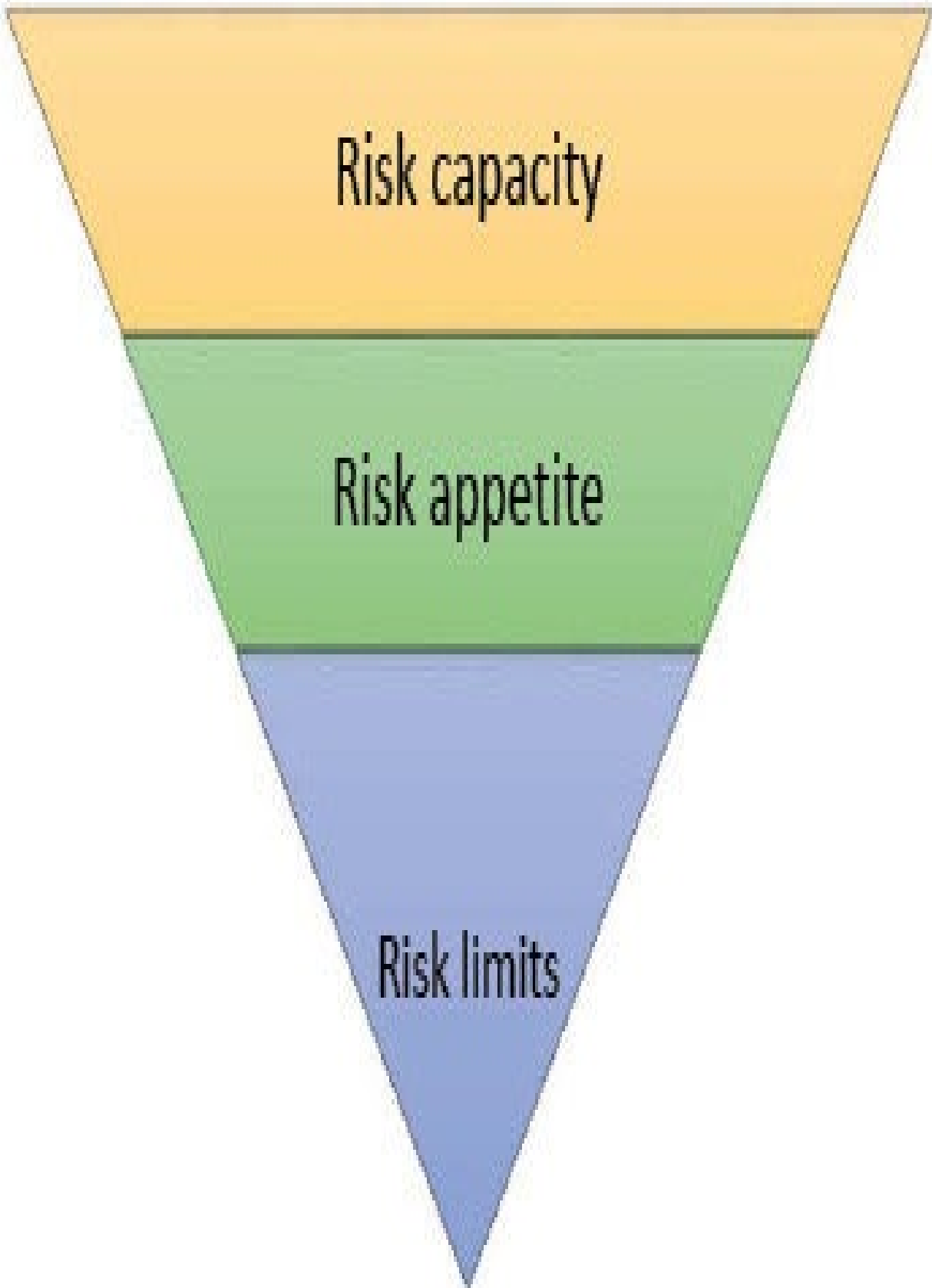
There, you can see that to obtain a higher rate of return it is necessary to accept a greater risk. Therefore, knowing and determining the risk appetite is necessary to be able to place ourselves in the return - risk relationship.

Limits

The risk appetite must be immersed within the risk capacity that the organization can take. Risk capacity is the assessment of the maximum amount of risk that the organization can undertake, given its capital base, liquidity, debt capacity, regulatory situation and other factors.

It can also be the risk that the organization is able to bear to achieve its strategic objectives, while continuing to do business safely and without harm to the company. Or putting it in another way, it is the maximum level of risk that the financial institution can assume given its current level of resources before breaching restrictions given by regulatory capital and liquidity needs, operating environment (for example, technical infrastructure, risk management skills, experience) and obligations.

Figure 6. Capacity, risk appetite and limits



Source: Own elaboration

Once the risk capacity and risk appetite have been known and determined, it is necessary to incorporate the necessary limits to effectively conduct the business in the organization. Risk limits can be defined as amounts of acceptable risk (measures and thresholds) related to specific risks. These specific risk levels are quantitative measures for business lines, entities, risks to certain risk factors, categories, concentrations, geographies, counterparties, etc.

1 <https://www.moneycrashers.com/manage-life-risks-make-better-decisions/>

2 <http://www.vatican.va/archive/ESL0506/4/UU.HTM>

3 <https://www.whitehouse.gov/about-the-white-house/the-constitution/>

4 <https://www.whitehouse.gov/about-the-white-house/the-constitution/>

5 <https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>

6 <https://www.besthealthdegrees.com/health-risks>

7 <https://www.who.int/es/news-room/fact-sheets/detail/road-traffic-injuries>

8 <https://wealthandrisk.nz/risk-management-is-luck-management/>

9 <https://philpapers.org/archive/BROLAR-9.pdf>

10 <https://www.mha-it.com/2020/01/29/risk-management/>

11 <http://dinaltia.com/themichaelbransonblog/la-suerte-y-la-gestion-de-credito/>

12 Rittenberg & Martens (2012). Enterprise risk management. Disponible en: <https://www.coso.org/Documents/ERM-Understanding-and-Communicating-Risk-Appetite.pdf>

Chapter II.

Why is risk management important?

“I don’t have dreams. I have goals”.

Harvey Specter

As we saw in the previous chapter, proper and efficient risk management allows to make better decisions with the required and necessary information. In this regard, making better decisions increases the probability of achieving the objectives (whatever they were), both at a personal level and at a corporate level. Achieving objectives will avoid losses and improve performance in every way.

Both people and organizations constantly face uncertainties and internal and external influences that require decision-making or action plans that will make it more possible to achieve the goals, managing that uncertainty.

This risk management requires that we are always in the process of identifying and managing risks, considering that risk can transform or new ones may appear, as a result of our actions or as a result of changes in the environment.

In business, for any organization (large or small), proper risk management is essential and must be carried out at all levels. A culture for proper risk management must permeate, allowing decisions to be made in a reasoned manner, assessing risk, mitigating possible aspects and being rewarded for the

risk taken.

Risk management improves and contributes to the general management system of organizations. For example, it is common for financial entities to have specialized areas in risk management. This is the result of regulation requires financial institutions to have an independent area that assesses and measures risk. As institutions take deposits from the public (depositors), they require greater diligence to protect those resources. However, it should be noted that proper risk managing helps any organization to improve its management system (university, agricultural company, sports club, transport company, etc.). Any organizations faces challenges and risks, without distinction. In addition, they will be able to better fulfill their mission if they can identify risks that others do not see and anticipate them.

In this aspect, the culture is fundamental. It is required that every employee within the organization has that ability to identify risks in the activities carried out by each individual. Each one will have the visibility of the risk in their day to day activities and in the actions or decisions they have to take. In this sense, they need to know how to identify risks to improve their decisions.

Organizations seek to create value and generate profits for their owners or shareholders. These profits will also benefit the employees of the organization (safer employer). In short, correct risk management will avoid losses and will result in more sustainable organizations over time.

What is a risk profile?

Each person is different and is exposed to different risks in different ways. What is a high risk for one individual may be a low or immaterial risk for another. A person who bicycles in the city is more exposed to the risk of an accident than one who rides a bicycle in a rural area. Or a person who plays soccer is more likely to suffer a muscle injury than a person who plays chess (who may be more exposed to stress levels).

Even so, for the same risk, people respond differently according to their risk profile. Some ride their bikes with helmets, lights, at times when there are fewer people; others without taking these precautionary measures. Some fasten their seat belts, limit their speed and do not use cell phones while driving; others do the opposite; however, the risk is the same.

Additionally, some people may have a high level of risk in some issues, but very low in others. For example, a person who has very risky hobbies (climbing, skydiving, etc.) might not want to take risks at home and have all kinds of security devices (surveillance, cameras, alarms, watchdogs, etc.).

So what does each person's risk profile depend on? I detail it here:

- **Capacity:** the ability to absorb a loss or setback without affecting your life or achievement of objectives. Those who watched The Last Dance series will know that Michael Jordan lost thousands and thousands of dollars on golf bets. For his wealth and income level, it wasn't a problem; probably for someone else, it would have been devastating. Therefore, the propensity to take a risk depends on

the capacity of each one. For this, we must ask ourselves if we are in the capacity to face that loss if it happens.

- Appetite: it is the comfort or attitude we have towards risk. It depends on our knowledge of the risk and associated uncertainty. As we know more, the more we understand it and the more risk we can take. Therefore, a police officer with many hours of practice will be more tolerant in a hostage situation than any other human being. He practiced more and passed it more times in his life

If we require anyone to take more risk than they can psychologically handle, they will surely experience extreme stress and anxiety. Therefore, it is necessary to know our capacity and tolerance so that our decisions are in accordance with the circumstances and do not generate this level of stress.

To know your level of risk, I suggest taking a test offered by Rutgers University (of New Jersey)¹³..

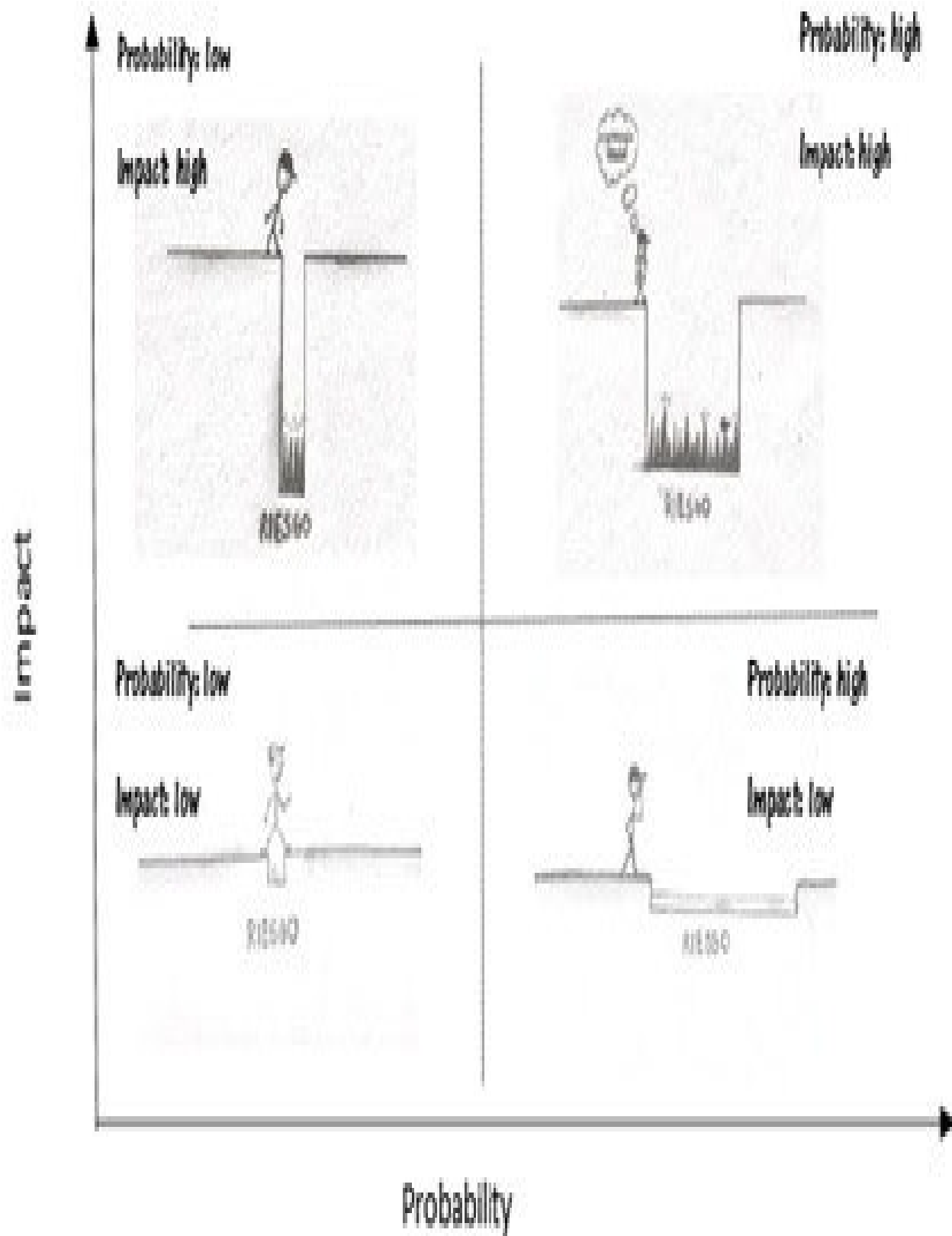
Warren Buffett, a well-known American investor, says: “The risk comes from not knowing what one is doing.” Therefore, he invests only if he knows and understands the risks he is taking, because in that way, he can handle the risks or manage them. And those are the risks he is willing to take (and he invests there).

Risk levels

As we saw earlier, risks always have a probability of occurrence and an impact. That is why the level of risk (high, medium or low risk) will depend on the combination of probability and impact. For example, a risk with a high probability of occurrence with a high impact will be a high category risk. Let's look at examples of the combinations of probability and impact of risks:

- Low impact & low probability: these are risks that rarely materialize and if they do occur, they have little impact on our lives. An example is being cut on the edge of a sheet of paper. They are rare and certainly do not require treatment.
- Low impact & high probability: generally, they happen. Fortunately, their impact is low and they don't require much action. An example is a mosquito bite. It is solved by using a repellent and it hardly takes us to a doctor.
- High impact & low probability: these are events that will have a devastating impact, but that only occur sporadically. Although they do not occur often, given the high impact, action or risk management is required. When we insure a property, we know that the probability of something happening is low, but we consider that the impact is too great (huge cost) not to cover the risk.
- High impact & high probability: living in a mobile home in Texas (a state with a high number of tornadoes) would be an example. Risk management is paramount. It will surely pass and its impact will be high.

Figure 7. Combinations of probability and impact



Source: Program & Project Management Hub, 2020.

What do we need for an adequate risk management?

The following are necessary requirements for proper risk management:

- Culture: reflects the general awareness, attitudes and behaviors towards risk.
- Comprehensive: the approach must be comprehensive and include all activities. If any aspect of risk is left unidentified or managed, it could seriously affect the achievement of the objectives.
- Recurrent: the approach must be carried out constantly and gradually identifying new possible sources of risks (internal and external).
- Appropriate: the approach must be adapted to the requirement, own needs (personal or business).
- Information: it is required to have the necessary information with adequate quality and in a timely manner.
- Human factors: risk management will depend on people and their actions and decisions.

- Resources: for adequate risk management, resources are required. Mitigating a risk generally takes time, effort, and money.

What does it mean to run risks in the daily life?

“Risk in itself is not bad. What is bad is that the risk is mismanaged, misinterpreted, mismeasured or misunderstood”.

Félix Campoverde Vélez

Considering that risk is the uncertainty that could have a negative impact on our lives (danger, losses, injury, accident, etc.), we see that we face risks on a day-to-day basis: every time we perform a physical activity, while managing our assets or possessions and in various areas such as health, profession, personal finances or even in relationships¹⁴. I go next on to detail each of these items:

1. Health: since the vast majority of people aim to live a healthy life and avoid the consequences of poor health, we see the importance of taking care of it. In any case, despite our efforts, we face risks such as colds, infections, obesity or cancer. Any illness will affect our physical and mental well-being. Risk management implies taking concrete actions to have good eating practices, drink enough water, exercise and not indulge in excesses. Also, identify any symptoms that we may have in order to take care quickly (preventively). If we do not manage risk properly, we will surely have an impact or consequence on our health.

2. Profession: our life refers to the fulfillment of our dreams and goals. Graduate, get a job, start something of your own, buy a house or remaining in our job (not getting fired). For these dreams and goals, we must establish the actions that are needed: study, consult with people who have experience,

work hard, improve interpersonal ties, associate with people who contribute to us, etc.

3. Personal finance: probably, this is the area where we see the most risk and we feel it more concrete; it is the financial risk of investments, where some take more risks than others. We make investments in deposit, money markets, stocks, bonds, mutual funds, real estate or we invest in starting a business. These decisions have their risk: credit, interest rate, prices, etc. A bad decision or an adverse change in market conditions can make us lose our investment and capital, affecting our future. For this reason, our risk management must include planning and establishing investment objectives, managing investments appropriately, mitigating risks, seeking diversification of investments, anticipating future needs for funds and providing adequate monitoring.

4. Interpersonal relationships: our interpersonal relationships are essential in our lives. The risk entails losing them and the consequences that this would bring. Therefore, we must manage risk appropriately, dedicating time to our loved ones, creating healthy and lasting bonds, visiting them when possible, following their situations, showing them love and affection, and treating them in the best way.

5. Assets: assets are our house, land, a house on the beach, a car, a motorcycle, a bicycle, animals, golf clubs, rackets, books, paintings, computers, refrigerators, even a personal diary, among many other things. Our risk is the loss or impairment of these assets. For this reason, risk management is to protect them and we do it with different actions: purchase of insurance, alarms, security dogs, cameras, among others. Even losing a password is a risk (as the asset or information they protect cannot be accessed) and we tend to mitigate the risk by writing down the password somewhere.

Therefore, we must properly manage our risks by prioritizing actions. Surely, our actions are oriented to the risks that could have a greater impact or negative consequence.

There is no generic or standardized or single risk management approach that works well for everyone. Risks cannot be adequately understood in isolation from objectives. Unless we can define and state our objectives clearly, there is a danger that the risk management exercise will not meet its goal.

Furthermore, you cannot manage risk without information. Every decision we make, carries risks. The quality of our risk management is determined by our ability to anticipate future events. Therefore, risk management is a vital tool to support high-quality decision making. In turn, the ability to anticipate what might happen depends on the quality of information available at the time. It is always good to protect yourself and prevent; they say prevention is better than cure. But let's remember the old Murphy's Law to mitigate risk: "If something can go wrong, it will go wrong."

This is why, in some occasions, it is necessary to hire a company to get a particular service, either for the acquisition of insurance (home, car, and retirement), medical coverage (social work, private medicine) or an architect or company to carry out a task. In all these relationships and contracts, in which the relationship will last for a while and in which we are expecting something in the future (flow of money, goods, works, coverage), we must ensure that the counterpart will not have subsistence problems. These problems could come from different circumstances: operational risks, market risks, lack of liquidity or resources, solvency, among others.

Sometimes our decisions are based on what an acquaintance or relative did; that is, sometimes we hire someone on the basis of a recommendation, but this does not mean that it is a good decision. Our best remedy is to conduct a counterparty analysis to ensure that the counterparty can honor and fulfill its commitment.

In other cases, we rely on the opinions of risk rating agencies, for example, but this is a particular case and to be careful since the income comes from the same companies that they rate (even though they implement some checks and balances). This means that they have a conflict of interest, as they say: “Paid musician plays good music”. The companies or institutions that are rated, many times, pressure the rating agencies to improve their rating taking into account that they pay the bill.

In short, it's best to make a well-informed decision based on an analysis that might include a review of your counterparty, its numbers and projections, as well as doing some research on it, in order to make the best possible decision. Obviously, it has some costs.

Different risk profiles

As already mentioned in the section “What is a Risk Profile?” each person has a risk profile that will be decisive for decision-making. There are people who are averse to risk and people who are always willing to take risks.

We are going to distinguish three different risk profiles according to the level of risk:

a) Conservatives: conservative people are characterized by having a lower risk appetite, being less risk tolerant and valuing safety. They seek decisions that have little variability and thus avoid negative impacts.

b) Moderate: they are in the middle of the conservative and aggressive, and their appetite for risk is medium.

c) Aggressive: aggressive people are willing to take whatever risk is necessary, they have a greater appetite for risk. They are not so concerned about the negative impact, as long as there is a positive impact to counterbalance it.

Additionally, it is important to know the risk appetite to make the best decisions and thus live better with the risk or uncertainty that they will carry.

Investor risk profile

Within the financial industry, each investor is required to know their risk profile before making an investment. To this end, financial institutions design tests that allows determining the risk profile of each investor.

This investor's profile is determined according to the characteristics of the person and that will serve as the basis for making investment decisions. In some way, this profile will enable (or not) the use of certain instruments. Knowing your risk profile will also allow better management of the different investment alternatives and create a portfolio that is in accordance with the situation and characteristics of each one.

The first thing to know is the investment objective. To know what the risks are, we said that an objective is needed to later identify the risks. These risks could prevent us from achieving those objectives. Likewise, the future funding needs that may exist must be known. These are some of the factors that influence the investor's profile:

- Age and life expectancy.
- The investment horizon.
- The current income (and expectations for the future).
- Current expenditures (and expectations for the future), including exceptional expenses.

- Net worth.
- Risk appetite and risk tolerance.
- Knowledge of the financial market.
- Desired profitability.

Additionally, we present the same three levels presented before but focusing in an investor¹⁵.

a) Conservative

This investor is characterized by being less risk tolerant and valuing safety. Therefore, they choose investment instruments that give certainty of the result of the investment and minimize the chances of loss. It does not matter to him that the profits (or performance) obtained are low. You prefer to invest in short-term instruments, time deposits or savings accounts, because you can know how profitable they will be when you invest.

Within this profile there can be all kinds of people, from young people (with their first income and who, therefore, do not want to risk their savings) to those with families to maintain or debts to cover, or retired or soon to retire people (who they don't want major worries).

b) Moderate

This investor is cautious with his decisions, but is willing to tolerate moderate risk to increase his profits. He tries to maintain a balance between profitability and security.

Usually, he seeks the creation of a portfolio or investment portfolio that combines investments in debt instruments (securities) and stocks.

Investors of this type have different ages. These are generally people with stable incomes, which can be moderate to high, or parents with the ability to save.

c) Aggressive

They seek the highest possible returns, so they are willing to take whatever risk is necessary. These are, for example, young investors, but also economically sound and with moderate to high incomes and net worth, and singles or without children, between 30 and 40 years of age.

This class of investors takes risks in the financial markets and opt for the instruments that promise the highest returns, regardless of whether at any given time, they risk losing most of the investment.

This type of people prefer investment portfolios in which they combine investment funds, long-term, structured products, use of derivatives and even use

of leverage (indebtedness).

The best way to achieve objective's within an organization

“Risk management is a culture, not a cult. It only works if everyone lives it, not if some high priests practice it”.

Tom Wilson

In an increasingly uncertain and volatile world, risk management has gained importance in organizations and is a key element when defining, adapting and implementing business strategy. Previously, it was seen as a cost to the business, demanding resources, time and effort. Today, there has been a change in perspective and it is seen as a necessity and a fundamental tool to increase the probability of achieving goals and objectives.

The recurring economic and financial crises show the importance of controlling business risks and good corporate governance in the management of organizations. External and internal risks are increasingly complex, new risks appear and are intertwined with each other.

Changes in the market and in the geopolitical environment, globalization, regulatory requirements, supply chain security, intense competition and risks derived from technology are some of the uncertainties that surround the organizational management, and its increasing difficulty demands an adequate strategic response.

Boards of directors are responsible for ensuring that this response is efficiently translated into all phases of business management, from business and strategic planning to operational execution and process control.

Every choice we make to achieve our goals has its risks. Both in the key decisions taken in the boards of directors and in the day-to-day operational decisions, risk management must be part of the decision-making process. That is why business risk management contributes to optimizing results.

Today, various stakeholders are more engaged and seeking greater transparency and accountability in managing the impact of risk, while critically assessing the ability of management teams to seize opportunities. Even success can carry risk. For example, the risk of not being able to meet unexpectedly high demand or maintain expected business momentum.

The Council of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) published the report Enterprise Risk Management- Integrating with Strategy and Performance (ERM, 2017), an update of a first version of 2004. This publication offers a perspective on the concepts and current applications of business risk management, which is constantly evolving.

This report is a fundamental working tool for boards of directors and management teams of organizations of any type or size. It highlights the importance of risk management in the ordinary course of business activities. It also demonstrates how the integration of corporate risk management practices throughout the entity helps accelerate growth and improve performance. In addition, it contains principles that can be applied in practice, from making strategic decisions to achieving results.

Through the application of the components and principles of the ERM

Framework, management will better understand how, by explicitly considering risk, the choice of strategy can be influenced. Enterprise risk management enriches the dialogue of the management team by adding a greater perspective on the strengths and weaknesses of the strategy, as conditions change and on how it fits with this strategy, the mission and vision of the organization. Also, it helps to generate trust and security in the different stakeholders with respect to the business.

In the long term, it can improve the resilience of companies (ability to anticipate and respond to change), improve the selection of strategies, since choosing it requires structured decision making that analyzes risk and align resources with the mission and vision of the organization.

In conclusion, what I mean, is that the Enterprise Risk Management Framework integrates risk management with strategy and performance. This is how it highlights the importance of business risk management in strategic planning and incorporates it throughout the organization, since risk influences and they are aligned to strategy and performance in all areas, departments and functions.

Top management sets the tone of the organization, reinforces the importance of risk management, establishing the responsibilities for such management. In this case, the risk culture that is understood by ethical values, desired behaviors and understanding of risk in the organization is essential.

Risk management, strategy and objectives work together in the strategic planning process. The risk appetite is defined and aligned with the strategy; business objectives put strategy into practice while serving to identify, assess and respond to risks. In any case, the different risks can inhibit the achievement of the strategy and the business objectives, and they must also be identified and evaluated. They should be prioritized by severity and in the context of risk appetite. The organization selects the responses to risk and takes the risk it is willing to take.

Summarizing, enterprise risk management requires a continuous process to obtain and share necessary information, from internal and external sources, that flows in all directions and throughout the entire organization. In order to achieve this, the ERM Framework is based on five components:

1. Governance and culture: The management sets the tone of the organization, reinforcing the importance and establishing supervisory responsibilities of the ERM. Culture refers to ethical values, desired behaviors, and understanding of risk in the organization.

2. Strategy and objectives setting: risk appetite is established and aligned with strategy. While business objectives put the strategy into practice and serve as the basis for identifying, evaluating and responding to risk.

3. Performance: risks that may impact business objectives must be identified and evaluated. Likewise, they will be prioritized by their severity and in the context of risk appetite. The organization then records the number of risks it has taken and decides how it will respond to them.

4. Review and revision: When reviewing performance, an organization can consider how well ERM components are performing over time and, in the event of substantial changes, what adjustments or updates are necessary.

5. Information, communication and reporting: the Framework is fed by a process in which it obtains and shares required information, both from internal and external sources, that flows up, down and throughout the organization.

Among the benefits that organizations can obtain by implementing the ERM Framework are:

- Expand the range of opportunities.
- Identify and manage risk throughout the organization.
- Increase positive results and benefits, as well as reduce negative contingencies.
- Reduce variability in performance.
- Improve resource deployment and enhance business resilience.

In addition to the five components already described, the COSO ERM Framework 2017 is structured by 20 principles that are detailed below, separated by components:

A) Governance and culture

1. Exercises board risk oversight

2. Establishes operating structures
3. Defines desired culture
4. Demonstrates commitment to core values
5. Attracts, develops and retains capable individuals.

B) Strategy and objective-setting

6. Analyzes business context
7. Defines risk appetite
8. Evaluates alternative strategies
9. Formulates business objectives

C) Performance

10. Identifies risk

11. Assesses severity of risk

12. Prioritizes risks

13. Implements risk responses

14. Develops portfolio view

D) Review and revision

15. Assesses substantial change

16. Reviews risk and performance

17. Pursues improvement in Enterprise Risk Management

E) Information, communication and reporting

17. Leverages information and technology

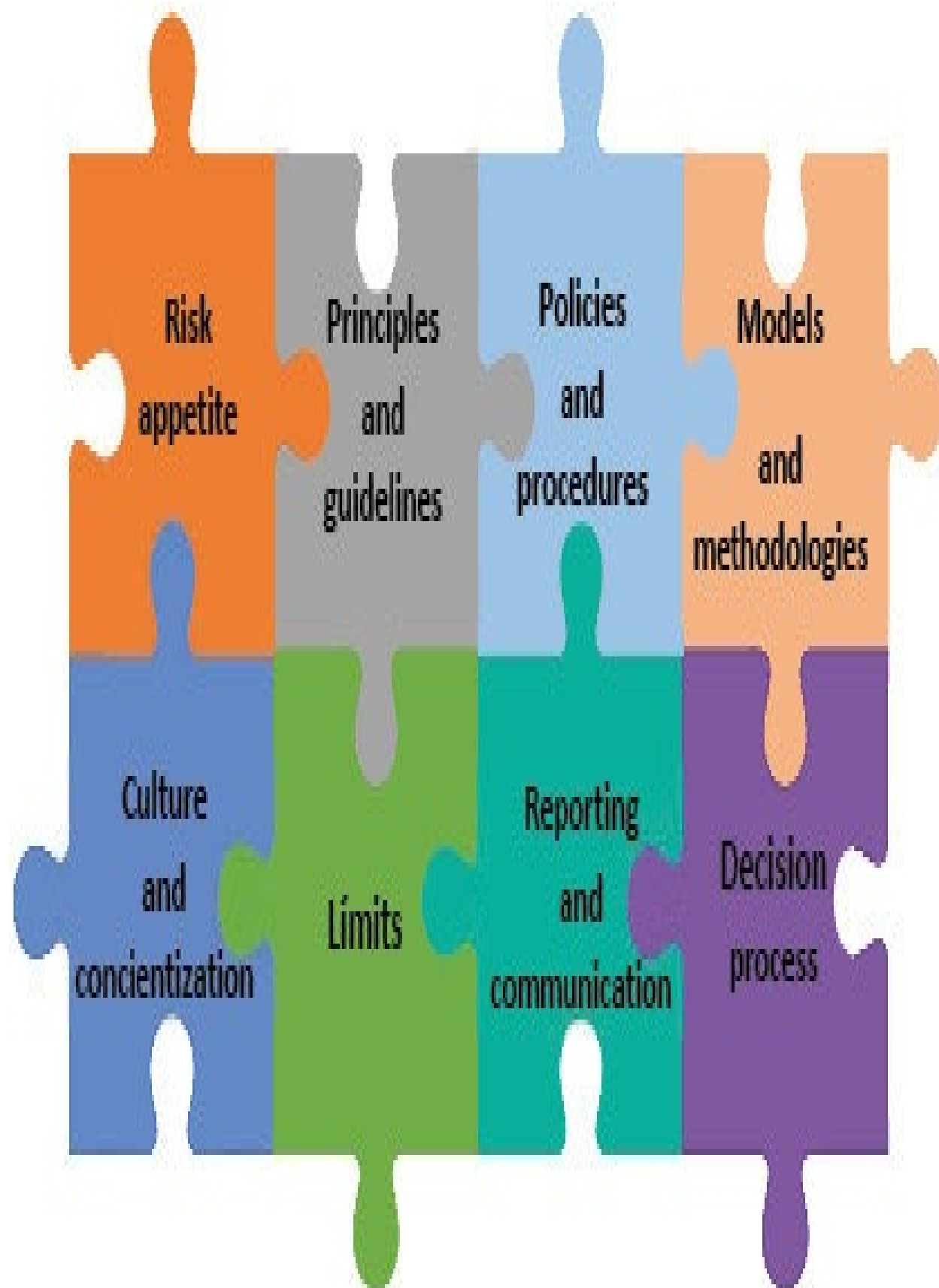
19. Communicates risk information

20. Reports on risk, culture and performance

Risk management framework for enterprises

This framework is made up of several pieces that must work simultaneously for the effectiveness of the model. Here are those elements:

Figure 8. Elements of a risk management enterprise framework



Source: Own elaboration.

Main benefits from enterprise risk management

Now, I do believe it is appropriate, after having explained what ERM is about and how it works, to present the benefits of carrying out an adequate risk management process. The implementation of a comprehensive business risk management system as a tool to identify, manage and mitigate risks in organizations, allows them to be managed comprehensively and brings several benefits to organizations, including:

- Increases the probability of achieving and fulfilling the objectives (mission and vision).
- Improves the organization's ability to identify risks and threats.
- Allows a comparative advantage if one risk is managed and the competition does not (it is called: opportunity).
- Enables better planning and provides predictability.
- Improves decision making.
- Allows to allocate resources in a more efficient way.

- Improves efficiency and effectiveness.
- Provides capabilities for continuous improvement and the detection of new unexpected risks.
- Minimize losses and volatility.
- Improves the trust of stakeholders or interested parties (person or entity that can affect, be affected or perceive themselves as affected by a decision or activity).
- Improves resilience and general resistance.

Risk appetite in organizations

“An important lesson in risk management is that a “retrieving sea” is not a lucky offer of an additional piece of free beach, but a warning sign of an upcoming tsunami”.

Jos Berkemeijer

The risk appetite should be an integral part of the decision making of any organization (financial or otherwise). You must know the level of risk that the organization is willing (and can) accept to fulfill its mission and to be successful.

In an organization, there must be a clear relationship between mission, vision, strategies, risk appetite and objectives. Therefore, it is necessary to integrate risk appetite with strategy and the fulfillment of business objectives. Every employees must be clear about the risks they are willing to take and in what amounts, in order to create value.

It is essential that this acceptable level of risk is considered when determining the strategy and organizational objectives. Every organization must take risks to generate value, innovate and grow, and risk is inherent in every business.

The challenge for organizations is to know the correct amount of risk necessary to maintain growth throughout the organization and to have the same concept when making decisions.

As long as there is a favorable economic cycle, a successful and growing company may be more willing to accept certain risks than when the economy is not growing or the company is not performing at its best. Even so, it may be that a company that is not having the best results decides to take more risk (like a bet).

The risk appetite should be seen as the statement about how the organization will make decisions in its management (and its risk management). Each innovation, new product, new service in pursuit of the success of the organization will create new risks, which should be within this risk appetite.

In order to have a clear appetite for risk, all interested parties must be in harmony (directors, shareholders, managers, employees). This understanding will allow adding value within the desired amount of risk.

Taking risks requires knowing what amount is acceptable in the pursuit of business strategies and objectives, balancing the relationship between profitability and risk.

Let's look at two examples of a statement about an organization's risk appetite:

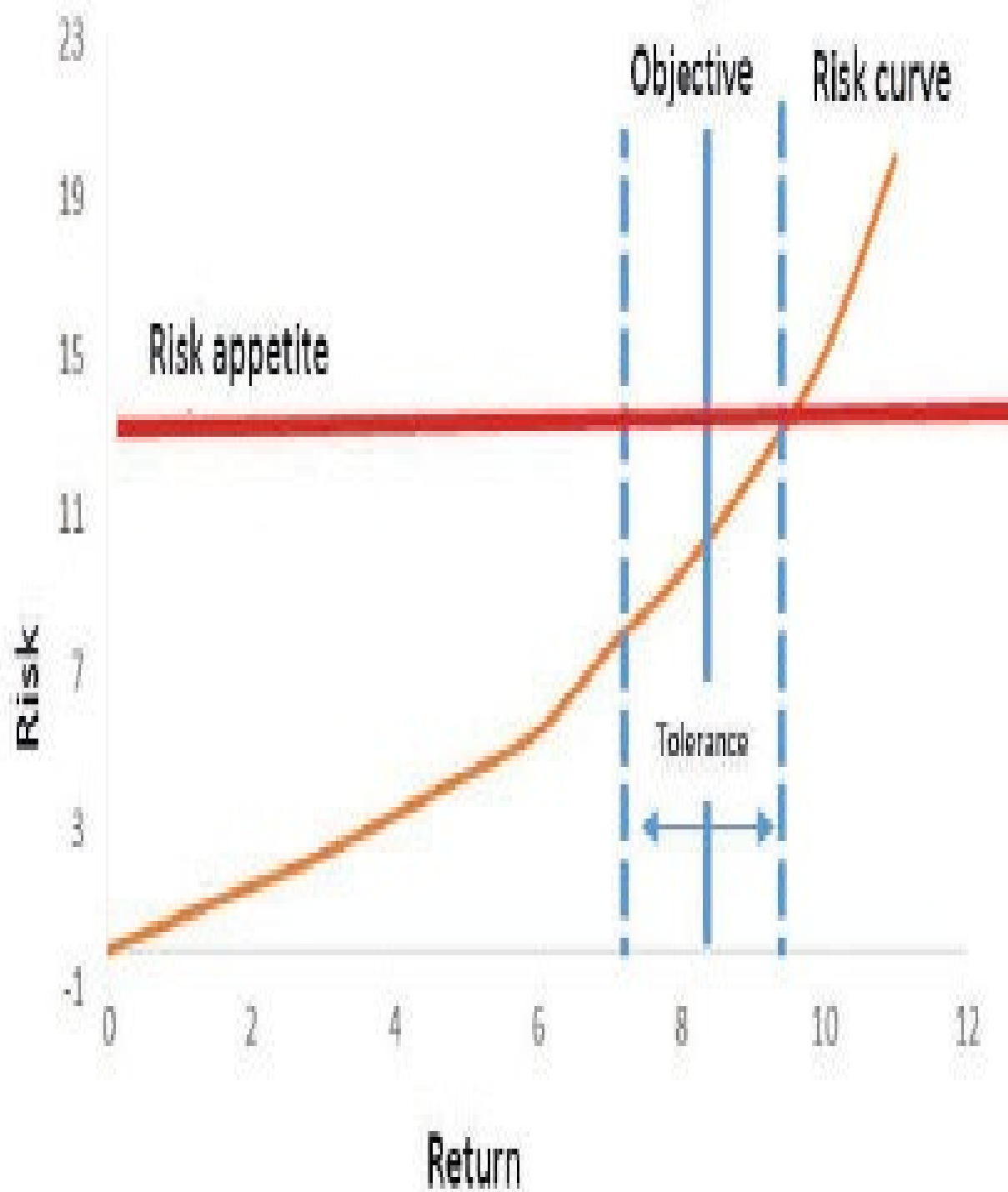
- We will pursue innovation to improve customer service and operational efficiency unless such innovation potentially raises risk related to internal capabilities or creates risk of significant business disruption. Any innovation that creates significant risk to the business will only be considered when the compliance risks are unacceptably high.
- The bank is unwilling to accept risks in most circumstances that may result in a disruption in service, affect or compromise the bank's long-term profitability, have a massive impact on the bank's reputation with stakeholders, or an excessive increase in costs, a significant loss in the information system or information integrity, or significant incidents in compliance with regulations.

On the other hand, risk tolerance refers to the limits of acceptable variation in performance in relation to objectives.

Let's see the following Figure in which you can see the risk appetite and tolerance regarding the objectives set.

Figure 9. Appetite and risk tolerance

Performance and risk relationship



Source: COSO – Risk appetite critical to success

As we have already mentioned, an organization should expect that the strategy it selects can be carried out within the appetite of the organization. So, the strategy must align with the appetite. In order to visualize this, let's look at the following examples of strategic alignment with risk appetite:

- Automotive company: keep the number of new vehicles that require warranty repairs within a range of 1% to 2% (risk: warranty costs).
- Bank: maintain exposure with a geographic concentration in any region to less than 20% of the portfolio (risk: credit losses).
- Hotel management company: maintain the level of staff turnover at less than 60% on an annualized basis (risk: loss of staff).

Once the organization determines a strategy and risk appetite, a communication mechanism must be established throughout the organization. The more specific the statements, the more general awareness it will create in employees.

Let's look at a statement of risk tolerance:

- A glass bottles company. Certain production factors can influence the final size of the bottle: the purity of the raw material, temperature and condition of the machinery. The company manufactures bottles of a specific size and will fulfill

its contractual obligations if the bottles are within 2.5% of the stated size (tolerance). The company is considering reducing this tolerance to +/- 1.5% to attract a new customer.

- The bank estimated that the net profit for the year will be 100 million dollars; however, they are willing to tolerate a +/- 10% change in earnings (90-110).

In summary:

1) Appetite:

- Applied in strategy development and goal setting.
- Focuses on overall business goals.
- Contributes to decision making.
- Helps in evaluating the general performance of the entity.

2) Tolerance:

- It is applied in the execution of the strategy.

- Focuses on objectives and plan variation.
- Links strategy to measures.
- Assists in decision-making and in evaluating performance in relation to objectives.
- Links objectives to measures.

Organizations should integrate the risk appetite and tolerance into the review practices used to evaluate performance. Likewise, a review of risk appetite is required when the context of the organization changes.

13 [Investment Risk Tolerance Quiz. Disponible en:
https://njaes.rutgers.edu/money/assessment-tools/investment-risk-tolerance-quiz.pdf](https://njaes.rutgers.edu/money/assessment-tools/investment-risk-tolerance-quiz.pdf)

14 <https://blog.v-comply.com/importance-of-risk-management-in-daily-lives/>

15 https://www.svs.cl/educa/600/w3-article-1252.html#i_w3_arTemas_ArticuloCuerpo_1_1252 Conservador

Chapter III.

Risk management process

“Not taking risks that you don’t understand is often the best way of risk management”.

Raghuram G. Rajan

The risk management process involves the systematic application of standards, policies, procedures, methodologies, practices and activities to management. This process is illustrated in Figure 10 (shown below).

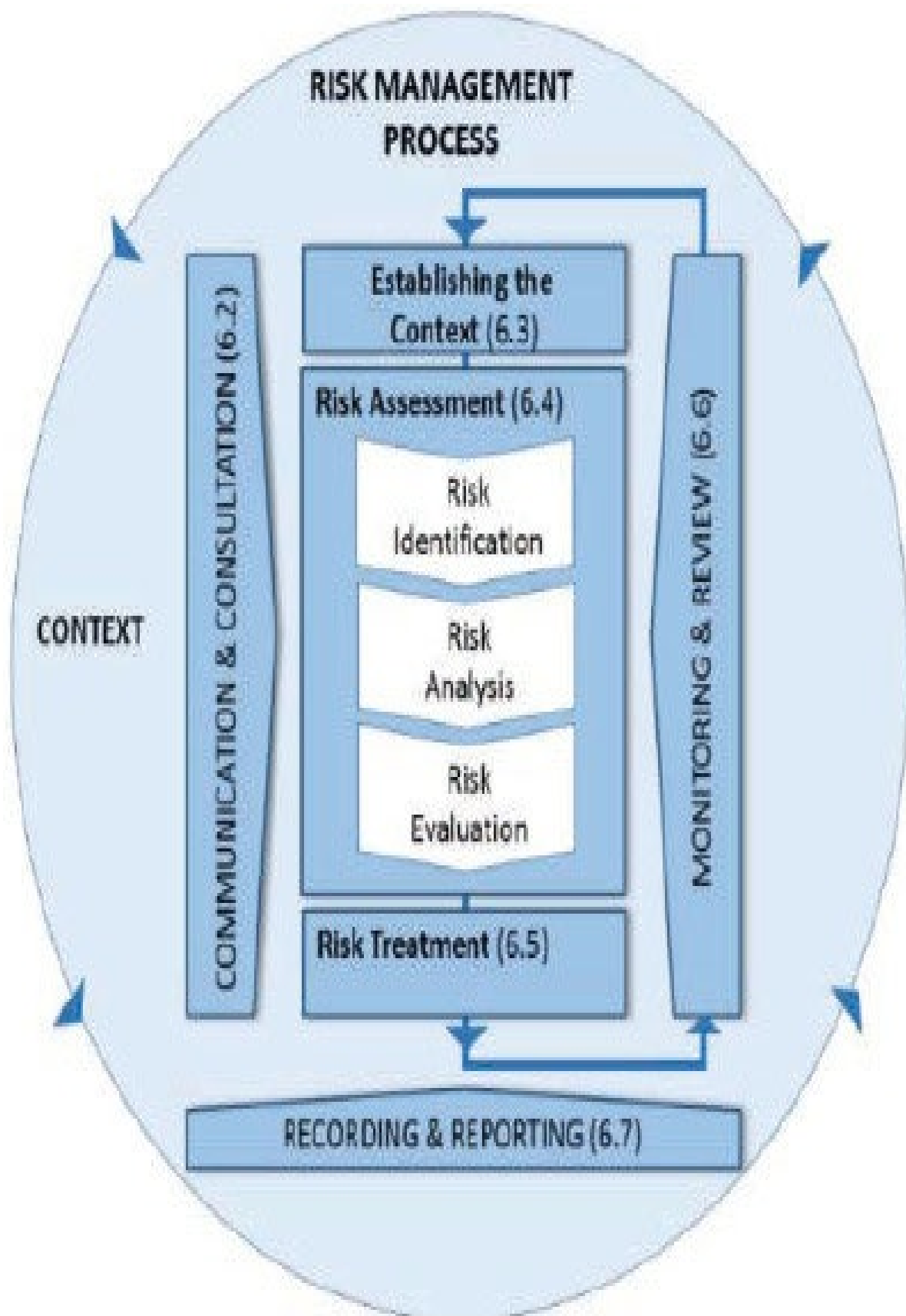
The risk management process should be an essential and integral part of management and decision making, and should be integrated into the organization. It can be applied at the strategic, operational or project level. To graph this risk management process, an organization will be used as an example (although it may well be used for the management of a country or for the correct management of an entrepreneurship).

What is a risk management process?

A process is a sequence of ordered steps or activities, with which it is sought to achieve a specific result. Processes are designed to achieve a goal, improve productivity, or establish order.

Figure 10 shows the risk management process, according to the ISO 31 000 standard.

Figure 10. Risk management process (ISO 31 000)



Source: ISO 31 000 – Security solutions.

Available: <https://www.securitysolutionsmedia.com/2019/03/30/enterprise-risk-management/>

This standard is the reference framework that contains general guidelines considered relevant for risk management. It is prepared by the International Organization for Standardization (ISO) with the intention of promoting international standards that help organizations, of any kind, to carry out effective risk management to meet their strategic objectives.

This standard is applicable to any type of organization (large, medium, small) and of any area. Likewise, it can be applied to a process, an area or a certain specific risk.

It should be noted that for proper risk management, these established steps must be followed regularly and repeatedly.

The different stages are detailed and explained below.

Stage 1: Scope, context and criteria

The first thing to do is define the scope of risk management activities. In this sense, it must be determined at what level it will be applied (strategic, operational or project) according to the objectives to be pursued.

Consider the objectives sought with the implementation of the framework, the available time, what is included in the exercise (and what is not), the required resources (money and human) and how the exercise will be documented.

Next, it is necessary to consider the context in which the organization is in (internal and external). The external context may include: the social and cultural, political, legal, regulatory, financial, technological, economic, natural and competitive environment, at the international, national, regional or local level. On the other hand, the internal context is the environment in which the organization seeks to achieve its objectives and can be a source of risk.

Finally, the risk criteria (measurement methods) must be determined and the amount and type of risk that it may or may not take according to the objectives that have been established. The criteria for assessing risk must be defined and, consequently, they will be used for decision-making.

Stage 2: Risk identification

Once we have determined the scope and context of the exercise that we are going to carry out (strategic, operational or project), we must identify the risks.

For this, first, it is necessary to know and ensure the objectives of the organization (mission, vision and strategy) or of the process or procedure that we are going to manage.

The purpose of this stage is to find, identify, recognize and describe the risks that can prevent an organization from achieving its objectives. Likewise, risks that can help an organization meet its objectives (opportunities) must be identified.

Various techniques can be used to identify risks that could affect the fulfillment of the established objectives: surveys, analysis, use of lists of risks already identified, expert judgment, among others.

It is necessary to consider factors such as sources of risk, causes, threats, vulnerabilities, changes in the internal and external context, asset value, impacts or consequences, limitations related to time or information.

At this stage, the aim is to identify the risks that must be managed: what risks could prevent the fulfillment of the objectives, affect the organization or generate losses (time, image, resources, etc.)?

Then, the risks are phrased or structured according to their causes, risks and consequences. It consists of identifying the sources of risk, the areas of impacts, the events, their causes and potential consequences. Generally, the impacts and consequences are grouped into two broad categories:

a) Economic and financial impacts and

b) Reputational impacts.

Among the various methods to perform this task, the following stand out:

- Brainstorming.
- Interviews.
- Use of questionnaires.
- Scenarios (what if ...).
- Use of historical data.
- Use of data from comparable organizations.

Stage 3: Risk analysis

The purpose of risk analysis is to understand the nature of the risk and its characteristics. It provides elements that will later be used for risk assessment and for making decisions about whether to address them. In addition, it implies the consideration of the possibility that the causes of a risk could occur and the consequences or impacts, if those events occurred or materialized.

Likewise, factors that could mitigate (reduce) the risk should be considered. This analysis can be qualitative, semi-quantitative or quantitative, or a combination, depending on the circumstances, capacities, times and available resources.

Next, we see an example to be able to carry out a risk analysis. A 5 * 5 scheme is presented (five probability scales and five impact scales). Other variants of three or four, or combinations of them, can be used.

1) Probability

To estimate the probability, we establish a probability of occurrence scale depending on the frequency of the event, which will be used to assess each of the identified risks.

To estimate the probability you can use:

- Expert judgment
- Statistics or history
- Self-appraisal
- Consensus

In addition, it can be done qualitatively or quantitatively, using 3, 4 or 5 scales. Here is an example of five qualitative scales, according to the frequency with which the event could occur.

Table 1. Scale for evaluating qualitative probability

■

Probability	
Probability level	Description
Very high (5)	It could happen quarterly or more frequently.
High (4)	It could happen semiannually.
Medium (3)	It could happen once a year.
Low (2)	It could happen every two years.
Very low (1)	It could happen every three or more years.

■

Source: Own elaboration.

Another way to estimate probability is using a quantitative approach, using percentages of occurrence. Let's see the following example in Table 2:

Table 2. Scales to measure quantitative probability

■

Probability	
Probability level	Description
Very high (5)	+ 80%: It could happen more than 80% of the time.
High (4)	61 – 80 %: It could happen between 61y 80% of the time.
Medium (3)	41 – 60 %: It could happen between 41 y 60% of the time.
Low (2)	20 - 40 %: It could happen between 20 y 40% of the time.
Very low (1)	< 20 %: It could happen less than 20% of the time.

■

Source: Own elaboration.

2) *Impact*

A) **Economic impact:**

To estimate the economic impact, a scale is established according to established criteria. The scales should be proportional to the size of the organization, materiality (relevance) and risk appetite.

Table 3. Scale to evaluate economic impact example

■

Probability	
Impact level	Impact description
Very high (5)	Economic impact > us\$ 1 million
High (4)	Us\$ 0,75 million > Economic impact <= us\$ 1 million
Medium (3)	Us\$ 0,5 million > Economic impact <= us\$ 0,75 millions
Low (2)	Us\$ 250 thousands > Economic impact <= us\$ 0,5 million
Very low (1)	Economic impact <= us\$ 250 thousands

■

Source: Own elaboration.

B) Reputational Impact

Then, create a scale to measure the reputational impact.

Table 4. Scale to measure reputational impact

■

Probability	
Impact level	Impact description
Very high (5)	Knowledge at an international level.
High (4)	Knowledge at the regional level.
Medium (3)	Knowledge at the local level, questioning from partners, affects th
Low (2)	Internal knowledge only.
Very low (1)	Knowledge of an area or person.

■

Source: Own elaboration.

3) Risk evaluation

Next, the risk will be calculated. This is done by multiplying the probability by the impact.

Residual economic risk:

$$\text{Economic risk (RE)} = \text{Probability (P)} \times \text{Economic impact (IE)}$$

Residual reputational risk:

$$\text{Reputational risk (RE)} = \text{Probability (P)} \times \text{Reputational impact (IE)}$$

Thus, we will obtain a risk assessment matrix.

Figure 11. Evaluation risk matrix (probability * impact)

<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	Very High	M	M	H	H	H
	High	M	M	M	H	H
	Medium	L	M	M	M	H
	Low	L	L	M	M	M
	Very Low	L	L	L	M	M
		Very Low	Low	Medium	High	Very High
		Impact				

Source: Systemico. Available in: <http://www.systemico.ca/quality-and-risk-management/enterprise-risk-management-erm/risk-assessment/>

This double entry matrix is obtained from the combination of probability and impact. Generally, colors are used to distinguish the different levels of risk. Thus, red indicates the highest level of risk (high probability and high impact).

Stage 4: Risk assessment

The purpose of risk assessment is to contribute to decision making. It involves comparing the level of risk obtained during the previous stage against the risk criteria established at the beginning of the year.

Other aspects to take into account are the appetite and tolerance of the organization, the situation of the institution, the costs required for the implementation of any mitigation of the identified risk. In addition, legal, regulatory and other requirements should be considered.

Stage 5: Risk management

“Take care and not worry; prevent and not regret”.

The purpose of risk management is to select and implement actions to manage or mitigate risk. Selecting the most appropriate options for risk treatment involves balancing the potential benefits derived from achieving the objectives against the costs, effort or disadvantages of implementation.

So, we group the options to treat the risk in the following concepts:

a) Risk acceptance

- Accept risks according to appetite levels and risk tolerance.
- May involve increasing the level of risk. For example: continue selling on credit.

b) Avoid risk

- It involves eliminating risk.

- Reduce the expansion of a product line to new markets.
- Selling a highly risky division, business unit or geographic segment.
- Stop producing a highly risky product.

For example: do not sell on credit and demand cash payment from certain customers.

c) Eliminate the risk

- It involves eliminating risk.
- Reduce the expansion of a product line to new markets.
- Selling a highly risky division, business unit or geographic segment.
- Stop producing a highly risky product.

For example: do not sell on credit and demand cash payment from certain customers.

d) Sharing the Risk

- Purchase of insurance against significant expected losses.
- Outsourcing for business processes.
- Share the risk with union or contractual agreements with clients, suppliers or other business partners.

For example: make half the sale by getting another seller.

e) Mitigate Risk

- Establish controls (preventive, detective, corrective).
- Strengthening of internal control in business processes.
- Diversification of products / income.
- Setting limits to operations and monitoring.

For example: making the sale but obtaining a guarantee from the buyer or a third party.

Ernesto Bazán in his book *Comprehensive Risk Management in Financial Institutions: A Guide to Design, Implement and Promote Management Methodologies, Techniques and Tools* (2020) proposes a guide for risk treatment that consists of three phases:

1. Prevention measures: seeks to reduce the chances of an event or risk occurring. For example: prohibit smoking inside a premises to reduce the probability of fire in the facilities.

2. Alert measures: seeks to generate messages as alert measures. For example: placing a fire alarm that detects smoke inside the premises.

3. Harm reduction measures: try to minimize the damage, should the event or risk occur. For example: having fire extinguishers, water sprinklers and purchasing insurance policies.

Preparation and implementation of risk treatment plans

Once an action is determined (whatever we have determined), it is necessary to create a work plan (action plans) to specify the way in which they will be carried out. Likewise, the responsible will have to be clear about his actions and thus progress can be monitored with respect to what was planned.

The action plans must include the actions, those responsible, the resources, how compliance will be measured, and the expected timeframes for completion. Below we present two examples:

Example 1:

The probability of dying in a car accident is 1.19% throughout a person's life.

Control: wearing a seat belt reduces the risk of death of the front occupants of a vehicle by between 45% and 50%; that is, it becomes 0.595%.

Cost: There is no economic cost for wearing a seat belt. The cost may be from discomfort or not wanting to show that one does not trust himself while driving.

This means that when we drive without a seat belt, we are increasing from 0.595% to 1.19% our risk of dying in an accident. That is the risk we take.

Example 2:

We said that the probability of dying in a car accident is 1.19% throughout a person's life.

Control: slowing down reduces the risk of death by 21% (speed from 68 miles

per hour to 59 miles per hour); that is, it becomes 0.94%.

Cost: In this case, cost is our value of time (the value we assign to the longest time it would take at the slowest speed). You could subtract the least fuel consumption from the slowest speed and the less chance of getting a ticket.

This means that when we drive faster we are assuming this greater risk, valuing very expensive the control (and our time).

Stage 6: Recording and reporting

The risk management process and its results should be documented and reported through the appropriate mechanisms. The record and report aims to communicate the activities, their results to the entire organization and provide information to improve decision-making.

The reports that are generated must be timely, specific and clear. They must also reach the people who make the decisions, when they are needed. Therefore, it is vital that the highest authority is aware of the risks, exposures and controls.

Stage 7: Communication and consultation

The purpose of this stage is to assist all relevant stakeholders to understand risk (sources and assessments) and improve their decision making. Communication seeks to promote awareness and understanding of risk. On the other hand, consultation involves obtaining feedback and information.

Communication and consultation with the appropriate external and internal stakeholders should take place at each and every stage of the risk management process. It ensures that all the different stakeholders that were involved in the process, have this information, appropriately considering the different points of view. It provides information to facilitate decision making and making everyone participate (involved) in the exercise.

Stage 8: Monitoring and review

The purpose of this stage is to ensure and improve the quality and efficiency of the process. Continuous monitoring, periodic review of the process and its results should be a planned part of the risk management process.

Monitoring and review should take place at all stages of the process. These include planning, collecting and analyzing information, recording results, and providing feedback. The results should be incorporated into all management activities.

This stage allows to obtain additional information to improve risk assessment, analyze and draw conclusions from events, changes, trends, successes and failures. It allows detecting changes in the internal and external context and identifying new risks.

Chapter IV.

Risk management

What happens when there is an inadequate risk management process?

“A ship in port is safe, but that’s not what ships are built for. Sail the sea and do new things”.

Grace Murray Hopper

In this section, we will take some examples from history, which serve to demonstrate how there are certain situations that can be avoided if the necessary precautions are taken and a correct risk assessment and management is carried out.

The Titanic

On April 14, 1912, the risk materialized:

Figure 12. Sinking of the Titanic



Source: National Geographic. Available in:
<https://www.nationalgeographic.org/media/sinking-of-the-titanic/>

1. The cause: collision with an iceberg.
2. The event: the sinking of the Titanic - two hours and 40 minutes later.
- 3. The consequences or impacts were: the death of more than 1,500 people, economic losses and others.**

However, it is a particular case due to the number of vulnerabilities or inadequate risk management (before and during the accident). Let's look at these vulnerabilities: ^{16 17}

a) Before taking the sea

- We already mentioned that lifeboats for 1,200 people had only been placed when there were 2,200 people on the ship. The priority was that there were free spaces for people and not lifeboats.
- The crew had not been trained in a new security system. Also, adequate processes for its use had not been established.

- The crewmembers who had to alert and were looking at the sea did not have binoculars. A person who had stopped working at the company a few days earlier had forgotten to hand over the keys to the box where they were kept.

- Many of these vulnerabilities were created by budget constraints on the ship's construction. The competition in the assembly of ships to mobilize people meant that certain expenses were restricted, causing unnecessary risks.

- A good part of the risks were created by a specific problem: the owners and operators took greater risks due to their premise of cutting expenses.

- Due to the lack of an independent control body, many of the decisions were bad or wrong. There was not a safety priority for the passengers and crew.

b) During the trip

- Despite the ice warnings, the captain instructed to increase speed. It was intended to cross the Atlantic Ocean in record time.

- The risk of navigating on ice had not been identified.

- Due to poor training of the crew in the security system, not all messages reached the security tower and several were lost.

- With the full moon, unusually large waves were created and moved the

icebergs towards the path of the Titanic.

- Certain special conditions on that day caused a visual effect that prevented other ships from seeing the Titanic.
- A lifeboat drill was suspended a day before the sinking to allow people to participate in certain religious activities.
- Due to the disorganization and panic of the people, several of the lifeboats did not come out completely full.
- People who spotted the iceberg (without binoculars) alerted only 37 seconds before hitting it.
- A woman died when returning from a lifeboat (before leaving) to look for her dog.
- As an anecdote, a cook who had drunk too much whiskey survived two hours in the water (most people died of hypothermia within fifteen minutes).

9/11

We will see certain risk aspects in what was the terrorist attack of 2001.

Figure 13. September 9/11 – Twin Towers



Source: FP News (2018) Al Qaeda won.

Available in: <https://foreignpolicy.com/2018/09/10/al-qaeda-won/>

- 1. The cause: a terrorist attack (it was unthinkable that they could hijack planes to use as weapons).**
- 2. The event: the demolition of the two twin towers (among other buildings).**
- 3. The consequences: the death of almost 3,000 people (considering the passengers of the hijacked planes, the citizens of New York and the workers in the Pentagon building). In addition to the large economic losses (not only the two towers, but several in the surroundings), losses of communications equipment and others.**

Below are some of the particular situations of this event: ^{18 19 20 21}

- The FBI had dismissed several reports indicating a possible terrorist attack.
- The terrorists took control of the planes very quickly and only with knives and spays. They were able to access the planes without detection by security. They were also able to access the cabins without difficulty.
- As a result of the composition of the buildings, the protection of the infrastructures of the Towers came off with the impact of the planes. If this had

not happened, the Towers would not have fallen.

- The stairwells of the Towers were not adequately reinforced to fulfill the function of an emergency exit.
- Communication was interrupted (for example with the Federal Reserve, banks, the main markets where financial assets are listed).
- It had a severe impact on the US and world economy, which caused a recession.
- Considerable health effects from toxic debris.
- Large losses for the insurance industry. It was even strongly debated whether there had been one or two events (importance of the contract and legal risk).
- Several of the business continuity plans had not contemplated scenarios, even similar to the one that originated. Many did not consider the unavailability of most of their personnel, communications, etc.
- Many organizations had established their alternate center or back-up information center near their main building and before the event, they had serious difficulties to continue operating. Some organizations had even established the alternate center in the other tower.

- Many organizations had not considered an eventual impact on the transport system and had not devised ways to mobilize staff elsewhere.
- Great concentration of financial institutions that stopped operating, generating a liquidity problem in the system.
- Concentration of communication systems in the surroundings of the place, severely affected communications.
- After the crash of a plane in the northern tower, an employee of Morgan Stanley ignored the orders that were given in the southern tower by evicting 3,700 employees of the firm before the impact of the second plane (20 floors by stairs). This person came back one last time to check that no one was left just as the building fell and died.
- Given the large number of agencies (almost 150 different ones), the coordination of rescues and efforts made were quite chaotic. Even some agencies that had to ensure environmental risk were in the vicinity of the place and could not access them. Some of the agencies involved were: New York City Office of Emergency Management, Federal Emergency Management Administration, Environmental Protection Administration, New York City Fire Department, the New York City Department of Design and Construction, Port Authority and the New York Police.
- Many of the first responders and personnel who came to the scene never had adequate training for a similar event, nor on the use of protective equipment.
- Over time, other risks occurred: mental health, debris, reconstruction, handling

of toxic material, etc.

- Finally, a risk derived from the accident: a Spanish woman posed as a survivor of the attack by adopting a false identity. She became president of a committee of survivors and collected the insurance; afterwards, her fraud was discovered.

What happens when there is an adequate risk management process?

““Business as usual is business at risk.”

Deloitte white paper

In this section, we will present some examples that serve to demonstrate how proper risk management allows meeting objectives and minimizing losses.

New Zealand and the coronavirus

When coronavirus began to appear in early 2020, most countries began taking measures to protect their citizens from the disease (and eventual death) by restricting certain people's freedoms and shutting down certain activities.

Figure 14. Coronavirus



Source: <https://www.isglobal.org/coronavirus>

1. The cause: rapid spread of the virus.

2. The risk: people will be infected (eventually, may die).

3. The impacts or consequences: people will get sick, die and / or the health system will collapse.

The actions that the different governments took were to restrict freedoms and their cost was economic (drop in activity, unemployment, lower disposable income).

One of the countries that excelled most in containing and eliminating the virus was New Zealand. As of June 9, 2020, John Hopkins University reported that New Zealand had 1,504 confirmed cases and only 22 deaths²².

Let's see the chronology of their actions and the keys to their success:

- February 3, 2020: Without a case, New Zealand began imposing travel restrictions for people arriving from mainland China.
- February 28, 2020: Included in the travel restrictions people arriving from Iran

or who had been on the Diamond Princess cruise.

- February 28, 2020: confirms the first case. A New Zealander who had come from Iran.

- March 21: the risk level system is introduced, establishing the country at level 2 (out of four).

- March 23, 2020: with 102 confirmed cases, Prime Minister Jacinda Ardern raised the country's alert level to 3, claiming that the country was under "high risk that the disease could not be contained". This decision implied the closure of schools and the prohibition of public gatherings.

- March 25, 2020: it was moved to a risk level 4, which instructed all people to stay at home and severely limited circulation.

- April 9: a mandatory quarantine was imposed on anyone returning to the country.

- April 27, 2020: the level was lowered to 3, releasing some restrictions.

- May 13, 2020: downgraded to level 2, releasing most restrictions while maintaining social distance and meeting limitations.

- May 19, 2020: the last new case is detected.

- June 8, 2020: no new cases had been registered for 17 days and the day before (June 7) there were no active cases. It returned to a risk level 1 that implies a return to normality (with the exception of getting into the country), including concerts and massive sporting events.

The total time of strict quarantine (level 4) was seven weeks. Although certain isolated infections were subsequently detected, it is presented as successful risk management.

After having listed the actions to prevent the spread of the virus, we show the keys to success to eradicate the virus in New Zealand^{23 24 25 26}:

- Quick reaction by the authorities. Before the first case, they had already taken protective measures.
- Strict containment and confinement policy.
- Rapid program that established voluntary confinement (then compulsory), temperature taking, thermal cameras, etc. for people who arrived at the country.
- Relatively small population (almost five million inhabitants) and being an island, there was no people getting in.
- Most of the population complied with the measures.

- Quickly increased testing capabilities and implemented scans to track the virus.
- They established isolation measures for all people who had had contact with someone with the virus.
- Massive communication campaigns through all traditional and digital media instructing the population about basic hygiene measures to prevent contagion.
- Recommendations to companies to promote teleworking, whenever possible.
- Clear, direct and honest communication by the Government was one of the mainstays of success. They informed the population, reassured, provided statistical data and put the data into perspective.
- Leadership by Prime Minister Jacinda Ardern, whose excellent management had already been seen during the attack on the Christchurch mosque or the eruption of the volcano on White Island. Her humanity, humility, respect, efficiency and sensitive manner were highlighted. She was always accompanied by the Director General of Public Health, Dr. Ashley Bloomfield, a calm, personable professional with enormous scientific credibility. Bloomfield conveyed great credibility for the strength of his arguments and answers to any type of question.
- The Government showed enormous sensitivity, empathy and harmony with the population from the first moment. The entire government demonstrated this from the beginning by leading by example: one of the first measures they adopted was

an agreement for the immediate reduction of the salary of all members of the cabinet, for the next six months, as a show of solidarity and respect for the population, which was also extended to senior positions in government companies. Even a public official was demoted from his post for breaching the quarantine.

- To alleviate the impact of the confinement on the economy, fiscal and economic measures were taken to alleviate and support the population. The measures were announced immediately and implemented without delay. A few days after the confinement began, Parliament approved an initial budget of 26 billion dollars for aid to companies and the self-employed, which have subsequently been expanded with two additional budgets of 16 billion and 20 billion dollars, which carry the total of the budget allocated to the recovery of the impact of COVID-19 to 62 trillion dollars, one of the largest budgets allocated to a single objective in the history of the country. Most of the measures were immediately available (from the day after their announcement and collectible in cash).

- The financial system also helped the population through renegotiation of conditions, maturities and reduction of mortgage payments for anyone who needed it.

- All political groups stopped their debates and differences and have supported the measures adopted by the government, understanding that the common good and the achievement of the objective of eradication of the virus passed through unity at all levels, both the population and also at the political level, avoiding disputes or sterile debates that could jeopardize the achievement of the common objective. Even though, elections were scheduled for September 2020.

- Great response from the population, respecting the conditions of confinement in an exemplary and disciplined manner and faithfully following the indications and recommendations given by the Government.

- Outstanding work of the police force. Their responsibility was to ensure compliance with the confinement by the population, and they carried out their task prioritizing informational and educational work over punitive.
- Wide availability of sanitary material at all times (masks, gloves, respirators, etc.).
- Good medical infrastructure (equipment, ICU beds, staff).
- Coordinated work of the entire scientific field and with New Zealand epidemiologists, from the very beginning. Their approach was the “elimination” of the virus.

The Shinkansen

The Japanese high-speed Shinkansen train, which reaches top speeds of more than 186 miles per hour, provokes admiration among Japanese, tourists and railway fans. This train inaugurated the era of high-speed trains with its first run on October 1, 1964.

Among the main virtues it exhibits, an almost impeccable security balance can be observed. Since it entered service more than 50 years ago, no one has been killed in a Shinkansen accident.

Entre las principales virtudes que exhibe, se puede observar un balance de seguridad casi impecable. Desde que entró en servicio hace más de 50 años, ninguna persona ha muerto en un accidente del Shinkansen.

Figure 15. Shinkansen



Source: National Geographic. Available in: <https://url2.cl/tCeIh>

The train was inaugurated for the Olympic Games in Tokyo and since then its trunk line has been progressively extended. Currently, the railway network has a total extension of 1,654 miles and over the last 50 years, over 10 billion passengers have been transported by this network. The Shinkansen continues to have a reputation as the safest high-speed train in the world.

Its proper risk management is based on excellent technology, good train maintenance and extraordinary punctuality. The network is separated from the suburban network and is almost completely fenced. Travel times, arrival and passing times are planned in units of 15 seconds. The cleanliness of the trains is also impressive.

For all this, we can conclude that the risk of accidents is almost zero, that the risk of being late for an event or appointment is minimal and that the risk of suffering a theft or accident is also almost zero.

16 <https://www.readersdigest.ca/culture/titanic-facts-should-know/>

17 <https://www.riskope.com/2013/02/20/looking-back-to-move-forward-the-risk-analysis-legacy-of-the-titanic/>

18 <https://www.sec.gov/divisions/marketreg/lessonslearned.htm>

19 <https://knowledge.wharton.upenn.edu/article/ten-years-after-911-risk-management-in-the-era-of-the-unthinkable/>

20 <https://www.ehstoday.com/archive/article/21905700/risk-management-expert-unveils-lessons-learned-from-911>

21 <https://www.sciencedirect.com/science/article/pii/S2214999614002926>

22 www.coronavirus.jhu.edu/map.html

23 <https://people.com/health/new-zealand-lift-coronavirus-restrictions-no-active-cases/>

24 <https://www.businessinsider.com/experts-australia-new-zealand-examples-how-to-slow-coronavirus-2020-4>

25 <https://www.ndtv.com/world-news/coronavirus-new-zealand-clears-its-last-covid-19-case-2242393>

26 <https://www.lavanguardia.com/participacion/lectores-corresponsales/20200526/481384618970/claves-exito-nueva-zelanda-lucha-control-covid-19-pandemia.html>

Chapter V. Different risk classifications

“When in the midst of adversity, it is too late to be cautious.”

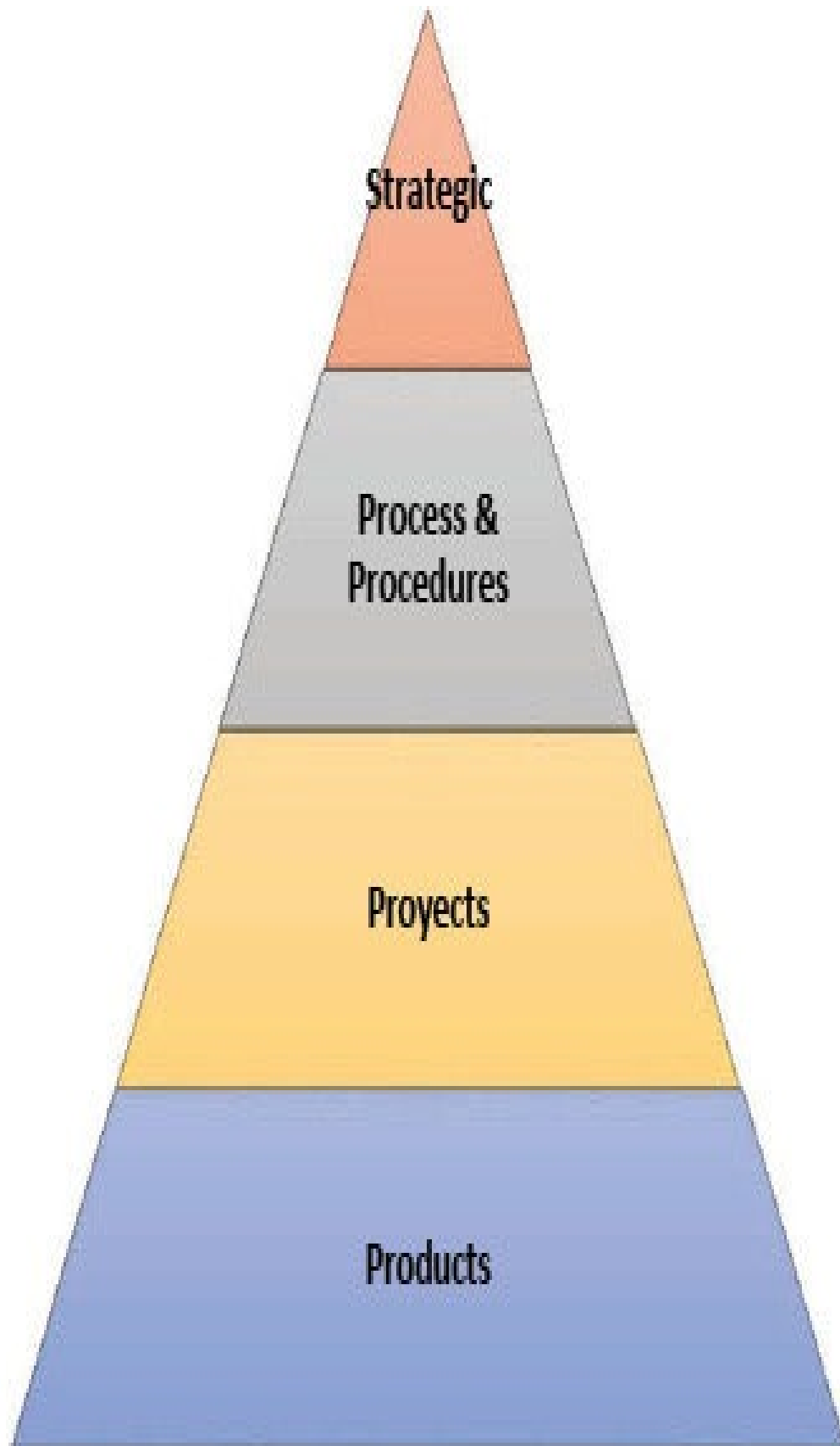
Lucio Anneo Seneca

In the next section, we present two ways of classifying risks, according to their level of impact and according to their typology.

Risk classification according to its level of impact

We can classify risks according to our level of analysis and their impact, as presented in the following Figure:

Figure 16. Risk classification



Source: Own elaboration.

Strategic risk management

Every organization has a goal and was created with a certain mission and vision. For this, companies design strategies (on how to achieve the established objectives). The main exercise of managing strategic risk is to carry out the risk management cycle on the mission, vision and strategy of the organization.

Figure 17. Mission, vision, strategy and processes

NORMATIVE MANAGEMENT

► where ?

STRATEGIC MANAGEMENT

► how ?

OPERATIONAL MANAGEMENT

► with ?



ENVIRONMENTAL ANALYSIS

- Society
- Stakeholder
- Economy
- Nature
- Technology

SWOT

Strengths, Weaknesses

Opportunities, Threats

STRATEGIC AREAS FOR ACTION

BALANCED SCORECARD

- Financial Goals
- Customer Goals
- Process Goals
- Potential Goals

Source: Management Control Consulting. Available in:
<https://www.mccov.ch/e/management/>

Thus, the risks that may prevent or hinder the organization from fulfilling its mission, vision and strategic objectives must be managed.

This methodology aims to facilitate the identification of risks that may limit the fulfillment of strategic objectives. The first step consists of taking the strategic objectives of the organization, since from these, risks could occur and would limit or prevent the fulfillment of the objectives of the organization.

As an example, a Balanced Scorecard (BSC) of an organization is presented:

Figure 18. Balance Scorecard example

Financial Perspective

Financial result and growth
Key Financial parameters and performance (ROE, ROCE)
Higher Profit Margin
Improved Cash flow
Lower Bad loans and lower debt
Net Interest Margin
Reduced overhead Expenses
Proper Revenue Mix

Learning and Growth

Develop Critical Skills and Knowledge
Proper Knowledge Management
Provide Strategic Information to all
Align Personal Goals with Company goals
Employee growth and turnover
Employee Satisfaction and Retention

Balanced Scorecard

Customers

Increase Customer Satisfaction
Increase Customer Loyalty
Retention of key customers
Sales revenue per customer
Competitive pricing and product offering
High Quality Service
Customer preference compared to competitors

Internal Business Processes

Cross-Sell Products
Improve Operational efficiency and minimize Problems
Proper Customer relationship management
Higher success rate in converting business opportunities
Fast business decisions and approvals
Proper work culture and higher employee confidence

Source: Consultora Bia Lopez. Available in:
<http://www.consultorablz.com/novedades/quien-usa-el-bsc-cmi-ejemplos-del-balanced-scorecard/>

Once the strategic objectives of the organization have been identified, an exercise should be carried out to identify the risks that could prevent their fulfillment. For this exercise, various techniques can be used as we have already seen: expert opinion, surveys, exercises from similar organizations, use of historical information or combinations between them.

Next, the risk management process detailed in the previous sections must be carried out.

Strategic risk management in Coca Cola

I remember being the Chief Risk Officer of an international bank and while I was telling the Human Resources manager about my concerns about a loan, she told me: “For me, the risk area of a bank is like the person in charge of the control area of quality in Coca Cola. She cannot allow a Coke to come out with some variation. All products must be exactly the same and she is there to reject any deviation”.

Her way of seeing risk management is as contributing to the quality of the organization. As a fully globalized company, Coca Cola has a systematic process to identify, measure, record, evaluate, prevent and mitigate risks. Let's see what may be today the most relevant business strategic risks for a company like Coca Cola²⁷.

Table 5. Strategic risk for Coca Cola

Risk	Description
Strategic relationships	Loss of the strategic relationships with the
Demand	Change in consumer preferences.
Patents	Patent violations
Competence	Aggressive positioning from the competitors
Cyber risk	Loss of service and loss of information
Economic, politic or social conditions	Changes in economic or social conditions
Regulations	New taxes or regulations.
Legal	Adverse result of legal proceedings.
Acquisitions	Little or low ability to integrate acquisitions
FX	FX movement and volatility.
Climate change	Unfavorable climate conditions.
Social media	Negative or inaccurate information about the
Water	Lack of water.
Raw materials	Increase in price or lower availability.

Source: Coca Cola (2020). Administración integral de riesgos. Available in:
<https://coca-colafemsa.com/reportes/KOF2018/es/comprehensive-risk-management.html>

Operational risk management (process and procedures)

According to the ISO 9 000 standard, a process is a set of mutually related or interacting activities, which transform input elements into results. In a financial institution, there are different processes: investment management, loan management, funding or accounting processes.

The same standard defines a procedure as a specific way to carry out an activity or a process. A procedure is a method made up of clear and objective steps that must be followed to complete the task. In a financial institution, a procedure would be the purchase of investments, the control and monitoring of the investment portfolio, the sales of those assets or the valuation (all within the investment process).

The difference between process and procedure is that processes are general activities to achieve a goal and procedures are specific steps that must be followed to complete a task.

To carry out the risk identification exercise of a process or procedure, the objectives of those processes or procedures must be determined. Then, the specific activities are analyzed and the risks that could prevent the achievement of the established objectives are identified. Let us see, as an example, the risks associated with the procedure: “Opening of bank accounts”. It will be considered that the objective of the procedure is to open accounts in different financial

institutions for the liquidity management and payments, avoiding fraud and inappropriate use of funds. Here are the identified risks:

- Due to weaknesses in the design and / or execution of the controls, an error could be generated in the request for transfer of resources (account, amount, bank, etc.), incurring economic losses for the organization.
- Due to weaknesses in the design and / or execution of controls (review, authorization, etc.) or that personal benefit himself or a third party, fraud could be generated in the transfer of resources, incurring economic losses for the organization.
- Due to weakness in the controls or non-application of the controls, or ignorance of the procedures, accounts could be opened in the name of the organization improperly (eg, unauthorized personnel), incurring economic losses.
- Due to ignorance, lack or weakness of controls, abuse of trust, etc., accounts could be opened in the name of the organization improperly, which could generate fraud and / or affect the financial statements of the organization.
- Due to errors, ignorance or lack of communication about the creation of a new account, errors could be made in the creation or registration of the accounting account, which would affect the presentation of financial statements.
- Due to the lack of a bank analysis or due diligence, an account may be opened at an institution that has high credit risks or financial risks, which could create greater credit exposure and / or image effects for the organization.

- Due to the lack of controls or criteria, many accounts could be created (which could not be used), which lead to operational risks and costs associated with their administration.
- Due to the absence of personnel, or personnel without specific experience or knowledge in the activities of the process, etc., the procedure could not be executed, affecting the normal flow of operations (partial or total) of the organization.
- Due to external events, etc., the procedure could not be executed (unavailability of personal, systems, etc.), affecting the normal flow of operations (partial or total) of the organization.
- Due to the absence of systems that provide information to the process, or failures in the process software's, etc., the procedure could not be executed, affecting the normal flow of operations (partial or total) of the organization.

Project management

“The science of projects consists of preventing difficulties in their execution”.

Marqués de Vauvenargues

What is a project?

A project is a temporary endeavor, undertaken to create a unique product, service, or result²⁸. The characteristics are:

- They have a specific objective that must be achieved, within certain specifications.
- They have a start date and an end date.
- They consume resources (money, materials, equipment, human resources).
- They have a specific budget or limitations on spending and investment.

Project management, at this level, seeks the balance between the following three variables.

Figure 19. Balance between cost, scope and time



Cost: is the monetary value of the resources necessary to carry out and finish the activity.



Scope: is the sum of products, services and results that will be provided as a project. What is included and what excluded.



Time: is the distribution of the work to be carried out on a schedule.

Source: Own elaboration.

Some of the most recognized projects that have been completed in the world are: The Chinese Wall, The Eiffel Tower, The Pyramids of Egypt, The Empire State, The Panama Canal or Machu Picchu. In some way, these structures praise the development of civilizations, knowledge and culture. All these projects have been carried out not without problems (more costs, times, delays, even deaths, etc.). For this reason, proper project management and risk management are extremely important.

According to Genesis, one of the most important books of the Bible, thousands of years ago men were building the Tower of Babel (in Hebrew bl-bl means “stammering, confusion when expressing something”). It is said that they were trying to build it with the purpose of reaching heaven. There are many stories that revolve around this monumental construction²⁹.

At the beginning of time, the entire planet was connected by a single language and all its inhabitants could understand each other without much difficulty.

The myth of the Tower of Babel rests on a real construction that could have belonged to ancient Babylon. The presumed remains were found in 1913 by archaeologist Robert Koldewey. According to the studies carried out, the Tower of Babel reached 60 meters in height and 400,000 tons in weight. It was built with millions of pieces made of adobe and brick. Its structure was composed of several large terraces, which ascended through ramps to the final summit.

The project failed and after the arrogance and violence that they professed, God punished them with the confusion of the language. The god of Noah (Yahveh),

observing the building, decided that the inhabitants will speak different languages and thus will abandon the construction, and spread throughout the Earth.

We see how the appearance of an external factor prevented the project from continuing: the lack of communication prevented the work from continuing. The risk of completion of the work was not properly managed and the cause was non-communication between the men.

On the other hand, as an opportunity, it can be seen that the language developed in the different languages, which gave rise to nations, peoples and cultural identity.

Returning to project management, in short, it is the process of applying knowledge, skills, tools and techniques that are applied to manage, design and guide the efforts within a project (whatever it may be, corporate, civil, technological or of any kind), from the beginning to the end, trying to fulfill the determined objectives.

When starting a project, the certainty of successful completion may be low and the risk of not meeting objectives is higher. As the project progresses, if done properly, the uncertainty is reduced. In case the progress is not adequate, it will surely affect the cost and time allocated to the project.

In this sense, it is necessary to have a methodology for project management, which allows reducing uncertainty in the achievement of objectives, obtaining benefits such as: clearly defined and integrated objectives, clearly assigned responsibilities, use of good planning and management techniques and adequate risk management.

What is project risk management?

In the planning stage of the project, the structure of the project must be established with the roles and responsibilities of all the people involved: sponsor, director, different committees, teams, supporters. Likewise, the scope, deliverables (milestones), stakeholders, budget, resources, acquisitions (purchases) and the work schedule must be determined (this version represents the baseline of the project), through the elaboration of a project charter.

Regarding project risk management, all the different types of risks must be identified (technological, technical, human, regulatory, legal, etc.) that could hinder the fulfillment of the project's objectives as established (scope, costs, time, impacts on the environment, losses or damages). For certain risks, it is necessary to establish an action plan with the characteristics that we have previously presented (detailing: responsible party, dates, action, reasons and documentation).

In the execution and control stage, there must be a person responsible for monitoring the various risks and identifying new emerging risks. Project risks must be managed, taking specific actions to reduce exposure and evaluating the effectiveness of the planned controls.

At the project closure stage, it is necessary to carry out a lessons learned exercise in which all risks are compiled and incorporated into a risk database for other projects.

These are some of the criteria that can be analyzed to determine the risk level of a project:

- Amount of the project.
- Estimated duration of the same.
- Resources you will need (areas involved).
- Previous experience in similar projects.
- External dependencies or restrictions.
- Technical complexity.
- Assumed commitments.

Now, we will take as an example the risks of implementing a technological project in an organization. We define the objective as implementing an application in time, form and cost, which satisfies the needs of the business. These may be some of the risks identified:

- As a result of a workload greater than the capacity of the areas involved, there could be a lack of availability to attend the required tasks, which could lead to delays in the project.

- As a result of delays in the construction of the processes associated with the new system, the agreed dates to carry out the tests could not be met, which could lead to non-compliance with the established goals.
- As a result of limited resources, not being able to make timely evolutions in pre-production, it could lead to delays in testing.
- As a result of causes attributable to the contracted company, low quality deliveries or delays could cause reprocesses that affect test times and low quality of the system.
- As a result of a lack of clarity in the definition of requirements, users may identify or request changes to the system, which could lead to significant delays in the work plan.
- As a result of late identification of requirements, new developments may be needed and lead to delays in its implementation, or it may not meet expectations.
- As a result of an inadequate way of recording incidents, the lack of information or precision of the problems could lead to reprocessing in their solution and delays to the project.
- As a result of the limited involvement or interest of the users, the omission of technical or functional requirements necessary to efficiently meet business requirements could be incurred.

- As a result of a misidentification of the necessary tests or their expected results, incomplete tests could be carried out that do not ensure the required functionality and affect the business needs.
- As a result of poor test planning or information backup, tests could be performed that damage information in systems and affect business information.
- As a result of the testing environments not being consistent, additional errors could occur in the environment changes, which could cause delays in the acceptance of deliverables and incidents in post-production.
- As a result of incidents once the system is implemented, a limited availability of technical resources could occur, which could lead to delays in tasks and incident resolution.

Risk management for new products

Not innovating is a risk as it leaves the organization out of new trends. It also limits its growth. On the other hand, innovating brings new risks. Therefore, it is necessary to innovate by managing risks (identify, evaluate, manage and control).

Innovation is a key value to grow in the market and to create sustainable value for the organization; however, it carries a high degree of risk. Each new product brings with it a series of risks that can affect the organization. The success of a product depends on the fact that the customer accepts it and values it; therefore,

an organization is successful in developing a new product if it manages to align its interests with the demands of the customer.

Launching defective products is a major concern for many organizations, as they cause high financial costs and can affect the image and reputation of the organization. Therefore, product risk management is necessary to reduce defective, inefficient or risky products in the early stages. Of course, risk management to reduce defective products involves the implementation of effective techniques to achieve the proposed objectives. The goal of risk management for new products is to implement and design products according to the needs of customers and where all the risks involved are being covered, allowing the organization to meet the objectives set. Here are some examples:

- Risk management in the design phase: Risk management, as early as the design phase, avoids having to solve problems that are likely to involve high volumes of finished products with defects.
- Supplier risk management: in the event that third parties or suppliers are involved, they must be managed to ensure that they comply with the requirements, quality and required times. It is important to implement processes that mitigate the risks posed by suppliers.
- Make the corrective action effective: generate reports that show the root of the problems, showing trends that allow the implementation of new controls and monitoring the effectiveness of the controls in place.
- Take advantage of market feedback: customer complaints and comments about the product in the market are valuable information that can be used for continuous improvement of product quality.

Both for the development of financial products or real products (physical), it is necessary to have a risk management process, in the design and in the launch stage to ensure that there are no hidden, unmeasured risks or situations that could compromise the product and the organization.

Leaders in risk management must collaborate with the organization on the initial product design. The goal should be to identify a comprehensive set of customer attributes and behaviors.

The evaluation of risk controls in product development processes is essential. Also, it is necessary to follow the actions of the clients to instantly adjust the characteristics of the products (for example: the price or the terms and conditions).

Additionally, the process for the development of new products, start-up of activities, start-up of processes or systems, must include an adequate identification, evaluation and measurement of inherent operational risks prior to their launch or presentation. These operational risks include: risks of not being able to account for transactions, risks that systems are not prepared, risks of not being able to know the cost or utility of the products, risk of not complying with regulations or laws, market or credit risks associated, among others.

Risk classification according to their typology

Organizations are exposed to various types of risk according to their line of business. The types of risks are different according to each entity. In very general terms, we can group them into financial risks (quantifiable) and non-financial risks (not quantifiable). The most relevant categories of risks are presented below according to their nature:

- **Credit risk:** credit risk is the possible loss that would be taken as a result of the breach of the contractual obligations of the counterparties.
- **Market or financial risk:** market risk is the risk of a loss in value of financial assets due to adverse movements in the factors that determine their price (interest rate, exchange rates, liquidity or derivatives). Includes counterparty credit risk, balance sheet risk, interest rate risk, liquidity risk, among others.
- **Operational risk:** operational risk is the risk of loss resulting from a failure in processes, personnel, systems or an external event.
- **Risk of Interruption:** the risk of interruption is the risk that an event or an action may adversely affect the operation of the organization, impacting the achievement of business objectives, the execution of its strategies, the relationship with clients and counterparties, credibility in the sector, loss of image, loss of information, etc.

- Human talent risk: risks associated with inadequate management of the organization's personnel due to various factors (lack of training, inadequate profiles, lack of skills, non-compliance, deterioration of the work environment, resignations, etc.).
- Information technology risk: technological risk is the risk of potential loss due to damage, interruption, alteration or failures derived from the use of or dependence on hardware, software, systems, applications, networks and / or loss of information.
- Legal risk: it is the risk of loss due to breach of legal and contractual provisions or the issuance of unfavorable judicial decisions.
- Compliance risk: regulatory compliance risk is defined as the possibility of incurring administrative or regulatory sanctions, financial losses or reputational losses due to non-compliance with laws, regulations, taxes, internal rules and codes of conduct.
- Risk of financial crime: the risk of financial crime is the possibility of loss to which the organization is exposed in the case of being involved in operations related to money laundering and financing of terrorism or financing of sanctioned counterparties, affecting its image and reputation.
- Environmental and social risks: social and environmental risk refers to the possible negative environmental and social impact of the organization or the projects financed by the organization.

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[29 <https://okdiario.com/curiosidades/lenguaje-torre-babel-1029959>](#)

Chapter VI. Decision making and risk-related aspects

Decision making

Every day, we make decisions. Some of these decisions may be minor: what color of toothbrush we are going to buy or what we are going to eat today or what television channel we are going to watch. Others, may have more implications: what car are we going to buy; and others are more complex: when are we going to get married or what job will we take. For some decisions we have more practice (what ice cream flavor are we taking), while for others we don't get much (whom to marry or where to live).

According to the study *Bad movements: how decision-making and the ethics of smart drugs go wrong* by Sahakian & Labuzetta (2013)³⁰, adults make almost 35,000 decisions every day, unlike a minor who makes 3,000 decisions and incredibly, we make 226.7 food-related decisions per day.

To mention a few, these are the decisions we make during our lives:

- What to eat
- What to wear
- What to buy
- What to believe

- What job to take
- What to study
- What to read
- Who to vote for
- What hobby or sport to practice
- Who to hang out with
- Who to date and marry. When.
- Have children
- Where to live
- How to educate the children

As we said, some of these decisions are simple. That is, they have almost no cost and have minimal associated risk (understood as an impact or consequence that could have a bad decision). On the other hand, some of the decisions have a high economic cost, take us longer to analyze and could have a high risk (these are the big consequences if the decision is inappropriate or wrong).

These decisions that we make, generate good and bad consequences. When deciding, we do not know what will happen in the future and what the outcome of our decision will be. As we are talking about the uncertainty of the future, we are talking about a risk.

Also, when we make a decision, we generally do not have all the necessary information. Often times, the quality of our decision (minimizing negative consequences and maximizing positive consequences) will improve with the quantity and quality of the information we have. However, this information is difficult to obtain, it costs effort, time and money, it is difficult to maintain and store.

On the other hand, human beings have different styles when making decisions:

- Impulsive: people who mostly consider their first option and stick with it.
- Compliant: people who make the most pleasant and popular decision (considering the majority of those who might be shocked).
- Avoidant: people who avoid making most of the decisions that could have an impact.

- People who delegate: they decide to delegate their decisions to other people they trust.
- Balanced: people who consider all the edges and try to make the best decision at the best time.
- Reflective: people who spend a lot of time in reflection trying to make a better decision.
- Prioritizers: people who put their energy into the decisions that have the greatest impact.

In some circumstances, we may use different approaches for different situations and different decisions. Although, we will maintain a particular style.

Our decisions usually involve:

- Uncertainty: we do not know what will happen in the future.
- Alternatives: generally, the decision will depend on the alternatives that exist or we identify.
- Costs: identify the direct and indirect costs of the decision.

- Complexity: if we come to understand the different aspects involved in the decision.
- Emotion: if we manage to separate the emotional from the rational to make the decision.
- People involved: think about how many people could be affected by the decision.
- Risks: what risks, consequences or impacts each decision could have.

In theory, our everyday decisions should be based on rationality, probabilities, risks, and consequences. However, this is not always the case. Many times we come to make decisions that are irrational. Let's see it with the following examples:

Suppose we have two alternatives.

- Alternative A: we win \$ 1,000 with a 100% probability (no risk).
- Alternative B: they give us two options, if it comes up heads, we win \$ 2,000; if it comes up tails, we win nothing.

What alternative will we choose? The safe (A) or the risky (B)? Both alternatives have the same expected payoff (\$ 1,000). If we are like most people (more than 3/4) we will choose alternative A (safe): we prefer the security of money in hand.

Now let's look at another scenario. In this case, we must pay a debt.

- Alternative A: we pay \$ 1,000.
- Alternative B: they give us two options, if it comes up heads, we pay \$ 2,000; if tails, we pay nothing.

What option would you choose in this case? Surely we choose the same as the majority of people (almost 70%); that is, alternative B. In this case also, both alternatives have the same payoff (-\$ 1,000). Will our decisions be okay?

Without going much into the math, the decisions are inconsistent with each other. We use the emotional to make those decisions and we put aside the purely rational.

In the first example, the expected utility of both alternatives is the same (\$ 1,000); with which, they are alternatives with equal value. In the second example, the expected loss is also similar (\$ 1,000). Even if we change the payment of alternative B, in the first case, to \$ 2,001, making it more "profitable", we will surely keep the choice of alternative A. Likewise, if we make alternative B worse in the second example (than with face will pay \$ 2 001) we would continue to choose this alternative. In both cases, even though they are rationally worse options.

Generally, we are bad at estimating odds of winning and losing. We overestimate the probability of winning and underestimate the probability of losing. We prefer a small safe profit to a large possible profit. But on the other hand, we don't like a small sure loss and we prefer a possible big loss. With a loss, we are more willing to take more risk. We are loss adverse.

We underestimate the probability of losing when we think that it cannot happen to us: "The coronavirus is not going to catch me"; "Nothing will happen to me if I smoke"; "Nothing is going to happen to me if I don't wear a helmet or go fast."

We overestimate the probability of winning when we think we will win the lottery or that we know what will happen in the future and we are going to bet.

On the other hand, in our investments we hate taking losses, because it means admitting that it was a mistake. Our ego does not allow us to admit that we were wrong and our aversion to losses leads us astray. It continues to make us risk more and more, despite the fact that the decision would have to be made with the new information.

For these purposes, Ben Carson (2009) in his book *Run the Risk*, presents a series of questions that we should ask ourselves every time we make a decision.

- What's the best thing that can happen if I do this?
- What's the worst that can happen if I do this?

- What's the best that can happen if I don't do this?
- What's the worst that can happen if I don't do this?

Skin in the game

Nassim Nicholas Taleb in his book *Skin in the Game*, affirms that it is essential that people who make decisions have exposure to the real world and take the risk of their decisions (pay a price for their consequences, good or bad). It presents that the question of incentives is key: when someone makes decisions and is not exposed to the results of those decisions, they will not have incentives to make or suggest the right decision.

His central argument is that whoever makes a decision enjoys the benefits if said decision is successful, but also assumes the consequences if the decision results with negative consequences. In other words, there must be symmetry in risk-taking: whoever decides must be equally exposed to the benefits and costs of their decision.

Taleb presents as a central example of what for him should not be allowed and calls it the Bob Rubin trade (“Bob Rubin trade”). This was a former US Secretary of the Treasury who during the decade before the subprime crisis (2008) earned more than \$ 120 million as a senior Citigroup manager for the large profits reaped by the bank. However, when the crisis hit and it became clear that the bank, which had taken huge risks, was insolvent, it was bailed out at the taxpayer’s expense. Robert Rubin, largely responsible for the situation, claimed that it had been impossible to foresee and of course he did not have to return the money. Says Taleb: “If it comes out heads, you win; if tails come out, you appeal to the black swan”.

Other examples that Taleb presents are politicians and bureaucrats. These are, in general, are clear examples of people who live making decisions that have enormous consequences for other people while not suffering the risks and / or

costs of them. A perfect example is that of a politician who decides to take on more debt to grow and show a higher level of GDP; however, he leaves his successor (and society) a difficult debt to pay.

These people who are not exposed to the risks or consequences of their actions, so they lack a necessary and essential feedback mechanism. Therefore, they tend to see reality as they would like rather than as it is: they tend to defend wrong ideas. And it is thus that they do not suffer the negative side of decisions³¹.

In this sense, his recommendation is that you never trust a person who does not risk his skin in the decision. That is to say, a person who recommends or decides without having symmetry his decision and being reached by the costs of the same is not believed.

On the other hand, it presents some examples in which decision-makers are affected by the costs of decisions: an airplane pilot, a ship's captain, an expert with whom I parachute in tandem, etc. In all these situations, the responsible person will suffer the consequences of their decisions or mismanagement and these act as an appropriate risk management mechanism. They don't have the incentive to make bad decisions.

Other examples where this can be seen are: restaurants, plumbers, electricians or hairdressers. They learn from their mistakes as they live on the opinion of their customers. Restaurants continue to operate, not because other restaurants have opinions about how they cook, but because customers keep coming. It is the customers who determine who continues to operate and who closes.

Different is the case of economists, journalists or "talkers" who only talk about how things should be. Opinion is very simple. They will not suffer the consequences of the recommendations or of what they say.

This main argument from Taleb must be balanced with what could be a conflict of interest or fairness when receiving a recommendation from someone who plays their skin in the decision³².

How is risk affected by physiology?

In general, psychology tries to explain our actions and how we respond to crisis or stress situations. The theory highlights that not having training or experience in risk and crisis management causes errors in our decisions in times of uncertainty and stress.

Risk psychology is the study of the mental process to respond to risk situations, how we identify those risks, how we evaluate them, how we assess the impacts and consequences. Having the right methods or processes in place can help individuals make better judgment, make better decisions, and better manage risk.

Our psychology plays a great role in managing risks, especially in crisis situations. I remember the following anecdote: a person was visiting a company in the United States, suddenly an alarm began to sound, but nobody moved. It turned out that the person in charge of giving the order to evacuate the apartment, was paralyzed by the alarm and did not react.

Many of the decisions we make in stress or crisis situations are not the right ones or are downright bad. For example, during the nuclear accident at the Fukushima plant, both Japanese government authorities and officials from TEPCO (Tokyo Electric Power Company) were unable to make decisions to stop radiation leaks as the situation at the plant got worse in the days and weeks after the disaster.

That is why including the aspect of human psychology in decision-making, especially in crisis situations, is essential. Being prepared to handle an unexpected situation can make a lot of difference. It is like exercising a muscle

and it will allow us a better response when it is needed.

It is known that in stressful situations, blood pressure rises, cognitive ability decreases and affects the ability to make decisions; therefore, some inappropriate responses can be produced. An example is the tendency to maintain a first decision, even in cases in which new information is presented that shows a better course of action. Another inappropriate response may be to stop looking at the big picture and focus on minor or less important details. Or, as we usually do when we do what the pack does (decisions based on what the group thinks and not on objectivity). Therefore, it is necessary to be familiar with these situations, to be able to make the best decisions when necessary and our abilities are ruined.

Taking risks

What risks should we take? What risks should we avoid or manage? What information is relevant to make that decision? What is our level of confidence about what will happen in the future? Should we manage the risk?

When there is uncertainty, the best tools for management are rationality and measurement. Both are essential to make a better decision.

Uncertainty is the lack of certainty or lack of something safe and clear.

Therefore, having the ability to rationalize our decisions and process information objectively is essential. We must not have any stubborn inclination.

There are countless occasions when we invoke luck to explain certain issues. But in reality, what we do is separate the event with its causes. When we tell someone who failed that it was the product of bad luck, we hold them harmless for what happened or for the decisions they made. On the other hand, when we say that someone did well and that it was a product of luck, we deny them the credit they deserve for their efforts or decisions.

When we make decisions, we are betting on an outcome that will result from the decision we make, even though we do not know for sure what the outcome will be. The essence of risk management is to maximize the area in which we have some control over the result, while we minimize the area in which we have no

control over the result or we do not clearly know the relationship between cause and effect.

That is why to improve our ability to handle uncertainty, we must look for ways to measure it in some way. The information will improve our ability to see alternatives, probabilities and improve our decision (and outcome).

Mental accounting

According to the theory of mental accounting, people treat money differently, depending on factors such as: its origin, rather than thinking of it in terms of “bottom line” as in formal accounting. This theory was created by the American Richard H. Thaler, winner of the 2017 Nobel Prize in Economics, and indicates that we make decisions by creating different accounts in the mind that deceive us and can make us make the wrong decisions.

According to the theory of mental accounting, \$ 3,000 is \$ 3,000, regardless of where it comes from. The \$ 3,000 from work has the same value as \$ 3,000 from a lottery prize or a tax refund. However, something very striking happens: it is easier to spend the \$ 3,000 of the lottery than the \$ 3,000 that we have won with the sweat of our brow; that is, we spend the \$ 3,000 from the lottery or tax refund faster. This occurs because our mind tricks us into believing that the first money has less value than the second. This is the mental accounting trap.

In contrast, money is fungible; all money is exchangeable and has no labels. When we use mental accounting, people treat assets as less fungible than they really are (we keep them in different boxes or pockets). For this reason, when investors have a “speculative” profit or from another source than their job, they tend to make decisions that involve a higher level of risk than is advisable. They do so because they make decisions using mental accounts in a differentiated way, losing the global vision of risk.

The effect of sunk costs

The sunk cost effect refers to the finding that people tend to let their decisions be influenced by costs incurred in the past. Some examples of this effect would be to leave unused clothes in the dressing room for the sole reason that we spend a lot of money or that we keep plans to go to an event despite certain difficulties, just because we already bought the tickets. This means that we continue to consume or follow an alternative only because we have spent resources on it.

The reality is that the money we have already spent, is already spent and there is nothing we can do with it. We should consider the alternatives from now on regardless of the expense incurred.

In the case of sunk cost, it usually leads us to take more risks in certain decisions than we would have to take or assume if we had not made those expenses. This finding seems to be in conflict with classical economic theory that only incremental costs and benefits should affect decisions.

The sunk cost effect induces a “loss frame”, which consequently leads to riskier seeking behavior than should be assumed.

Let's look at an example: let's say we spend \$ 2,000 on a snowboard trip to Valle Nevado. Later, we found an offer and bought a trip to Aspen for \$ 1,000. We realize that the two dates match and there is no refund for packages. Snow in Aspen is better and will enhance the experience. Would you attend the “good” \$ 2,000 trip or the best \$ 1,000 trip? Most people would choose the trip to Valle Nevado (more expensive) because the loss seems greater. The sunk cost fallacy

prevents you from realizing which is the best option and makes you place more emphasis on the irrecoverable loss of money (it makes us choose to go to Valle Nevado). So when we've spent money or had a loss, we tend to take more risk than required in the hope of recouping that loss.

The best decision, says Robert Leahy, is when our decision model is based on future profit or future cash flows.

Future tourist

Visiting new places is exciting because it provides contact with experiences, knowledge or unknown, different or unusual situations. You get out of your routine and set yourself up for something new. This novelty aspect also creates anxiety. When choosing a trip (or destination), the future tourist faces the conflict between seduction and the fear of the unknown or that he or she is outside his daily environment.

In this sense, risk perception and risk appetite are relevant when choosing the destination or trip. The idea of risk, in this context, is related to the cognitive probabilities of suffering partial or total damage, or of experiencing unexpected negative consequences (theft, accidents, among others). Regarding the positive consequences of risk (opportunities) we could point out a win in a casino, find a boyfriend or a friendship³³.

The objective of the tourist will be to enjoy the trip whatever their final objective (rest, adrenaline, sun, beach, culture, fun, sports, etc.) without suffering losses, damages or unexpected consequences.

A future tourist may perceive risks even though he has not experienced them before or he may assess risks with a higher probability of occurrence or greater impact than reality and that perception will influence his behavior (leads him to be more conservative in his choice). On the other hand, another future tourist may not identify a real risk (if they exist and are likely to occur and will have an impact) and will lead him to take greater exposure than his risk appetite would indicate.

This context could lead us to identify some risks that the tourist could face (and the controls that could be established to mitigate the possible causes of the risk), let's see some of them^{34 35}.

- Inadequate selection or insufficient inquiry about the destination: determination of the final objective of the trip, security analysis, review of qualifications, amenities.
- Incorrect contracting of the supplier: acquisition of the package (air, accommodation, packages, events) through a recognized company or directly with the supplier. Analysis of the counterparty finances (I know it is something difficult to do, but it is still the best control, since we are assuming credit and operational risk with the counterparty).
- Inability to carry out planned activities due to weather: weather check at destination for estimated travel dates.
- Contract a disease: check the destination's health system, which diseases are the most common, have adequate medical insurance, drink mineral water and use repellent.
- Suffer an accident: carry out activities that are aware of the risk to be assumed, avoid activities that could cause damage or injury and have adequate insurance. Have necessary contact phone numbers at hand.
- Excess spending: initially, estimate the cost of the trip and follow up during it to ensure that it does not exceed our capacity or desire.

- Lack of liquidity or currency: carry out the corresponding analysis on the best alternative to dispose of the local currency or the means to access it (cash, currency exchange before leaving, exchange in exchange houses, use of the debit or card credit), without paying the costs of intermediaries or exchange houses that have very high price or spreads.
- Excess purchases (this can carry the risk of space in the suitcases for the return plus the eventual customs control for the payment of taxes): ensure that one has space available to return with the purchases, acquire the necessary suitcases and be willing to pay any costs that the airline and customs may charge.
- Being the victim of a theft or security incident: always check the places to attend, the schedules and ensure adequate means of transport according to each destination. Avoid having money that may be seen by third parties. Have luggage insurance.
- Suffering body damage: use of appropriate elements according to the activities we are going to carry (especially shoes or slippers), attend suitable places and eat food according to the activities to be carried out.

With proper risk management we seek to protect finances, health and safety.

Risks that are not worth taking

When we are faced a decision, it is because there are alternatives. If there were no alternatives, we would not be talking about a decision. As there are alternatives, we must consider the benefits and risks (costs of the different alternatives). In general, we will tend to risk more in our decisions when the benefits are greater (more concrete) and the risks and costs are lower. Let's see it in a formula:

$$\text{Alternative A} = f(\text{Probability} * \text{Benefits}) - \text{Costs} - f(\text{Probability} * \text{Benefits})$$

$$\text{Alternative B} = f(\text{Probability} * \text{Benefits}) - \text{Costs} - f(\text{Probability} * \text{Benefits})$$

We are going to favor the alternative that has greater benefits, the one that is more certain, that has a lower associated cost and that its risk (negative impact) is lower.

In this sense, we are going to choose the riskiest alternative when its benefits are much higher than the other alternative and that its benefits are highly probable (without uncertainty). As the benefits begin to be less evident or proportionally close to another safer option, we will choose that one.

Let's see it with an everyday example. Suppose we have to go from Buenos Aires to Necochea and that we can use two alternative routes. The first is taking Route 2 and passing through Chascomús and Coronel Vidal. The second alternative is to go on Route 3 passing through Cañuelas and General Belgrano.

- Analysis of alternative A: this path is shorter, since it is 522 kilometers long. Google Maps shows us that it would take 5 hours and 45 minutes. Assuming we spend 12 kilometers for every liter of gasoline, the cost of gasoline would be 43 liters (at \$ 60 per liter). There are also 2 tolls. The road is in worse condition and there are three police posts that tend to stop vehicles (the probability of being stopped for an hour is 50%, plus a possible economic cost of \$ 1,000 for not carrying a fire extinguisher).

- Analysis of alternative B: this road is longer since it is 540 kilometers long. Google Maps shows us that it would take 6 hours and 5 minutes. Assuming we spend 12 kilometers for every liter of gasoline, the cost of gasoline would be 45 liters (at \$ 60 per liter). There are also 2 tolls. The road is in better condition and there are no police posts.

$$\text{Alternative A} = f(0.50 * 5:45\text{hs}) - 43 \text{ lts} - f(0.50 * + 1:00 \text{ hs} + 0.50 * \$1,000)$$

$$\text{Alternative B} = f(1.0 * 6:05\text{hs}) - 45 \text{ lts}$$

On average, route A will take 6:15 hours (50% of the time it would take 5:45 hours and the other 50% of the times it would take 6:45 hours). The cost of this alternative is \$ 3,080 (\$ 2,580 for gasoline + \$ 500 for eventual fines).

On average, route B will take us 6:05 hours and the cost of this alternative is \$ 2,700.

We then see that alternative B is better in terms of its estimated time and economic cost. It is not advisable to take the risk of taking alternative A, despite the fact that the estimated time to start is shorter. Only as the probability of being stopped by the police decreases and less time and cost are more likely, alternative B could be chosen. Also, the probability of a tire failure due to road conditions should be included.

To explain a risk that is not worth taking, we will use another example, but this time from sport. In 2018, Jorge Lorenzo (Moto GP motorcyclist) fell in the Aragon race and suffered a fissure in the final part of the left radius. Two weeks after that accident, the Thai Grand Prix was running. Lorenzo made the decision not to get on the bike and not ride that Grand Prix. The Spaniard declared: "It is not worth taking risks. I already said yesterday that the chances of me trying to run were very low, but they were even more so when the X-rays that were taken at Buriram Hospital revealed that I had made a fissure in the final part of my left radius. I will wear this protection for as long as possible to speed up the recovery and thus get to Japan in the best way I can, within two weeks. I won't be 100% there and it's a shame, because Motegi is one of my favorite tracks, but given the situation in the championship there is no point in exposing myself to making things worse".

So the benefit was minimal (Lorenzo was far behind in points in the championship) and the risk of suffering a major injury was considerable. The

risk was not worth taking considering the circumstances.

Endowment effect

There is evidence about the role of the endowment effect in risk taking and management. This effect is especially true for entrepreneurs. It refers to the fact that people tend to value more assets they possess than exactly the same assets that we do not possess; that is, people attribute more value to things solely for the fact of owning them. This overvaluation of the good is due to the aversion to the loss that the person feels.

An example of the endowment effect was presented by Ziv Carmon and Dan Ariely. They showed that certain people who had purchased final tickets to the NCAA tournament were only willing to sell them at a price that was 14 times higher than their hypothetical purchase price. They also asked a much higher price than those not having the tickets were willing to pay.

In a Jack Knetsch experiment, two groups of students were asked to fill out a questionnaire, being rewarded with a gift held in front of them for the duration of the questionnaire. In one session, the prize was a cup and in another, a bar of Swiss chocolate. At the end of the class, the experimenter showed the alternative gift and allowed everyone to exchange theirs for someone else's. Only 10% of the participants chose to change their gift. Most of those who had received the cup stayed with it and those who had received the chocolate did not budge either. The rationale is that everyone would have opted for the higher value good.

This endowment effect influences our decision-making and leads us to make decisions that are sometimes not entirely rational, especially it leads us to take greater risks.

We can see this effect when the potential to lose their companies leads owners and entrepreneurs to take greater risks.

According to a study by Isabela Echeverry Peñón and Santiago Reyes Ortega (2018) The endowment effect on entrepreneurs: a risky link, entrepreneurs are more likely to accept riskier bets when these are related to the ownership of their companies (it maintains more your companies even though they have negative returns) or they dismiss potential investors who want to join your company when it is successful. That is, entrepreneurs take greater risks than people in general, when it comes to their companies. In this sense, they are overconfident in their situation, leading them to overestimate the probability of success.

In conclusion, the price at which we are willing to sell an object is always higher than the price we are willing to pay for a similar object.

Collective decisions

Certain decisions can be very complex and controversial. On certain occasions, time and analysis can be spent to make a better determination. In contrast, other decisions systematically fail to analyze the risks involved. In general, for these decisions, the uncertainty involved in the resolution is very large and there is no information or the risks cannot be assessed.

Also, there are certain decisions that are made collectively or jointly. The premise of this collective decision making is that “four eyes can see better than two”. Thus, it is sought that different visions complement each other to make the best determination and better manage the risk or uncertainty involved.

At the organizational level, there are various instances in which a group of people is summoned to analyze an issue and make a decision (committee, board of directors, assembly, etc.). In this case, it should be ensured that all those involved in the decision have the same (or similar) ability to think in terms of benefits and risks, and know the risk appetite of the organization to improve resolution. In the case of an organization, there tend to be common guidelines that seek the above.

In the case of the most collective decisions, this is not always the case. Let's think of a democratic election as a decision. It is difficult for the people who are going to make that determination to have that common vision of risk analysis and evaluation, and the appropriate information to improve or make an appropriate decision. Judgment, time spent, or analysis effort differ for each person.

The vote is hardly the result of rational calculation and a reasoning of advantages, disadvantages, benefits and risks that are run when making a certain decision.

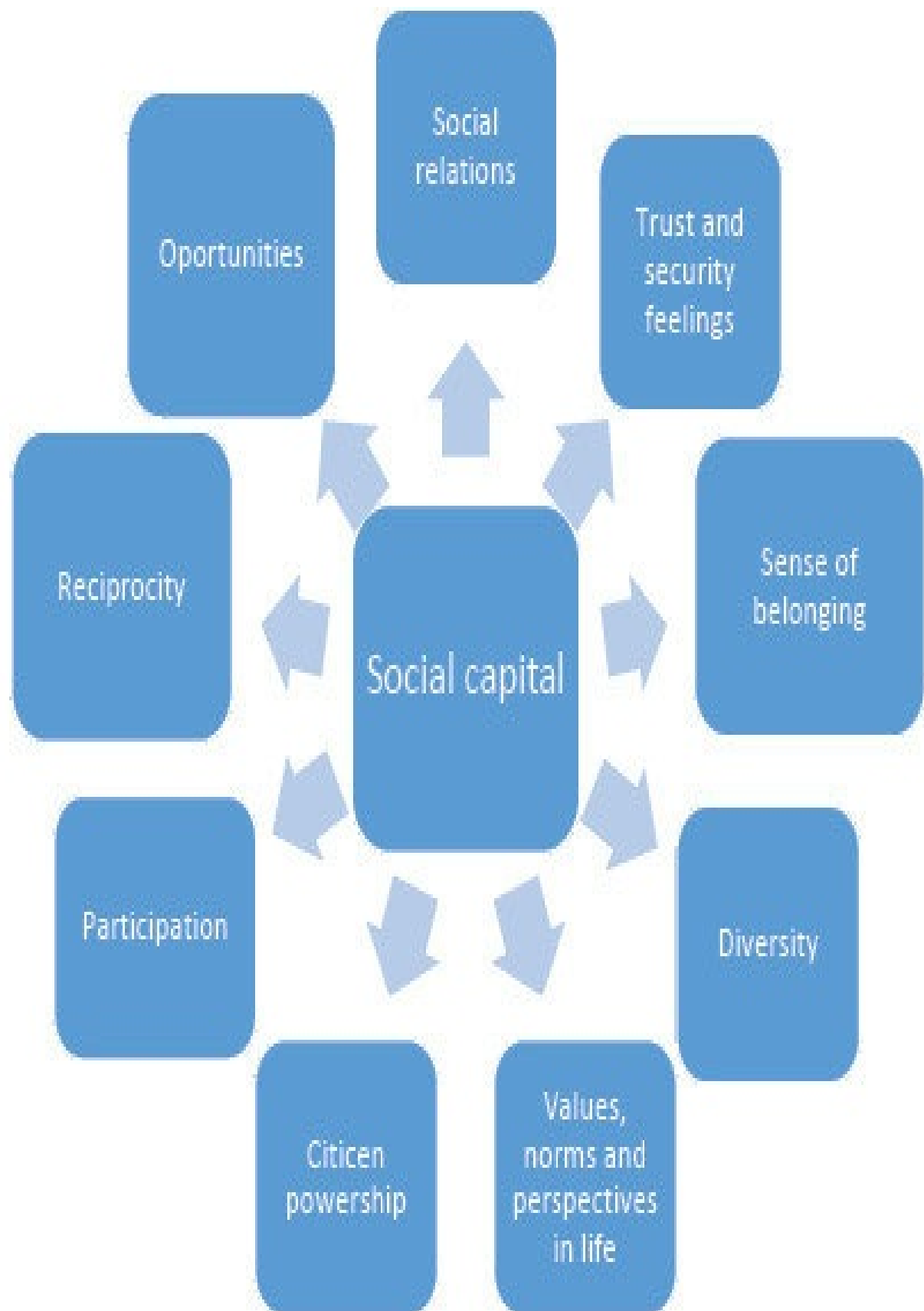
Many times, during electoral campaigns, voters are raised with fear or the risk of the “other alternative” or proclaim that “if the adversaries come to power, stability, peace, progress will be lost or put at risk, the well-being, the future, the security, the values and the achievements achieved by the citizens, for which they are summoned to vote to avoid the risk or to stop the possible calamity that will come in the future and represented by their opponents”. It is further argued that: “A triumph of the opposition will lead the nation to chaos, disaster and a crisis due to its inexperience to govern”. This is how many times, citizens vote with fear or risk of innovation and prefer the status quo.

Youth and the decision making

During adolescence and youth there are risk factors, difficulties, threats and vulnerabilities that could affect young people (taking a range of 15 to 25 years). Their decisions can be more or less risky and expose them to various dangers depending on the influence of the social, family and school context.

Research concludes that adolescents and young people tend to take more risk or make decisions that will expose them to risks and greater consequences, depending on their social capital. The higher the share capital, the lower the risk of your decisions. Let's see how the social capital of a young person is composed.

Figure 20. Social capital for a Young person



Source: Own elaboration.

Thus, young people can take different alternatives according to their social capital and expose themselves to a greater or lesser level of risk, with the consequences that could later have. On the one hand, they can decide to be a prudent person, making rational and generally correct decisions, measuring the benefits and costs (risks) of the choices they make. On the other hand, they can take the gambler as an alternative, who makes riskier decisions, even against the odds, which are more irrational and reckless.

So, this social capital plays a central role in the ability of young people to be able to overcome that stage in which they are faced with a variety and quantity of risk decisions. They must have adequate capacity and the necessary resources to be able to face, manage, obtain information, assess risks in order to make decisions and avoid those risks.

Among the impacts or consequences of their decisions, we can point out: pregnancies and early births, deterioration of their mental health, violence, poor performance, school failure or drop-out, use of alcohol and drugs, trauma (involuntary injuries as a result of accidents of traffic), malnutrition and obesity, tobacco use or crime. Certain factors such as: low intellectual capacity, indifference by society, being impulsive, family problems, abuse, marginalization or inequality can put a person at a greater risk of having problems.

Like any risk, prevention is better than cure. In this sense, it is necessary for youth to be able to adequately assess the benefits, costs, and risks of their actions and decisions to better navigate this stage of their lives.

For this reason, each young person must be responsible for managing their risk, making the most prudent choices (taking care of their body, food, friendships, etc.). This requires an analytical, thoughtful level and an ability to make informed and strategic decisions about risk.

Now, let's look at another aspect of risk related to youth. When a young person commits a crime and is in a vulnerable situation, there is a risk that they will reoffend (that they will continue to commit crimes in the future). To prevent the risk of their recidivism (which would affect the rest of society), measures must be taken to modify their behavior or way of thinking. There are three alternatives for this prevention³⁶:

- Zero tolerance: it is based on punitiveness. Its axis is more oriented in protecting the victim and that the offender pays and avoids recidivism for fear of punishment. Its premise is to punish the offender so that he perceives the consequences of his actions (and the society).
 - Opportunity: in principle, it seems to operate before the crime occurs or before the first repeat offense. Its aim is to keep young people out of crime. It is to see confinement as inconvenient and demands an attitudinal change from the young person and incorporates his family and environment, in this job. It uses police warning strategies, group conversation systems between welfare workers, police, offenders, their family and, in some cases, victims.
 - Tolerance: focused on social and community prevention, guaranteeing the best interests of young people. There is a joint responsibility regarding the management of the crime. Some aspects such as human rights or the understanding of the problem as a social one have more weight and trust in family and religious values.
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Chapter VII. Different aspects of risk

Risk management for a country

It is critical for a country to include risk management within its government functions. It is essential to identify and manage the risks that could prevent the fulfillment of the objectives of each one of the countries. To properly manage risks, it is necessary to be clear about the objectives that you are trying to achieve.

It is not so common for countries to set their goals. These can differ according to the political party that wins the elections and even so, it is not normal for them to be put in writing. However, if we are not clear about the objectives, it is very difficult for us to identify the risks and manage them. If we do not identify the risks, various circumstances may probably generate unwanted impacts.

To carry out this exercise, we are going to establish the objectives that any country could have. Sure, the goals will differ according to each country, its situation, population, history, poverty / wealth, but let's try.

We will start from certain common objectives. For this, we will use as a basis certain objectives that could be applied to any country. We will use the UN Sustainable Development Goals (formerly the Millennium Development Goals), certain plans of some countries, prospects for the issuance of certain sovereign bonds (that provide some insight), criteria from risk rating agencies and other documents.

The following are those that could be the objectives of a country:

- **Reduce poverty and hunger.**
- **Generate economic growth and employment.**
- **Improve the quality of education.**
- **Promote sustainability.**
- **Justice and strong institutions.**
- **Security. Peaceful environment.**
- **Improve the country's infrastructure.**
- **Price stability.**
- **Equality.**
- **Comply with all your commitments.**

- Citizen's happiness.

After setting the macro objectives, it will be necessary to establish more concrete and specific objectives and goals in order to better identify the risks; however, for this exercise, we will stick with the objectives set out in the list.

It is important to mention that the objectives for a country will not necessarily be the same as for a government (public sector). While they should be aligned, there will probably be differences between them.

Now, we will move on to identifying the risks that could prevent the achievement of these objectives:

a) Adverse external factors

- Global economic contraction.

- Decrease in foreign investment, which would deprive the capital necessary for development.

- Changes in international prices (drop in exportable goods) could affect the current account and reduce income from the public sector.

- High international interest rates (for a country with indebtedness) that could generate higher interest payments and higher budgetary spending.

- **Recession or low economic growth in trading partners (could decrease exports, inducing a contraction of the economy) and reduction in public sector income.**

- **Change in the perception of risk by international organizations (World Bank, IDB, among others) or by funders that restrict resources or change their financial conditions.**

- **Adverse weather events.**

b) Adverse internal factors

- **Increase in the amount of money or increase in its turnover, which could lead to raise in inflation, high domestic interest rates, exchange rate volatility and, consequently, lead to lower economic growth.**

- **Decrease in internal investment that will affect the growth and income of the public sector.**

- **Decrease in the demand for local currency due to distrust that will lead to its depreciation or devaluation of the currency, inflation, difficulties in the payment of commitments in foreign currency and greater external commercial competitiveness.**

- **Adverse political events.**

- **National or international hostilities.**
- **Inappropriate use of funds (corruption, fraud, theft, etc.)**
- **Changes in the rules of law, tax increases or legal uncertainty that scare away investments.**
- **Natural events, climatic changes, earthquakes, droughts, abundant rains, etc.**
- **Distrust in the finances of the country that leads to the outflow of capital.**
- **Systematic increase in public spending that requires greater financing.**

Next, the different risks should be evaluated and compared with the risk capacity and appetite. For this, it is necessary to quantify the risks (probability and eventual impact). For the risks that are more relevant (greater probability of occurrence and / or greater impact), the necessary action plans must be established.

Let's look at some of the characteristics that make a country more vulnerable / risky than another: its economy is concentrated on a good or service (it can be a commodity, an input, the tourism sector), it is dependent on the weather, it has fewer resources to deal with a pandemic, has fewer resources in general (natural, human, economic), defaults on its debts on a recurring basis, among others. All

these circumstances make one country more risky or vulnerable than another.

The risk rating agencies (Fitch, Moody's and S&P, mainly) rate countries in relation to their ability to repay their debt. At higher risk, investors will demand a higher interest rate to offset that risk. Let's look at some of the variables that the agencies analyze to determine the risk of each country:

- **Legal security, government effectiveness, control of corruption, political stability and absence of violence.**

- **GDP per capita.**

- **Default on your debt and time since the last default.**

- **Increase in the monetary base of money.**

- **Volatility of GDP.**

- **Level of public debt, interest payments, fiscal situation.**

- **Level of reserves, flexibility of the currency.**

- **Dependence on commodities.**

- Current account level.

In the end, Fitch groups these criteria into four main pillars:

a) Structural characteristics: if the economy is more or less vulnerable to shocks and risks created by the financial sector, political uncertainty and governance factors.

b) Macroeconomic performance, policies and prospects: prospects for growth, stability, coherence and credibility of the institutions.

c) Public finances: deficits, structure and sustainability of the public debt, access to financing and eventual materialization of contingent liabilities.

d) External finances: sustainability of the current account and capital flows. Debt structure (public and private).

In conclusion, to manage and improve the risk of a country, work must be done on mitigating the risks emanating from these pillars. This will lead to improvements in financing conditions and will create more favorable conditions for the country's growth and development.

Sovereign risk and country risk

Sovereign risk is the probability that the sovereign will default on its financial commitments and obligations when applicable. For this, we use the credit rating provided by the risk rating agencies, already mentioned in the previous section.

On the other hand, country risk is somewhat broader in its concept. It includes the probability that the government will impose capital and exchange rate controls that prevent converting currency and paying commitments in foreign currency. This is called transferability and convertibility risk and includes the risk of wars, expropriations, revolutions or natural disasters.

Let's see the model presented by Country Risk³⁷:

a) Economic structure and growth. It includes: income level, GDP volatility, demographics, education, infrastructure, technology, integration with the world and level of savings. A greater economic structure, a greater future and resilience.

b) Political stability. Includes: quality of democracy, history and internal or external conflicts, religious or ethnic conflicts, military influence or social conflicts. They measure the political system to establish the ability to drive sustained growth and healthy public finances.

c) Institutions and governance. Includes: rule of law, control of corruption,

quality of regulation, responsibilities and accountability, political stability, transparency, respect for human rights, ease of doing business. A robust political system serves in times of instability and favors the development framework.

d) Monetary policy. Includes: price evolution, inflationary volatility, growth of domestic credit, interest rates, exchange rate regime and integrity of monetary policy. Sound and credible monetary policies are a pillar for sustainable growth and reduce risks in the face of unexpected events. Likewise, the independence of monetary entities with respect to the executive branch is key.

e) Strength of the financial system. It includes the evaluation of the financial system in terms of capital adequacy, asset quality, management quality, profitability, liquidity and sensitivity to market risks. A strong and stable financial system is important for sustainable economic growth.

f) Vulnerability of fiscal accounts. It includes: fiscal balance, collection efficiency, evolution of fiscal income vs. GDP growth, quality of the management of fiscal managers.

g) Fiscal vulnerability and sustainability of public accounts. Includes: ratio of total public debt vs. GDP, ratio of interest service vs. tax revenue, debt services on exports, profile of public debt, and uncertainty of projections.

h) Flexibility of the balance of payments and external debt sustainability. Includes: current account balance, level of reserves, currency transactionality, evolution of exports, diversification of exports, investments, debt over GDP, debt over exports, and coverage of imports.

i) Climate change, renewable energy, environment and biodiversity.

Includes: level of greenhouse gas emissions, risks of climatic factors, risks that come from climate change, public policies to face climate change, use of renewable energies.

j) Social issues. It includes: strength of public health, quality of the health system, food quality, policies to face hunger, elimination of poverty, risks of humanitarian crises.

k) Labor market and social inclusion: unemployment rate, youth unemployment, labor force participation, quality of labor policies, equitable income system, social support, balance between work and private life, equity.

l) Risk of transferability and convertibility. It measures the incentives and costs of the government introducing capital and exchange controls. Although these controls may represent certain benefits for the government in terms of preserving international reserves and limiting the outflow of capital, these restrictions generally harm the private sector (limitations for the payment of its commitments and difficulties in accessing financing). Likewise, the incentives for foreign investment decrease. In this category, the history of imposition of restrictions, participation in monetary unions, integration with the world economy, quality of the law, international reserves is evaluated.

Promotion of good risk management practices by the state

Likewise, a State should promote and recommend to organizations and individuals, who are in the country, that they have good risk management practices.

In the financial field, it is the local regulator that requires financial institutions to have good risk management practices (corporate governance, independent area, processes, models, scenarios, etc.), taking into account that these institutions collect money from the public. So the regulator tries to take care of the public by demanding good practice.

The same should happen in the other areas. For example, if organizations (large and small companies) adequately manage their risks (identify and manage) they would be more resistant or resilient to shocks. On the other hand, they would better preserve the jobs of their employees and be more profitable (avoiding operating losses and being more efficient). This would result in higher tax payments.

On the individual's side, proper risk management would lead them to go through life with fewer unforeseen events, better health, less risky decisions and healthier finances.

Risk management in sports

“The first step in the risk management process is to recognize the reality of the risk. Denial is a common tactic that substitutes deliberate ignorance for thoughtful planning”.

Charles Tremper

In general, risk management has been implemented mainly in financial institutions. This because it is required by the regulator. However, the business environment, market conditions, uncertainty and efficient use of resources should prompt all organizations to manage risk, including sports organizations or anything related to sports.

All organizations or ventures are exposed to various risks that could prevent them from achieving their ultimate ends (objectives). For this reason, it is necessary for organizations to have an adequate framework to manage risks, both at a strategic and an operational level. This will help reduce unwanted or unexpected events or losses, and help improve efficiency. Resources are not inexhaustible and any initiative that improves efficiency will allow a better return on invested capital.

One of the most visible risks in sport is injury. Some more than others will prevent the athlete from competing and this will take him away from his goal.

On the other hand, regarding the risk of the sports business, the risks of changes in laws and regulations, changes in market conditions (interest rates, exchange rates, input prices, among others), changes in income or expenses that affect the ability to repay (or generation of funds), political risks that affect the business environment, legal risks (possible lawsuits or breaches), loss of key people (with information or contacts), weather risks that could affect the events (and therefore income) and ... pandemics!

Among the impacts, we have economic losses, loss of assets and damage to the image and reputation of the company or undertaking. The loss of a sponsor or a contributor is also an eventual risk.

In this case, we must apply the same risk management process. Know the mission, establish the objectives (strategic or operational), identify the risks that could affect compliance, analyze the risks (determine probability and impact), assess them (against the ability and desire to take risks) and mitigate them (if necessary) with action plans.

It is necessary for all companies, clubs, enterprises or even athletes or athletes to manage their risks in the best way. For this, it is necessary to have people who have the adequate capacity to identify and manage risks, with the necessary resources and with the adequate responsibility to make the decisions that are required.

The better the uncertainty is managed, the better the performance and the greater the possibility of meeting the objectives. As we already know, risk is unavoidable. We can only manage it in the best way.

Establishing an adequate risk management environment, with the necessary control environment, will lead to a company of excellence and improve decision-

making throughout the organization.

In the case of a sports club or enterprise, the following risks could arise: changes in the business environment, changes in the financial market, use of resources appropriately, unexpected expenses for the maintenance of the facilities, risks in the acquisitions that are made, fights, riots, inventory theft, risks in the facilities (need to have an evacuation plan), business interruption (need to have a business continuity plan). Additionally, injuries to those involved could mean losses. To do this, on many occasions, they resort to insurance that covers this risk.

To carry out all this, it is necessary to have trained personnel, processes and documented actions that will reduce risk and possible liabilities.

Score dynamics in certain sports and its relationship with risks

In their study Scoring dynamics across professional team sports: tempo, balance and predictability, Sears Merritt and Aaron Clauset (2014) analyze the different variables that influence the scores in major American sports (football, baseball, hockey, and basketball). Among the variables that they analyze in their study is risk.

In these sports, the ultimate goal of each team is to win (score more points than the opponent). The risk of not reaching the goal can be associated with worse strategies, worse executions, worse skills, lower physical performance, among others. These factors can also carry partial risks (or sub-risks) of being scored.

In the study, they show that in certain sports, in the early stages of the game, teams tend to “warm up” or “learn and discover their opponent’s strengths and

weaknesses". For this reason, in these early stages, these behaviors tend to reduce the chances of scoring points for the behaviors most adverse to risk. Teams are less likely to take risks to score and attack, since suffering scores against them would limit the game from that moment on.

They also show that when the periods are ending (especially in the last one), the teams that are below the scoreboard tend to take greater risks, since they will not have more opportunities in the future. This results in more scoring in the final moments of a game. These teams tend to make changes in formation and strategy trying to reverse the score. On the other hand, teams that are ahead on the scoreboard tend to consume playing time (time management) trying to reduce their exposure to risk.

A different case is tennis. The ultimate goal of the game is to earn the last point (or earn the points necessary to complete the games or sets). In the case of the player, he also has the risk (sub risk) of missing a shot and losing that point. If we have the serve of Andy Roddick or Goran Ivanišević, the risk of losing a service point is lower.

According to Tennis Mind Game, if one increases the risk of a shot (stronger or more to a line), it decreases the chances of losing the point (more difficult for the opponent), but increases the chances of missing the shot. From a certain risk (speed or angle), each time we take more risk, the probability of making a mistake increases.

Thus we can classify the players into two types: a) conservative (they lower the probability of missing shots) and b) aggressive (greater probability of missing shots).

According to the ATP, there are certain points much more important than others

(therefore, more risky if one loses them) and they are classified as follows³⁸:

- **High risk points:** for example, 30/40 points, advantage out or 15/40: there is a lot of difference between the probabilities of winning the game or losing it (more than 50% difference between winning and losing that point).
- **Medium risk points:** the 30/30, 0/30, deuce, 0/15, 15/15, 15/30: the difference between winning the game by winning or losing the point is between 25% and 50%.
- **Low risk points:** the 40/30, serve advantage, 0/0, 30/15, 15/0, 40/15, 30/0, 40/0 and 0/40. The difference between winning and losing the point is less in the result of the game (less than 25%).

As the risk of the point decreases, you can be more aggressive and take more risk. A high risk point has a high consequence and impact relative to the goal of winning or losing the game.

On the other hand, it is important to consider the overall score of the game. Thus, as we are down on the scoreboard, we can be more aggressive looking to change the trend of the game.

Injuries as risks

Injuries can affect athletes in meeting their goals and objectives. On the one hand, for an athlete who competes individually, it may mean being out of

competition, losing income, and falling back in a ranking or classification. On the other hand, for an athlete who competes within a team, it can mean a detriment to the team depending on their level and their replacement.

As with all risks, the risk of injury must be evaluated, which, as we have seen, is measured according to probability and impact. A simple injury could have minor consequences (surely it has a higher probability of occurrence); meanwhile, a major injury would significantly affect the athlete and could put him out of competition for months.

Let's analyze a study carried out by Javier Noya Salces called Analysis of Injury Incidence in Spanish Professional Soccer in the 2008-2009 Season (2015) and some of its most relevant findings³⁹. Salces studied 27 teams from the first and second Spanish division of the 2008-2009 season in which 2,184 injuries were recorded (for the 728 players). Overall, the injuries were 8.92 injuries per 1,000 hours of exposure (training and competition). The mean consequence or absence was 11.3 days.

On the basis of these statistics, some of the most relevant are described:

- Average injuries per player is 1.4 injuries per season; that is, more than one injury per player per season. Also, more than 75% of the players will have an injury in the season.

- Injury in competition is six times more likely than in training.

- An injury is more likely in a World Cup or Champions match than in the local league and much more likely than in a friendly. That is, the probability depends

on the importance and requirement of the competition.

- The above mentioned coincides with the highest probability of injury if the player's team is losing (twice the probability of injury than if his team is winning).
- Contrary to intuition, very young players (17-19 years old) are the same or more prone to injury than older players (due to technical defects, muscular strength, endurance, knowledge of their body).
- An injury to the player's dominant side is more likely (56% -44%).
- The highest probability of injury corresponds to a forward, then to the goalkeeper, then to a defender, and finally to a midfielder.
- Muscle injuries are the largest (2.6 injuries per 1,000 hours of exposure or 40% of the total), followed by ligament injuries (2.0 or 20% of the total), by contusion (1.7 or 18% of the total) and finally, fractures (5% of the total).
- Within muscle injuries, the most common is muscle tear, and within this category, the most common is that affecting the thigh.
- Among ligament injuries, the most common is to the ankles.
- Regarding impacts, minor injuries (4-8 days of absence) represented 31% of

the total, then minor injuries (1 to 4 days of absence) 30% of the total, followed by moderate ones (8-28) 28% and, finally, the serious ones (+28 days, 10%). Only 0.1% involved retirement.

- Regarding the impact of injuries or severity, the most serious (player will be absent for more than a month) correspond to the knee (35% of the total), followed by the groin or hip (20% of the total).

- The mean absence was 11 days, showing that the major injuries are not severe.

- Only 3% of the injuries required surgery.

It is unrealistic to believe that safety in the game can be fully guaranteed, as any competitive sport carries risk. However, there are recommendations (controls) that will minimize the risk:

- Coaches and physical trainers: advice on the structuring of training sessions, appropriate warm-up, appropriate training / match ratio, reduction of playing time.

- Medical staff: advice on appropriate rehabilitation programs, sufficient recovery time, attention to all the player's ailments, bandaging of the ankle joints (especially in ankles that have already suffered sprains).

- Players: advice on how to improve performance (flexibility, capacity, endurance), reaction time, good lifestyle habits (avoid tobacco and alcohol

consumption, proper diet), responsible attitude towards fair play.

- Referee: advice on reducing foul play through strict application of the rules of the game.
- Varied diet: good nutrition is the secret of success, balancing protein and carbohydrates.
- Specific exercises: exercise and stretch the muscles involved.
- Hydration: drink enough and frequently water to stay hydrated and avoid cramps. Energy drinks can replenish glucose levels but are also high in sugar.
- Rest: injuries take time to heal. Also, the body needs adequate rest between workouts and games.

In this sense, several authors have identified the risk factors associated with injuries in soccer, among which dirty play, previous injuries, increasing age, lack of training (or training too low for the number of matches) and field conditions.

Injuries that end a career and risk management

Injuries often occur in sports: in training, in competitions, or in accidents. They can be simple injuries or they can end an athlete's career. Some athletes decide to mitigate the risk of a serious injury that could end their career and purchase an insurance. In certain circumstances, insurance can be purchased by a club (soccer, football, rugby), protecting its interests (assets). Payment can be made through a fixed sum or in installments. It is of vital importance how the injury was defined (what it includes and what it does not) and the obligations of the athlete to be able to access the claim in case of injury.

For example, Usain Bolt is a person prone to take risks. He won eleven world titles and eight Olympics as a sprinter. In addition, he still holds the world records for the 100 and 200 meter sprints, and the 4 × 100 relay race with the Jamaican team.

In 2010, he commented in his book *Usain Bolt: My Story* 9.58 (2010), that he did not have any coverage against an injury that will end his career. According to Bolt, he studied, together with his team, the possibility of taking out insurance against injury; however, they concluded that it was ridiculously expensive and that even if he suffered an injury, he would not have financial problems. This reflects the more relaxed attitude of a Caribbean as opposed to that of a European (as explained later). He also says that he was not very inclined to training.

In contrast, other athletes do assess the risk and decide to mitigate it. For example, Leonard Joseph Fournette (current running back for the Jacksonville Jaguars), while still in college, decided to purchase insurance against an injury that would damage his career. His parents purchased a \$ 10 million insurance in

the event that Fournette suffered a career-ending injury, and another \$ 10 million policy if any circumstance occurred that prevented him from reaching the NFL⁴⁰. The cost is estimated to be around \$ 8,000 per million of coverage.

In the case of certain leagues (NBA or NFL or NHL), there are requirements for clubs to acquire these coverage. For example, the NBA forces teams to do it for the top five players.

In the case of individual athletes (tennis or golf), they must pay for their own coverage⁴¹. Let's look at the case of ex-golf player Anthony Kim. In 2010, Kim was 25 years old and the great American hope of golf. He had achieved three wins on the PGA Tour and was in the top 10 in the world rankings. In addition, he had represented the United States in the famous Ryder Cup⁴².

After playing in the 2011 Augusta Masters, Kim injured his thumb and had surgery a month later. Later, he had tendonitis in his wrist and later, the rupture of the Achilles tendon in 2012. He has not played since then and one of the reasons, it is estimated, is because of the coverage he had. Kim had taken out \$ 10 million insurance for a career-ending injury. Kim highly weighed the risk of an eventual return and could be injured again, against the benefit of collecting the policy. The policy in question stated that if you made a swing, you lost the benefit⁴³.

Similarities between golf and risk management

There are many similarities in the game of golf and risk management. On the one hand, there is always a tradeoff between risk and return. When one faces a shot over the water or over a bunker or with a near out of bounds, one has two alternatives: a) go over the obstacle or b) use two shots to round and avoid the obstacle. To select any of the two alternatives we should consider certain factors:

for example, our ability, our experience, our nervousness, the importance of the tournament, whether it is at the beginning of the round or at the end. Going over the obstacle or taking a risky shot can leave us in a better situation, but it can also leave us in the obstacle and with some penalty.

Therefore, the decision will depend on our appetite for risk. Everyone has a different appetite for risk and we all decide accordingly. Some of us go for the shot of the year, which could lead us to the PGA Tour, others for the safe game. Being clear about our risk appetite will allow us to make those decisions better when our pulse is higher.

Another aspect that I highlight about golf is that the past does not guarantee success. I could have played that hole a thousand times or that course a thousand times with success. However, that does not mean that the next time I play I will do the same score. One must be totally aware and focused on each day because the conditions are different: more or less wind, more or less pressure, among others.

Risk management is similar. The past does not guarantee that one can always properly manage a risk. Conditions and environment are constantly changing. New risks continually emerge⁴⁴.

Assessments are conducted on various courses in the United States to determine the level of risk of certain risks^{45 46} (forgive the redundancy). They identify the risks, assign probabilities and establish mitigating controls. They also carry out a risk analysis of each of the holes on their course. Let's look at some of the examples:

- That a ball hits a player.

- A club hitting a player.
- That a player slips or trips due to an irregularity or slopes on the court.
- A player slipping on wet grass.
- An accident occurs with electric carts.
- Damage to third party property occurs.
- That the court suffers a loss due to fire, lack or excess of water.
- That there is a theft in the club's facilities.
- That the players physically or verbally attack each other.
- That the workers suffer an accident during maintenance.
- There is an electrical storm.

Once the risks have been identified, the appropriate controls are established to mitigate them.

The risk in medicine

One area of our life where we deal with risks is in medicine. Informed consent means that patients with rational communication skills must be provided with sufficient information about the risks, benefits, costs and alternatives associated with a treatment or procedure to be able to make a decision and express their permission. This process requires that the doctor or clinic provide the information to the patient before the treatment or procedure.

It should not be about a signed document only, but about the management of the client needs or patient expectations. Patients must have the greatest knowledge of the purpose, benefits, risks, alternatives, expected results in order to manage their expectations.

When speaking of uncertainty and expected objectives of a treatment or procedure, it is necessary that the patient can realistically estimate the probabilities and impact of each alternative in order to understand the situation and be able to make the best decision.

On the other hand, this informed consent transfers the responsibility for the decision from the doctor or professional only to both (doctor and patient). Informing a patient that the probability of success of a procedure is 100% certain when in fact it is not, could result in a problem.

For the physician, well-conducted informed consent (providing evidence, explaining in detail, taking the time necessary for the patient to understand the risks) can be an adequate tool for their defense in the event that the result of the

practice is adverse.

In the case of emergencies, the informed consent of the patient is assumed for the treatment. While in the case of minors, the consent corresponds to the parents or guardians.

On the other hand, doctors must also take action in the event that a patient refuses to carry out a process or treatment. It is essential that the professional documents his diagnosis and recommendation, that the patient refused to perform the procedure and assumed the risks of not performing it.

Similar practices happen when we go skydiving, bungee jumping or high-risk activities. Generally, they ask us to sign a document in which we accept the risks of what we do (and release the other from responsibility). On some occasions we sign writings like this: “I have read all this information (which we rarely read) related to this activity. I confirm that I clearly understand and accept the inherent risks (after the controls) that I face, including physical accidents and even death”.

Likewise, it should be noted that there is a difference between bungee jumping and a medical practice. In the case of bungee jumping, the one who performs the practice expresses that he assumes the risk of accidents during the practice. You must sign that you release the operator from any responsibility for any accident, including its negligence. This implicit acceptance of risk is somewhat different in medicine. In the case of the doctor, he will always be responsible for acting in the best interest of the patient. Conversely, if a person is struck by a baseball in an MLB game, it is understood that their choice and decision to be at the event is evidence of their consent to take the risk.

Risks that one needs to take

In his book *Think Big* (1996), Ben Carson details certain circumstances in which it is worth taking very high risks. Carson is an American pediatric neurosurgeon (now retired), writer, and politician. He was a Republican presidential candidate in 2016 and is the current Secretary of Housing and Urban Development and the first African American to join President Trump's cabinet. He is known for performing very high-risk operations, such as the separation of the German Siamese twins Patrick and Benjamin Binder in 1987, along with a team of 70 people, after a period of 22 hours, the separation of the Zambian baby boys Luka and José Banda, performed the first intrauterine procedure to relieve pressure on the brain in fetal hydrocephalus and did a hemispherectomy (involves removing half of the brain), among other things.

When asked about the high-risk procedures he performed, his response was: "But we must look at the alternative if we do nothing." In most of his interventions, patients likely died either way.

One of his most renowned cases was that of Dusty Phillips. Dusty lived in West Virginia and all the neurosurgeons there had agreed that he had a tumor in one of the hemispheres of his brain, which was growing very rapidly and would be terminal. After trying unsuccessfully with rays and chemotherapy, doctors advised his parents to do their best to make him "comfortable the last days of his life", stating that they saw no possibility.

Almost without hope, the parents took Dusty to John Hopkins Hospital to see Carson, who agreed with the previous diagnoses; however, he opened a minimal possibility: "There is a minimal chance for your son, it is not a high probability, but it would be worth trying"; "Do it" said the parents.

Carson spent several hours explaining to the parents the risks of the procedure, including: possibility of fatal bleeding during the operation, infection, permanent neurological impairment, paralysis, sensory changes, loss of vision, possibility of reaching a coma, etc.

The parents then asked: “What would happen if we do nothing?” His answer was what the doctors in West Virginia had told him; with which, the parents decided to perform the operation, which required the removal of part of the affected brain.

After the operation, the tumor did not return and Dusty’s life is normal. They took a big risk, but it ended up being worth it.

The risky society

The risky society is the way in which a modern society is organized around its response to risk. This term arises from several modern writers such as Ulrich Beck and Anthony Giddens. The concept was born in the eighties and gained popularity during the nineties as a result of modernist world trends, especially the growth of environmental concerns.

According to Giddens, a risky society is a “society that is increasingly concerned with the future and with security; with which, it generates the notion of risk”. On the other hand, Beck defines it as “a systematic way of dealing with the dangers and insecurities that modernization itself brings”⁴⁷.

So, modernization brings changes in technology, in the characteristics of society, in lifestyles, in the way of relating, in the power structure and in knowledge. These changes represent risks to society. Likewise, the concept is based on the new capacity that society has to reflect and examine itself.

One of the events that led to this concept was the Chernobyl disaster in 1986. Environmental risks have a considerable effect on society and are sometimes unmanageable.

Giddens and Beck comment that, previously, societies faced risks that, in general, depended on non-human factors, such as a natural disaster. However, modern societies are exposed to risks such as pollution, diseases (including the Coronavirus) or crimes, which are the result of human actions and the product of modernization.

Among these environmental disasters, created by human hand, we have the Chernobyl nuclear accident, the contamination in the Niger Delta, the oil spill in the Gulf of Mexico by British Petroleum, the disappearance of the Aral Sea between Kazakhstan and Uzbekistan, and the destruction of the Amazon. We can add the harmful effects of the coronavirus in 2020⁴⁸.

In some way, these environmental disasters undermine the trust of societies in industries, governments and experts. Some believe that the solutions (or action plans) should be for more regulations to be created in all related industries. Thus appear the concepts of sustainability and precaution that focus on preventive measures to reduce the level of risk (probabilities and impacts).

Both authors also agree that risks are often taken by different people than those who create them. Let's look at an example: wealthy individuals establish a factory that will pollute the water. Theoretically, it should be the factory owners themselves who should be impacted by the risks they create. However, there are two reasons why this will not be the case. On the one hand, there is the wealth effect and that, therefore, they can buy bottled water; on the other hand, there is the knowledge effect and greater knowledge of the risks. Or they can move to another place.

Risk appetite according to culture

Hofstede Insights is a company that conducts studies and analysis of different countries and different cultures in six different dimensions: distribution of power (and distance between the most powerful and least), individualism, masculinity, long-term orientation, indulgence and avoiding uncertainty.

This last dimension was the one that caught my attention given its relationship with risk management. According to the firm, this dimension has to do with the way in which society deals with the fact that the future cannot be known exactly. It has to do with whether we can control the future or whether we should just let it happen. According to the firm, this ambiguity brings anxiety and different cultures manage this anxiety in different ways. Some societies feel more threatened by the ambiguous or unknown conditions of the future and then create beliefs and institutions to avoid those risks.

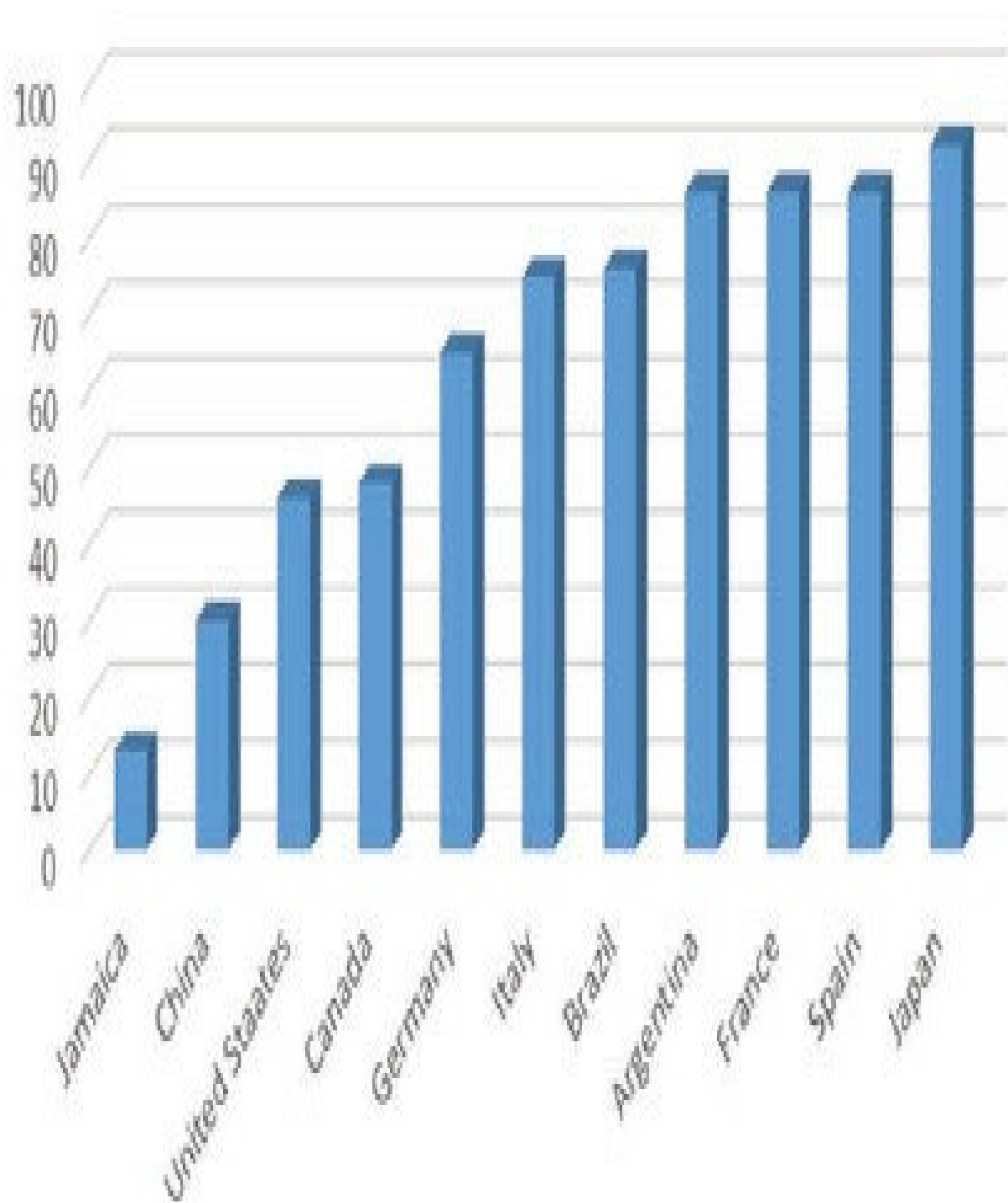
For this dimension, they use a scale that goes from 1 (accepts more uncertainty and more risk) to 100 (accepts less uncertainty and less risk). Let's see it with an example: for Japan, its score is 92. It is one of the countries that tries the most to avoid uncertainty. Their risk appetite is very low.

Surely, this has its origin in the fact that Japan is constantly threatened by natural disasters: earthquakes, tsunamis, typhoons or volcano eruptions. Due to the uncertainty of these circumstances, the country has learned to prepare to face these situations (it managed its risk with various action plans). These emergency, evacuation or precautionary plans have been transferred to almost every aspect of their society. For this reason, it is said that in Japan, everything one does is pre-established in advance and most of life is totally anticipated in advance and is repeated daily. This applies both for everyday life (schools, weddings,

funerals, social events) and for business life (extensive feasibility studies with countless details to start any project). In short, it is a society that avoids uncertainty (avoids risk) and therefore it is very difficult to make changes.

Figure 21. Table of countries according to its uncertainty acceptance

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Source: Hofstede Insights

Based on this Figure we can say that:

- Canada (48): accepts a lot of uncertainty, new ideas, technology, innovative products, tries different things, new practices. Canadians tolerate the ideas of others and favor freedom of expression. They are not so rule-oriented. They accept risk more.
- China (30): They are comfortable with ambiguity, they are moldable, adaptable and entrepreneurial.
- France (86): they don't like surprises; therefore, they require planning and structure. Therefore, they are good at developing new technologies and systems.
- United States (46): accept new ideas, innovative products, developing new technologies or different practices. They tolerate new ideas and encourage freedom of expression (even though they have been more fearful as a society since 9/11).
- Jamaica (13): very low preference for avoiding uncertainty or risk. They have a very relaxed attitude; they are based on practice and not rules. They don't believe in the need to create rules. Little punctuality and precision. They are not afraid of innovation or change.

- Argentina (86): like any territory that depended on Spaniards, it shows a need for rules and systems to order its life; however, it adheres little to those standards. As a consequence, it creates an abuse of rules and regulations given the lack of adherence to them.

As can be seen, each culture has its appetite and desire to take risks. Certain characteristics such as the weather, natural disasters or entrepreneurship generate more or less acceptance of uncertainty and risk.

37 <https://countryrisk.io/platform/rating-methodology/july-2020/>

38 <https://www.atptour.com/en/news/infosys-scoreboard-strategy-june-2016>

39 http://oa.upm.es/40563/1/JAVIER_NOYA_SALCES.pdf

40 <https://www.cbssports.com/college-football/news/leonard-fournettes-10m-policies-and-the-unregulated-world-of-player-protection/>

41 <https://www.insurancethoughtleadership.com/sports-injuries-who-pays-for-what/>

42 <https://www.marca.com/2015/10/01/golf/1443714365.html>

43 <https://www.golfdigest.com/story/report-anthony-kim-might-not-p>

44 <https://assets.kpmg/content/dam/kpmg/xx/pdf/2016/11/three-lessons-risk-management-golf.pdf>

45 https://www.rowanygolfclub.com/wp-content/uploads/sites/5460/2015/11/RISK-ASSESSMENT_FINAL.pdf

46 https://www.signaturerisk.com/assets/docs/Golf_Course_Risk_Management.pdf

47 https://en.wikipedia.org/wiki/Risk_society

48 <https://www.consumer.es/medio-ambiente/los-doce-peores-desastres-ecologicos-del-mundo.html>

Chapter VIII.

Risk management tools

Tegucigalpa-Toncontín International Airport or also known as Teniente Coronel Hernán Acosta Mejía Airport, is a civil and military airport located 3 miles from downtown Tegucigalpa, Honduras.

It was ranked by the History Channel's Most Extreme Airports program as the second most extreme airport in the world. The approach to the airport is considered one of the most difficult in the world for all planes, especially in adverse weather conditions, as it is surrounded by hills.

The vulnerabilities of this place, the causes, threats, risk and consequences are explained below.

Figure 22. Airport of Tegucigalpa - Toncontín (Honduras)



Source: <https://hondudiario.com/2020/05/31/aeropuerto-toncontin-se-prepara-para-reiniciar-operaciones/>

Vulnerabilities:

- The track is short (1.25 miles).
- It begins on a slope and ends in a valley.
- It is located in an urban area.
- The area is mountainous.
- To land you have to make a 90 degree turn.

Threats:

- Possible inexperience of the pilot.
- Tropical climate (stormy).

- Aircraft size (A320).
- Commercial flow (625,000 passengers in 2018).

Causes that could lead to an accident:

- Human error.
- Intentional human factor.
- Failure in communications system.
- External event.

Risk:

- Air accident

Consequences - Impacts:

- Human lives
- Plane crashed
- Loss of profit
- Compensation
- Lawsuits
- Loss of clients
- Forensic investigation
- Fines
- Distrust
- Business closure

In the following sections, I will explain each of these concepts and how to

identify the risks that could prevent the achievement of the objectives. Likewise, I will present certain concepts that serve for the correct risk management.

What are the tools for risk identification?

Root cause

Root cause analysis is a process by which we discover the origin or cause of problems in a given situation. This attempts to identify the best solution to the problem.

This analysis seeks to discover the cause of a problem or event, understand how to solve it, and seeks to prevent future problems in a more systematic way.

The important thing is to focus on correcting and remedying the causes, rather than correcting the symptoms (or blaming someone). To apply this analysis, you must understand the problem well and look for all the causes that could affect it. It should focus mainly on “how” or “why” something happened and not on “who” was responsible.

The 5 Why's

One of the most common techniques for conducting this root cause analysis is “why” -based question analysis. The strategy is to examine any problem and ask the question: “Why?” The answer to the first “why” will generate another “why”, the answer to the second “why” will ask you for another one and so on, hence the name of the “5 why” strategy. Step to detail an example:

- The pen does not write
- Why?
- Because the ink is dry.
- And why is the ink dry?
- Because the temperature is high.
- And why is the temperature high?
- Because it is left next to the stove.
- And why is it left next to the stove?
- Because there is no other place.
- And why is there no other place?
- Because it's the only place with a pen holder.

- Solution: place a pen-holder elsewhere.

This 5 Whys method is helpful in exposing the root causes of a problem. It is a management and analysis tool applicable to any area.

Risk map

The risk map is a risk management tool used to identify, evaluate, monitor and report the level of risk within an organization. Through it, the level of residual risk (after the use of controls) is presented for both financial risks and non-financial risks. It is a tool that is based on the expert judgment of a second line of defense. For each of the risks, a level is established: red, yellow or green, this level of risk is determined by the main aspects of the risk and action plans.

This tool can be tailored for the organization as a whole and / or for a particular line of business. To do this, it is advisable to establish different categories of risk: financial and non-financial. Likewise, different levels can be established: level 1 and level 2 (event a level 3).

Financial risks:

- Credit risk (individuals, companies, corporations, financial institutions, government).
- Market risk (prices, exchange rate, capital, liquidity).
- Strategy risk

Non-financial risks:

- Financial report and taxes.
- IT and information systems.
- Financial crime and fraud.
- Legal.
- Compliance with rules and regulations.
- Persons.
- Models.
- Business Continuity.

Each level 1 risk can have level 2 risk subcategories. For example, in people, the following sublevels could be established: capacity and well-being.

The tool is useful to present the risk level of the organization at all levels (especially to top management).

Each risk manager (or a general manager) must assess the level of risk of each one considering the existing controls (and their effectiveness). That is, it must be completed according to the level of residual risk.

Table 6. Risk evaluation

Risk rating	Definition
Green	The risk is within risk appetite and at an acceptable level.
Yellow	Closer monitoring is required. The risk is above the desired level an
Red	Actions are required. The risk is widely outside the acceptable level

Source: Own elaboration.

It is important to include the actions or action plans that are needed so that the risk level is framed in the risk appetite, detailing the actions, responsible persons, deliverables and dates of completion of those actions. Likewise, it is necessary to capture whether the level of risk increases or decreases, both due to the actions taken and other factors.

Table 7. Risk level 1

■

Risk level 1	Evaluation	Risk level 1	Evaluation
Credit risk		Financial reporting and taxes	
Market risk		IT and information systems	
Strategic risk		Financial crime risk and fraud	
		Legal	
		Law and regulation compliance	
		People	
		Models	
		Business continuity	

■

Source: Own elaboration.

Table 8. Level 2 for credit risk

■

Risk level 1	Risk level 2	Evaluatio
Credit risk	Sovereign risk	
	Financial institutions and large multinational companies	
	Corporate credit risk	
	Retail credit risk	

■

Source: Own elaboration.



Top and emerging risks

From the risk map, we can obtain the main top and emerging risks. The top risks are the most relevant risks that could deviate the most from our objectives. On the other hand, emerging risks are new risks, the impact of which is increasing. It is new in the sense that it did not exist previously and is due to new processes, technologies, social or organizational changes, normative or regulatory changes, or new discoveries.

It is emergent in the sense that it causes the risk to increase (exposure level) or its impacts to increase per se.

Early identification of emerging risks is key to anticipating their negative impacts.

According to a survey conducted by Gartner, the most important emerging risks in 2020 are⁴⁹:

- Changes in the strategic assumptions used by organizations.
- Increased risks associated with cyberattacks due to inadequate IT security due to increased connectivity.
- US Presidential election.

- Risk of the location of the information and its protection.
- Risks of economic stagnation as a result of the pandemic.
- Reputational risk or financial impact due to market perception of environmental, social or corporate governance actions in organizations.
- Risks that artificial intelligence leads to ethical, moral or compliance violations.
- Risks from natural disasters.
- Trade disputes between the United States and China.
- Demographic changes.

Key risk indicators (KRI)

Key Risk Indicators (KRI's) are metrics used to determine the potential for eventual risk and take timely action. KRI's are a kind of alarm that alerts you when something is not working as it should. These differ from KPI's (measure performance) since risk indicators focus on preventing what could happen. This means that they help to anticipate future problems and opportunities, based on

the observation of trends that may affect an organization.

The objective is that they provide useful information about the potential risks that can impact on the strategic objectives of an organization to anticipate.

KRI's can be established on the strategic objectives (or on the objectives of the processes or procedures). On the one hand, the KRI's on the organization's strategy seek to anticipate causes that could prevent the fulfillment of these strategic objectives and anticipate actions. On the KRI side, regarding process objectives, it seeks to identify those causes that could prevent the fulfillment of the objectives of those processes.

These are some of the principles on which the KRI's are based:

- They are needed on the most relevant issues (keys).
- They need to be measurable.
- That they are predictive.
- Easy to monitor.
- There must be a person responsible for the measurement of the KRI (and the actions behind the factor).

- Must have an ability to detect / predict threats / opportunities.
- Seeks to control the impact / results.
- Must have levels to determine concrete action plans.
- May be determined to predict probability or impact.

Let's see some examples:

- Level of complaints per 1,000 customers: measures the perception of customer satisfaction. See if it is in line with historical levels.
- Safety incidents in the workplace: measures the trend of safety and if the safety rules are met.
- Sales growth levels.
- Fines or regulatory sanctions.
- Market risk level of the organization: measures the potential loss that an

organization could have due to changes in market conditions.

- Level of liquidity: measures the level of liquidity that the organization maintains, monitoring the organization's ability to meet its obligations.
- Number of projects with delays. It seeks to identify the organization's ability to plan and execute projects.
- Availability of systems: monitoring of the level of availability of all systems.
- Percentage of employees who were trained in different items.
- Number of payments made incorrectly.

Now let's see what it would be like to build a KRI for a financial institution for your top risk (credit).

1) The institution has a strategic objective which is to obtain certain results.

2) It also seeks to minimize its exposure to defaults by its clients.

3) Identify that a key risk could be associated with a geographic concentration of your portfolio.

4) Establish a KRI as a maximum percentage of the portfolio in a certain location.

5) Establish a trigger on which alerts would be activated (when approaching a certain concentration level in that location).

6) Once the level is reached, the alarm is generated.

7) Appropriate measures are taken, rejecting new credits in that location.

Figure 23. Process for setting a KRI

Establishment of the strategic objective (profitability)



Determination to minimize losses due to defaults.



Risk - Seek geographic diversification.



KRI - Percentage of portfolio in a certain geographic area.



Establish a limit.



Generation of alarm when approaching the limit.
Monitoring



Risk mitigation. Credit rejection.

Source: Own elaboration.

Documentation of policies, processes and procedures

As part of risk management, it is important to have clear and documented policies, processes and procedures. These will create the required standards, the necessary steps, and help employees know how to operate and mitigate identified risks⁵⁰.

- Key processes, activities and controls must be identified to establish the processes.
- Personnel should be involved in preparing the processes and they should be updated regularly.
- The standards must be documented and accessible at all times and in any place.
- Convey the importance of following the processes to mitigate risks and protect the business.
- It is necessary to establish adequate standards for the most relevant processes of the organization, such as sales, customer service, management of staff well-being, adequate health and safety conditions, proper use of resources, purchases and acquisitions, investments, recruitment, among others.

Lessons learned: Findings

“I’ve missed more than 9,000 shots in my career. I’ve lost almost 300 games. Twenty-six times I’ve been trusted to take the game-winning shot and missed. I’ve failed over and over and over again in my life. And that is why I succeed”.

Michael Jordan

According to the IDB (Inter-American Development Bank), the lessons learned are the knowledge acquired about a process, an activity or one or more experiences. This knowledge is reached through reflection and critical analysis of the factors that may have affected it positively or negatively⁵¹.

Both in personal life and in organizational life, maintaining this analysis of past experiences in a methodical way can give a competitive advantage over the rest. In an organization, it will allow you to take advantage of these learnings to improve your performance and differentiate yourself from the rest (avoiding repeating mistakes and repeating actions that were appropriate). Learning from the past will help us improve our decision-making, better manage uncertainty and improve our risk management.

The lessons learned capture evidence and identify cause-effect relationships, limited to a specific context. Analyzing the past, it allows us to draw practical and useful recommendations for the application or replication of the new knowledge in other contexts, and in the design and / or execution of other projects or initiatives that aim to achieve similar results.

Using knowledge and previous experience is an important source for the improvement of our decisions. It is necessary to incorporate into our management model a process to identify those lessons from our past management, which allows us to improve performance.

The documentation of lessons learned contributes to the incorporation of new knowledge, its dissemination, application and re-use throughout the organization.

A lesson learned is a “finding” from the past and expresses the relationship between the result of a process and / or project, and the critical factors, conditions or causes that facilitated and / or hindered them.

It is recommended that these lessons learned be kept as part of our memory or organizational memory and therefore, they must be documented and written down. It is the only way to improve our management and keep it in the collective memory. In general, it is recommended to describe the finding in the past tense, although the present can also be used in those cases in which the effects and / or conditions continue to be valid.

It is recommended to write the sentences stating a lesson in three phases:

1. Description of the conditions, causes or factors.
2. Description of an end situation, impact, result, or consequence.

3. Description of the corrective action.

The lessons learned serve to improve our risk management. Learning from our past actions allows us to identify those causes that made it difficult for us to achieve goals and establish the appropriate actions in the future so as not to repeat them. This exercise of analyzing the past allows us to make concrete recommendations (actions) for our improvement.

The recommendations are concrete and actionable proposals, based on the consideration of the lesson learned that has been described and through which, in similar circumstances, it would be possible to solve a problem, mitigate risks, repeat or reinforce successes. The recommendations should include an action verb, and specify, as far as possible, the actors of the action, a time frame, the financial or technical means or resources that would allow the action to be carried out.

Learn from mistakes: risk awareness plan

Thomas Edison said, “I didn’t fail, I only discovered 999 ways how not to make a light bulb”. His failures and mistakes led him to finally have an electric light bulb.

A Chinese philosopher once said that: “Learning from our mistakes is necessary; but learning from the mistakes of others is wise. And that fools never learn”.

Therefore, it is necessary for organizations to establish processes that allow them to learn from their mistakes. Similarly, the same process should allow organizations to learn from the mistakes and best practices of other organizations.

There are always opportunities to learn. That we have not had a crisis or that we have not been affected by an event does not mean that the organization cannot benefit from a situation.

Within risk management, it is appropriate to create a risk awareness program that presents lessons learned, errors and good management practices. In these reviews, case studies, the sequence of events, the causes of the problems and the impacts they had should be reviewed. The focus of the exercise is to identify how the organization would handle a similar event.

Another good practice is to conduct visits and discussions with other similar

organizations, obtaining the perspectives and practices from others.

Within the program, it must be ensured that the culture of risk management is well disseminated throughout the organization. For this, regular training, awareness raising and talks are required (especially with new members).

Some lessons:

- Know risk management: the entire organization must know risk management, especially the shareholders, Board and management.
- Establish adequate checks and balances: just as it is not advisable to have a high exposure or concentration on a risk factor or customer, it is not advisable to allow one employee or group of employees to have so much power within the organization (or authority) to take and exposing the organization to very high risk. This applies to a trader, a person who can make large purchases, investments or sales with financing. Establishing checks and balances (segregation of duties) is generally thought to have a cost to the organization; however, the cost will be higher if something happens. And these concepts are necessary conditions for a sustainable business. Remember Nick Leeson, who was an English derivatives trader notorious for bankrupting Barings Bank, the United Kingdom's oldest merchant bank. He was a rogue trader who made fraudulent, unauthorized, and speculative moves, and his actions led directly to the 1995 collapse of the bank, for which he was sentenced to prison. Nobody could understand or check his trades.
- Establish limits: identify the exposures, risk factors and risks that are taken, and determine limits that restrict the risks in all the identified categories.

- Establish the correct incentives: it is necessary to include metrics and risk management in all management result reports. It is key that management has timely knowledge of the risks faced by the organization and can take action when necessary. Measuring only results, profit or sales growth is not a good practice.

- Rewarding employees for adequate performance: Organizations need to review how they compensate their staff and how they set incentives. These must be adequate to ensure that employees have the expected behavior and performance. They need to be aligned in favor of risk management. Rewarding an employee only for their sales, regardless of risk, is surely a way of exposing the organization to greater risks and greater risk appetite than desired. As a university professor said: “If you go to a company and see smart people doing stupid things, 9 times out of 10 it’s because they get paid to do it.” Establishing an inappropriate incentive structure is a root cause of problems in many organizations.

- Balancing yin and yang: a good part of risk management is based on an independent area that identifies, measures, reports, establishes limits and rules. On the one hand, the yin, are the hard skills (processes, systems, standards, methodologies, reports, etc.). On the other hand, soft skills (yang) make people, culture, values and incentives. These include management’s commitment to risk management, awareness of the risk culture and principles, open communication on these issues, training, etc.

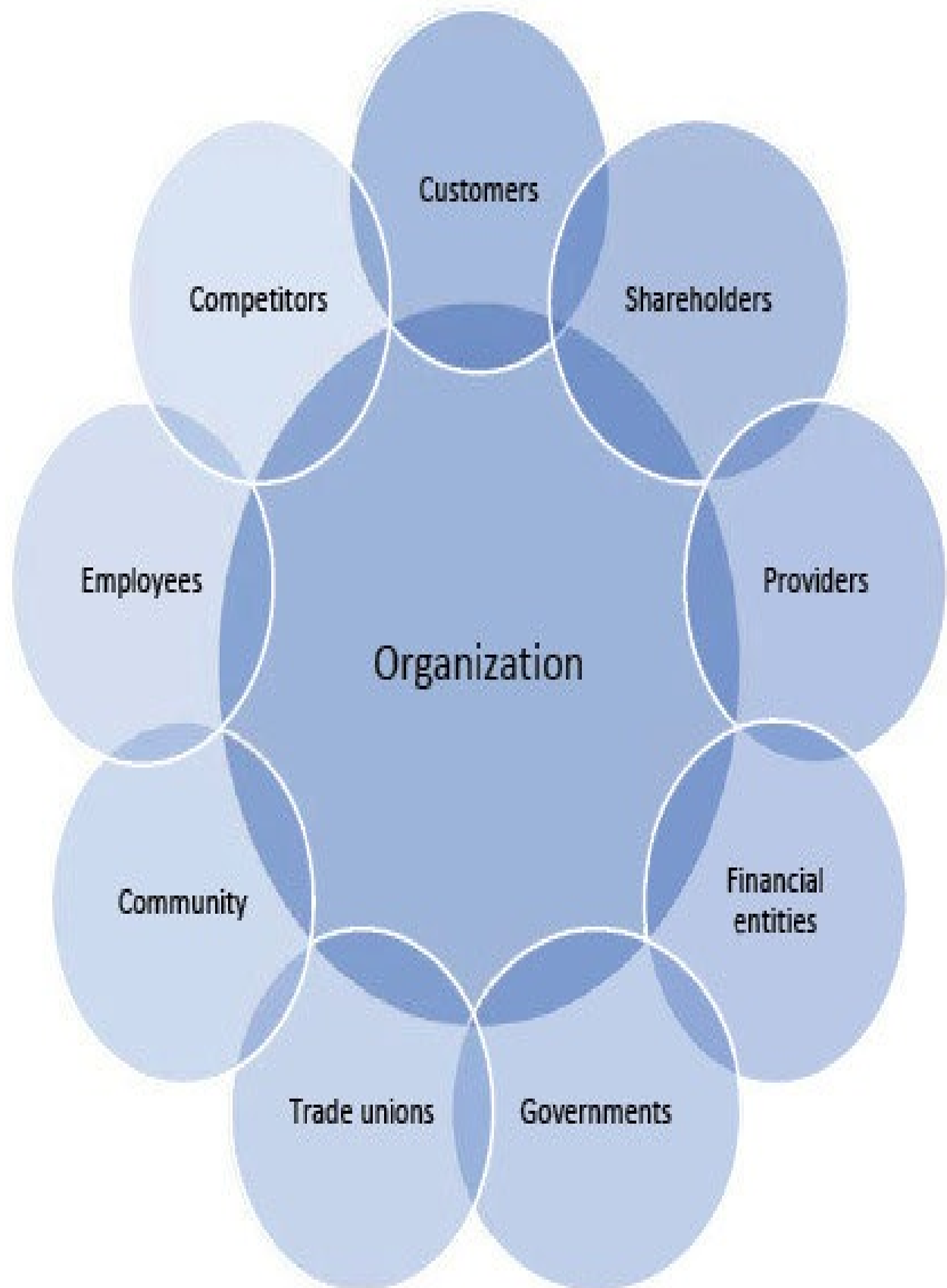
As we have said, there is no reward without taking risks. However, risks should not be taken randomly or negligently.

Stakeholder risk management

For proper risk management, it is necessary to identify the stakeholders in the organization's management framework. The concept of stakeholders is included in the latest revision of ISO 9 001 and it is important to review its definition, according to ISO 9 000: "Stakeholder is a person or organization that can affect, be affected or perceived as affected by a decision or activity of our organization".

The following Figure shows examples of stakeholders for an organization⁵²:

Figure 24. Stakeholders



Source: Own elaboration.

Each of these groups or stakeholders have different interests, needs, and requirements. Below are the requirements of certain stakeholders⁵³:

Table 9. Stakeholder requirements

STAKEHOLDER	REQUIREMENT
Clients	Quality products Customer service Delivery on time
Government	Compliance with laws and regulations Taxes
Employees	Safety environment Salary
Suppliers	Payment for the product or service Loyalty
Shareholders	Profitability Risks within the risk appetite
Financial institutions	Loan repayment Cross selling (other products)
Society and communities	Contributions to society Low environmental impact

Source: Own elaboration.

Stakeholder management contains the following stages:

a) Identify interested parties: the organization must determine which people or organizations have an interest in its decisions or activities.

b) Determine relevant or pertinent interested parties: the organization shall determine which interested parties are relevant. These are the people or organizations of greatest importance to the organization and who have the greatest influence (power) over it.

c) Determine the needs / requirements and expectations of relevant interested parties: the organization shall determine the requirements, needs and expectations of each relevant interested party; that is, what do they hope to achieve from the organization or what they want to see done or happen.

d) Determine the risks and opportunities: once the requirements of the interested parties have been identified, the risks and opportunities associated with the failure to comply with those requirements must be recognized to satisfy those expectations.

Let's take a restaurant as an example: it establishes the estate and county as an interested party; identifies as a need the requirement to comply with the published regulations that regulate the noise that the place makes. In addition, it

must satisfy the needs of the surrounding neighbors. What is the risk if you do not comply with these regulations? What would happen if a neighbor accuses the restaurant for noise or odors? Then, the dissatisfaction of the two interested parties (governments or community) represent the risk derived from their activities.

For this reason, when making decisions, the organization must take into account the way in which its activities affect stakeholders.

Risk management is not just a decision about how much risk the organization takes; it is also about determining how much risk some of your stakeholders (e.g. suppliers or employees) may take. Organizations must understand and know that certain stakeholders are risk takers. Thus, risk managers must set the level of risk that is optimal for all stakeholders. They not only have to take into account how each party's risk affects the organization's total exposure, but they must also assess the best way to manage and distribute those risks.

For example, if an employee has ties to unhealthy groups or performs dangerous activities in his spare time, it can be a risk for the organization. These risks can be: the death of the employee, kidnapping, accident, and arrest, among others. The impacts can be a bad reputation for the organization or lack of an indispensable resource. Another example would be the case of a supplier that provides most of the raw material used by the organization, but the supplier depends exclusively on an elderly person who does not have other personnel who can succeed him. The risk is that if something happens to that person, the supply of that raw material is cut off.

The organization must identify the risks that create a potential loss, but also the effects that such risks could have on other interested parties.

In other cases, certain actions will transfer risks, costs, and benefits among certain stakeholders and decisions will be shared differently among them. For example, when an organization avoids certain risks, it may be depriving certain people of benefits to which they would otherwise have access. An organization that reduces the risk of injury to its employees in its facilities by introducing safety improvements (signage, anti-slip floors, railings, etc.) offers a benefit to its workers (this comes at a cost to the owners). If instead of making the improvements, you purchase an insurance policy to transfer that risk to a third party, you transfer the risk to the insurance company (at a cost to the owners). In these two actions, prevention was changed (safety changed), ex ante for ex post compensation in the event of an accident.

It is clear that risk management systems require resources; however, they generate value and serve for society and the different stakeholders to increase their trust in the organization. This will make the organization more sustainable.

On certain occasions, it is the government (in any of its different levels) that regulates or requires risk management in organizations (permits, authorizations, insurance requirements, quality, controls, etc.).

Three lines of defense

This model was developed from the need to coordinate the different existing control tasks. It was created by the European Confederation of Internal Audit Institutes (ECIIA). The three lines of defense model provides a simple and effective way to improve communications on risk management and control through the clarification of essential roles and functions.

This model classifies the functional and responsibility areas of the organization into three lines of defense. These are represented in a series of activity levels, which guarantee effective risk management and supervision.

To effectively assume its responsibilities, the highest governing body of the organization must establish three clearly differentiated lines of defense, establishing the responsibilities in terms of risk management and control. Obviously, for smaller organizations it will not always be applicable.

a) First Line of Defense

The first line of defense falls on the business areas that manage the main activities and own the risks. These areas are also responsible for the implementation of corrective actions to address control deficiencies (business areas, financial areas).

b) Second Line of Defense

In the second line are different functions, depending on the type of organization and the specific needs. The most common functions are: risk management (performs monitoring and support in the identification and management of risks), compliance management (monitors compliance risks with external and internal regulations), legal (verifies the risk of compliance with laws and regulations), among others.

c) Third Line of Defense

In the third line is the audit with a risk-based approach, which provides a comprehensive assurance based on the highest level of independence and objectivity within the organization.

49 <https://emtemp.gcom.cloud/ngw/globalassets/en/risk-audit/documents/top-ten-emerging-risks.pdf>

50 <https://www.business.gov.au/risk-management/risk-assessment-and-planning/policies-procedures-and-processes>

51 <https://blogs.iadb.org/conocimiento-abierto/es/como-documentar-lecciones-aprendidas/>

52 <https://spcgroup.com.mx/gestion-de-riesgos-parte-2-partes-interesadas/>

53 <https://sgiseo.wordpress.com/politicas-del-sgi/>

Chapter IX:
Different types of risk according to its type

“When someone wants something, they must know that they take risks and that is why life is worth it.”

Paulo Coelho

The main risk classifications are presented below.

What is credit risk?

Credit risk is defined as the possibility of suffering losses due to the default of our borrower⁵⁴. Default may be caused by declining creditworthiness or liquidity of the borrower. However, it could also be due to a simple lack of willingness to pay.

Often times, credit risk is the risk that financial institutions take by lending money and they do so through a legal binding document (contract). However, there are many other occasions when credit risk is involved and not necessarily with a contract in between.

For example, a taxi driver gives us credit by moving us to our destination and agreeing to be paid at the end of the trip. If we get off without paying, the taxi driver's credit analysis will not have been correct and he will lose money. When we pay a blacksmith for a job in advance we assume credit risk, when we pay for ten trips on a charter service we assume credit risk, when we pay for a plane ticket we take credit risk, when we deposit money in the bank, we accept risk from the bank. With this, what I want to show is that it is extremely common to give and receive credit in our day to day. Although, in general, in these cases, we do not carry out a credit analysis of the counterpart to know their capacity, will and character. In some cases, we may believe that it will not fail. However, it will not always be so.

Companies also incur in credit risk every time they sell their goods or services with a later payment and do not necessarily have the appropriate mechanisms to measure, manage and mitigate this risk. Some companies outsource this credit risk management.

On the side of financial institutions, they are usually the most advanced in managing this risk, as it is their main activity. Generally, credits are documented and based on contracts, which allow to improve the probability and amount of recovery in case of a default. In many cases, incorporate guarantees that also mitigate your credit risk (home, car, guarantees, others). Let's see some of its main risk segments:

- Credit risk to individuals

An institution lends money to a natural person (credit card, personal loan, mortgage loan, pledge loan, loan guaranteed by a title).

- Credit risk to companies

An institution lends money to a company for its business (advance or loan, overdraft). It could be a large, medium or small company.

- Credit risk to financial institutions

They make loans or deposits in other financial entities.

- Credit risk to projects

They make loans for a project and the repayment of the same will come from the flows generated by the project.

- Credit risk to government and other public sector entities

They make loans or acquire securities of the sovereign public sector or non-sovereign public institutions (provincial, municipal, companies or public banks).

- Credit risk management in financial institutions

They make loans to other financial institutions.

Financial entities carry out credit risk analysis for each of their clients. Although in the case of individuals, due to their large volume and smaller amount to lend, they tend to establish certain criteria for approval, monitoring and collection to improve their efficiency.

Although loans are granted based on the quality of the borrower (ability to pay and character), the guarantees included mitigate credit risk (and improve the eventual recovery). On the other hand, financial entities demand higher interest rates, the riskier the counterparty and the longer the term.

The greatest credit risk is the risk of default of the debtor (default). This type of risk occurs when a debtor defaults on his contract obligations on a loan. Additionally, financial institutions have credit risk every time the debtor's repayment capacity deteriorates (increasing the probability of default),

generating a reduction in their credit score.

Financial institutions usually establish covenants in their loans. A covenant is a condition in a commercial loan or bond issue that requires the borrower to fulfill certain conditions or which forbids the borrower from undertaking certain actions, or which possibly restricts certain activities to circumstances when other conditions are met. Typically, violation of a covenant may result in a default on the loan being declared, penalties being applied, or the loan being called. Covenants may also be waived, either temporarily or permanently, usually at the sole discretion of the lender.

The credit risk is calculated through the expected loss (PE) and as follows:

$$\text{Expected credit loss} = \text{PD} * \text{EAD} * \text{LGD}$$

PD: Probability of default.

EAD: Exposure at default.

LGD: Loss in case of default (1 – recovery).

Let's look at the following example: A \$ 300,000 loan will be made to a person with a mortgage at 5% interest for 30 years. The risk area assigns it a risk level of 2 (on a scale of 1 to 8), which determines a probability of default of 2% at 30 years and estimates a recovery, in case of default, of 60%. Therefore, the expected loss would be:

$$PE = 0.02 \times \$300,000 \times 0.4 = \$2,400$$

Consumer financing (financing to individuals)

Financial institutions allocate a good part of their resources to finance individuals. Among the various varieties they have to finance, the following stand out: credit card loans (shorter term), loans for the acquisition of automobiles or similar (with the guarantee of the property), individual or personal loans, mortgage loans (with the guarantee of housing) and loans guaranteed with titles or certificates of deposit.

In general, institutions assess risk according to certain parameters:

- **Debt service ratio**: total debts / equity. It measures the level of indebtedness of the debtor.
- **Interest / income payment ratio**: measures the ability of the debtor to pay their debts. On the other hand, the ratio of total debt: total debts / income is measured.
- If the loan is guaranteed or not with an asset (that has no restrictions).
- In the case of **guaranteed loans** (pledge or mortgage), the **Loan to Value** is determined. Loan to Value (LTV) is a mortgage information ratio entered that measures the percentage of debt over the value of the property (value of the property according to the last appraisal carried out). Typically, the ratio is a maximum of 80%, ensuring that the collateral is higher than the debt at all times (therefore, a revaluation of the asset is necessary).

- In the case of loans against securities, the credit quality and liquidity of the securities are considered, and a discount is made on them (haircut). The securities are valued in time, to ensure adequate coverage.
- A harvest analysis is carried out consisting in visualizing the behavior of a certain number of credits originated in the same period and observing their evolution over time. They try to determine variations in their rating (either a deterioration or an improvement), and thus try to determine how were the circumstances in which the portfolio was originated, especially the credit conditions with which they were granted.
- Use of credit bureaus to verify the situation of the debtor in the market.
- Scoring models are created to predict the behavior of debtors over time. For efficiency, they are not analyzed individually. It seeks to estimate the probability that they will default in the future.
- Criteria and metrics are used for approval and monitoring.

Microcredit portfolio (small business financing)

Financial institutions make loans for working capital, liquidity needs for the accounts receivable, purchase of materials, payment of salary or investments. Likewise, it can finance the acquisition of a new plant, remodeling or change to another location.

Commercial portfolio (financing to large companies)

These companies have access to multiple sources of financing, including banks, capital markets (issuance of securities) and suppliers. This credit risk to large companies has a low probability (of default), but high impact.

At the time of making a loan, the credit quality of the counterparty must be determined through its payment capacity, based on the cash flow projection.

In these cases, financial analysis and expert judgment are used for higher exposures or risks. The profitability of the company is compared against its level of debt. The debt coverage service ratio (DSCR) is used, which compares the earnings before interest, taxes and amortizations (ebitda) against the annual commitments for the debt payment. It is customary to have a DSCR greater than 1.25, ensuring that the generation and profit capacity of the company is sufficient to cover the payment of obligations.

On the other hand, the assets and liabilities of the company are analyzed. The solvency or current ratio is calculated as the ratio between liquid assets and liquid liabilities (ensuring that liquid assets are sufficient, and higher, for the payment of current liabilities). When a loan is granted against a guarantee, the loan vs. the guarantee (Loan to value ratio, LTV) is observed.

Project Finance

To evaluate an investment project in which the repayment will come from the

flows generated by the project (and not from the balance sheet of a company), you must consider the aspects that make the project more or less strong (less or more risky).

Below is a methodology to analyze and classify projects (based on four main categories):

- **Structure and information:** quality of owners and sponsors, financial capacity of these, commitment to the project, characteristics of the good or service, condition of the vehicle created, ownership and control, legal framework, risk allocation, permits and licenses, information.
- **Risk of completing the project:** construction contracts, contractor experience, contractor financial strength, executing teams, cost structure, final design, inclusion of contingencies, contingency and escalation, guarantees, construction times, materials and supplies required, project safety, insurance.
- **Operation and maintenance risk:** quality of the operator, work equipment, operation and maintenance costs, reserves, supply and material risks, necessary infrastructure, income risk due to the weakness of the buyer of the good or service, penalties for not completing the project, exposure to financial risks, demand risk, DSCR (debt service coverage ratio), income vs costs.
- **Macro or environmental risk:** country risk, legal regime, contract institutional framework, industry risk, cross defaults, special characteristics (dividends, cash sweep, derivatives, and contingent obligations).

What is market risk?

Market risk is the potential loss due to changes in risk factors that affect the price or valuation (of assets, liabilities or derivatives) or the expected results. It covers risks in: investments (sovereign bonds, sub sovereign bonds, private securities, and stocks), exposures with interest rate risk, exchange rate (FX) or commodity prices.

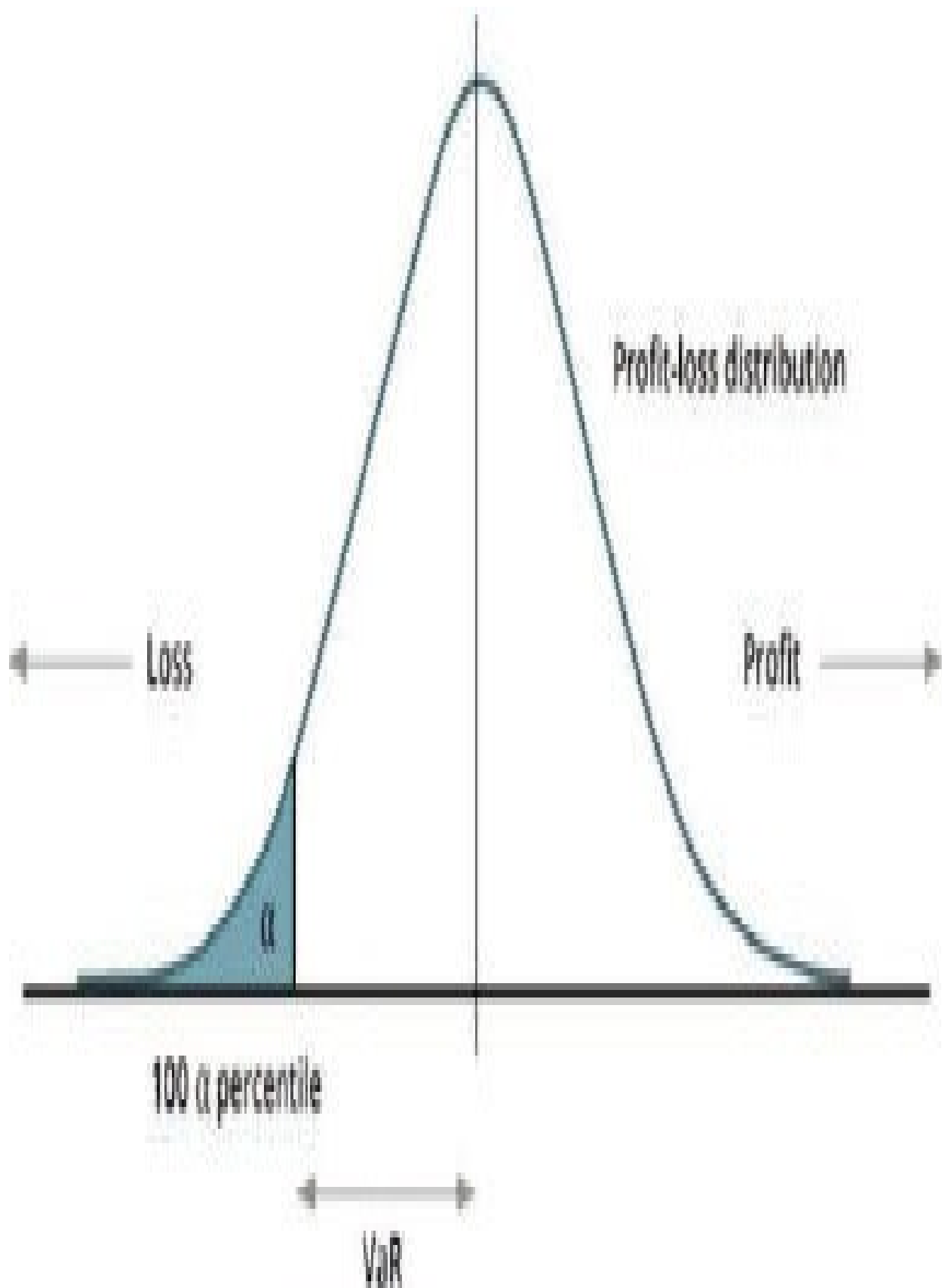
Everyone, in some way, has exposure to market risk. The most common case is the case of our investments. However, we also assume market risk when we assume a variable rate debt (and its rate rises, increasing our interest payments), when we assume a debt in foreign currency (and it appreciates), when we travel abroad and we incur expenses in a currency other than ours, when a company sells its production abroad or when a company exports a commodity. In all these cases, the change in market conditions will affect the result. Proper market risk management ensures that the risks we will take will be within our risk appetite, that we will be rewarded for the risk we will take and allows us to make reasoned decisions. Managing price or market risk allows us to better preserve capital and avoid unexpected losses.

Likewise, it is necessary to establish, define and control different limits to exposures that generate market risks, among them: risk limits, losses, duration, counterparty, country and instruments.

Let's see an example of the most common tool used to measure and manage market risk: Value at Risk (VaR). VaR represents the estimate of the potential loss of a portfolio over a time horizon at an established confidence level. It is a technique based on statistical theory.

VaR defines risk as the possible loss of value (with a confidence level of 99%) of an asset (or portfolio) in a fixed time horizon (for example: 1 day), assuming normal market conditions.

Figure 25. VaR



Source: BME Clearing. VaR. Available in: <https://www.bmeclearing.es/ing/Risk-Management/IM-Calculation-model-HVAR>

Let's use a numerical example.

An agricultural producer has a wheat crop valued at \$ 10MM and wants to know its market risk (VaR) with 99% confidence in a horizon of 10 days. The standard deviation (σ) of the price of wheat is 2%. The Z of a normal distribution for 99% confidence is 2.33. Therefore the VaR is calculated like this

$$\text{VaR} = \text{Market value of the position} * 2.33 * \sigma * \sqrt{\text{time}}$$

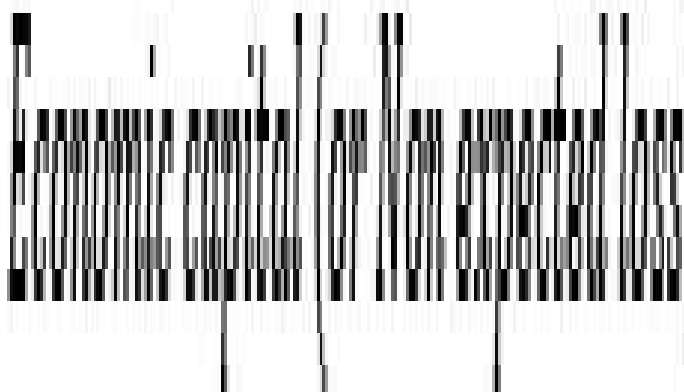
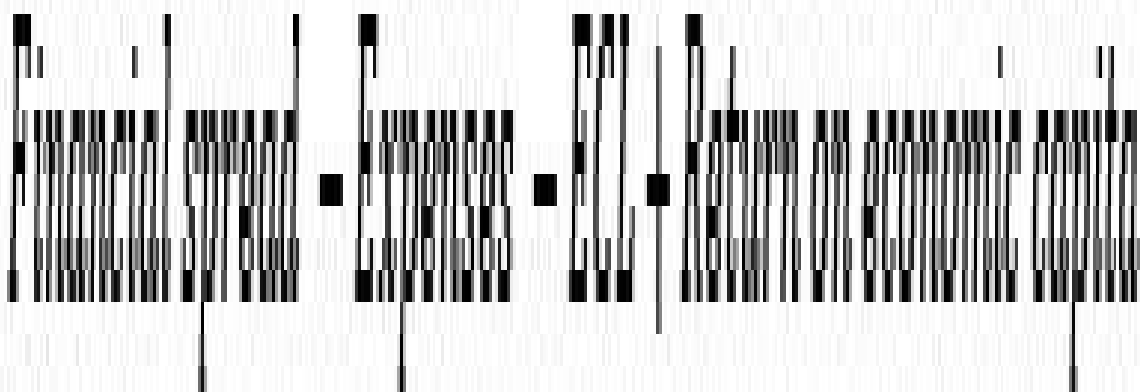
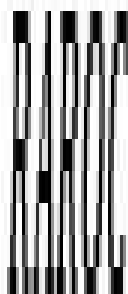
$$\text{VaR} = \$10,000,000 * 2.33 * 2\% * \sqrt{10} = \$1,473,621$$

This means that 1 day out of every 100 days, under normal market conditions, the loss in a ten-day period can be equal or greater than \$ 1,473,621; or what is the same, that in 99 out of every 100 days, the loss in those ten days will not be greater than \$ 1,473,621. This will give an assessment to the producer to know if it is within their risk appetite or not; in which case you could reduce your risk by selling the production (or part) or using derivative financial instruments to mitigate the risk at the falling price of wheat.

The same could be done for a company that has exposure, through an asset or liability (debt) position to any market factor.

On the other hand, other tools for identifying market risks are detailed here:

- Stress tests: it is the analysis to estimate the loss levels of a portfolio in a stressful situation.
- Scenarios: analysis of the behavior of a portfolio when applying hypothetical or historical changes in market risk factors.
- Conditional Var: C-VaR measures the expected loss once the VaR is exceeded. Provides information on the magnitude of losses when they exceed the VaR.
- RAROC (risk-adjusted return on capital): it is one of the main metrics in risk-capital models. It measures the expected profit as a percentage of economic capital:



ECL: Expected Credit Losses

The RAROC is a relative tool and, therefore, allows comparison between different alternatives or is used to decide if a certain objective return is achieved.

I do not intend to complicate the presentation of the formula, but simply to present that the RAROC is a tool that incorporates expected profitability and economic capital (it incorporates the capital required to absorb losses up to a pre-established probability).

To establish the price of a loan, financial institutions establish that the RAROC of the intervention (or it can be for the client, including other deals with it) is higher than the cost of capital. This will generate economic value for the institution.

What is liquidity risk?

The liquidity risk represents the risk that a person or organization will not be able to pay its commitments (or liquidity needs) in the time and manner required according to established conditions.

In the case of an individual, this risk is that of not being able to meet his financial obligations (payments, debts or liquidity needs). In general, we all manage liquidity by keeping enough money for our needs, daily expenses, contingencies and unforeseen events. Likewise, we must plan for when we must make extraordinary expenses (travel, investments and acquisition of goods such as a house or a car).

In general, three concepts of liquidity risk can be distinguished:

- **Liquidity of an asset** (stock or bond): refers to the ease with which an investment can be converted into cash or sold in the market.
- **Market liquidity**: refers to the general liquidity of the market or how assets are traded in it.
- **Liquidity of an organization**: refers to the ability to cover obligations or fund increases in assets without incurring losses.

Focusing on this last meaning, liquidity risk is a low probability event (low occurrence); however, if it happens, its impact will be high or it would have important consequences.

Every organization (small, medium or large) must take care of its liquidity and guarantee to fulfill its obligations and its business. In a financial institution, it is even more crucial, since it depends on the confidence of its depositors (or lenders), in its solvency and liquidity. A simple rumor can make people withdraw their deposits and stop funding the institution, creating liquidity problems.

Organizations maintain cash and liquidity to be able to carry out their usual business transactions: pay salaries, pay supplies and inventories, other daily business expenses, cover the differences between income and expenses of funds, cover emergency needs or make investments (loans, financial markets or other assets).

Like any other risk, liquidity risk management requires a balance. It is the balance between higher liquidity (higher security, lower probability of facing liquidity problems, default) and lower liquidity (higher profitability and lower cost associated with liquidity). Thus, the appropriate balance between risk and profitability must be sought, according to the situation of the organization, market and risk appetite.

All assets and liabilities of an organization have a relationship between liquidity and performance. Shorter term assets (cash, deposits) have a higher degree of liquidity, but lower returns. Longer term assets (investments in companies or real estate) will have higher returns, but less liquidity.

On the liability side, a short-term liability will have a lower cost; but, you will

have a risk when you have to renew it (refinancing risk if the market conditions or for the organization have changed). Longer-term liabilities will ensure liquidity for a longer time, but will have a higher cost.

The events that could affect the liquidity of an organization are of two types: a) specific to the organization (third parties lose confidence in it) or b) systematic (affecting the market, in general, and liquidity is strongly reduced).

A good liquidity management framework requires several interconnected elements:

- Good corporate governance: assignment of clear roles and responsibilities. Establishment of policies with liquidity guidelines. Command lines.
- Define a risk appetite and tolerance: establish the risk appetite you want to take. Establishment of different limits and the necessary liquidity.
- Have risk measurement and monitoring tools: establish models and methodologies, scenarios and assumptions. Metrics to measure and manage liquidity risk.
- Build stress scenarios: simulate a scenario on the liquidity needs for the organization in a given time horizon. Define the impacts and plan actions against them.
- Management of collateral, guarantees or contingents: identify those situations

that could determine the need to deliver liquidity.

- Diversification of funding: perform an efficient diversification of funding through counterparties, types of lines, currencies, geographies, maturities. Identify alternate sources of funding.
- Have a liquidity contingency plan: have a plan to manage liquidity if unexpected situations occur. Design the plan to have triggers and concrete actions to manage liquidity.
- Have good quality and liquid assets: maintain good quality and liquid assets without legal or regulatory restrictions that can be used in times of need.
- Communication and reporting: have transparent, efficient and timely mechanisms for communicating liquidity to the necessary entities and to all interested parties.

What is operational risk?

Some time ago, operational risk was said to be “the risk that was not credit or market risk”. Currently, it is the possibility of the occurrence of financial losses due to deficiencies or failures in internal processes, in information technology, in people or due to the occurrence of adverse external events.

The most common operational risks have to do with people's errors or failures (when carrying out their tasks or making decisions), processes failures (it was not well established what the process or series of activities was like), failures in technology (fall of a system, connection, loss of information) and external events (pandemics, earthquakes, theft, floods, etc.). In short, it has to do with:

Figure 26. Operational risk



People



Processes



Systems or IT



External events

Source: Own elaboration.⁵⁵

Every time we do something, we run an operational risk. Some examples: we drop a plate, a tire gets punctured, our internet connection drops, our wallet is stolen, or a hurricane is coming.

In organizations, operational risk is also present and affects all business activities; therefore, it must be managed holistically. The implementation of an adequate operational risk management framework will minimize losses, increase profits and improve institutional efficiency. Therefore, operational risk management must be a permanent activity.

The following Table shows some examples of operational risk events:

Table 10. Main operational risk events in 2017⁵⁶

■

ORGANIZATION	AMOUNT	DESCRIPTION
Bndes	Us\$2,52 bn	Illegal activities between a bank subsidiary and
Shoko chukin bank	Us\$2,39 bn	Bank employees manipulated the credit approval
Woodbridge group	Us\$1,22 bn	Creation of a ponzi scheme in which they obtained
Societe generale	Us\$1,18 bn	The bank obtained transactions based on fraudulent

■

Source: Risk.net

Other events also stand out: errors in valuation models, unauthorized transactions, conflicts of interest, lack of transparency in operations, registry errors, process failures, insecurity in the workplace, bad business practices, natural disasters, infrastructure and technology failures.

Among the most common tools for operational risk management we find:

- Collection of events and creation of an event database: collection of events, losses and incidents.
- Operational risk indicators: KRI indicators that preventively monitor possible operational risks (for example: incidents of fraud).
- Evaluation of the processes and activities of the processes: assessment of the risks and controls of the processes. Quantitative analysis determining the riskier process.
- Review and analysis of the activities of the processes: identification of the most important risks and risk factors for implementing controls.
- Establishment of action plans to mitigate the identified risks.

- Report and communication.

Events or incidents of operational risk may or may not have an economic consequence; however, it is advisable to manage and analyze them regardless of their consequence.



What is interruption risk?

The risk of interruption is an event, foreseen or unforeseen, that can alter the normal course of the operations of an organization; that is to say, it prevents the company to continue operating.

In the case of this interruption risk, with respect to individuals, we can point out how people went to purchase supplies to go through the quarantine (coronavirus). When the coronavirus got to our door, we all needed to buy food and others to prevent shortages. In organizations, it refers to events that can create a shutdown of operations. The same pandemic affected different organizations in different ways. Certainly, many organizations suffered considerable losses or even ceased to exist.

In order to adequately manage the risk of interruption, a Business Continuity Management System must be established as the framework under which the risks that may affect business continuity are identified, measured, evaluated and managed. With this, the organization will be prepared to react in an appropriate and timely manner, from the moment an incident or crisis occurs until it is managed and it returns to normality.

This Business Continuity Management System must have two phases:

1. Prevention phase: in this phase, business needs and priorities are identified. This information serves as the basis for the creation of the different plans and tools that make up the Business Continuity Plan.

2. Response phase (incidents or crisis): in this stage, there is real situation. This situation is evaluated, plans and tools to respond are activated, and normality is returned once the situation is over.

In the prevention phase, you must:

- Identify critical risks to establish preventive and corrective measures to ensure business continuity.
- Design tools to protect critical business assets (personnel, applications, information, records, facilities, etc.) in the event of an interruption to reduce the financial or reputational impact that this could cause.
- Know and understand the interests and needs of all interested parties, and ensure that these are considered in the design of the tools to respond to interruption events.
- Establish an adequate business continuity operational strategy that allow prompt recovery from an interruption event.
- Establish the roles and responsibilities of key personnel and necessary instances.

Among the main plans to respond to incidents or crises, the following stand out:

- Crisis plan: describes the steps that must be taken to respond effectively to a crisis (event or series of events that could severely affect or that has the potential to severely affect the institution's critical operations, reputation, general ability to doing business or your relationships with critical stakeholders).
- Incident plan: allows responding to minor events that could constitute or result in a business interruption altering the normal course of the institution's operations. If an incident is not properly managed, it could evolve into a crisis.
- Emergency plan: includes activities to respond to an emergency (event that endangers people's lives and safety, and operation of physical facilities). Includes procedures for evacuating the facilities.
- Crisis communication plan: establishes the steps to follow to communicate with interested parties or stakeholders (both external and internal) in the event of an incident or crisis.
- Disaster recovery plan: establishes the guidelines to respond to unforeseen events that endanger the technological infrastructure, made up of hardware, software, and networks.
- Contingency operation plan: describes the activities that critical personnel will carry out in an alternate center (or in their home), ensuring the continuity of critical operations and processes.

Finally, the main management tools are:

- Risk analysis: is the process of identifying, analyzing and evaluating risks. It allows visualizing the level of risk to which the organization is exposed and implementing controls to prevent and reduce the impact of risk events.
- Business impact analysis: it is the process of analyzing the activities of the organization and the effect that an interruption could have on them. It allows determining the need and priority of recovery of critical processes and identifying the critical resources to operate in the event of an interruption.
- Exercises and tests: they provide a practice and assessment of the state of the institution in the event of an interruption event and allow the continuous improvement of recovery capacities, ensuring that continuity management plans and tools remain updated.
- Training and awareness: an organizational culture of interruption risk management must be promoted and implemented.
- Determination of the interruption risk appetite: determination of the interruption risk that the organization is willing to take. If the intended recovery period is very short, the cost of implementing plans and actions will be higher.

What is legal risk?

This type of risk is the probability of losses or interference to a business derived, mainly, from defectively documented transactions, claims or legal actions, defective legal protection of the rights / assets of the company and / or regulatory ignorance or changes in the law or their interpretation⁵⁷.

The Basel Banking Supervision Committee defines legal risk “as the possibility of being sanctioned, fined or forced to pay punitive damages as a result of supervisory actions or private agreements between the parties”.

Legal risk is a natural part of any economic or business activity, and its consequences can lead to the closure or intervention of a company or business.

Both organizations and consumers must abide by a legal framework to carry out their business relationships. The following are the main legal risks for an organization:

- Risk inherent to documentation: it is the risk that arises from the inadequate or null formalization of operations, lax or highly specific instruments, which make their interpretation and execution difficult or which are not suitable for the function for which they were implemented and which, therefore, are susceptible to a greater number of lawsuits.
- Risk inherent to legislation and compliance: it is the risk that arises that a deal

cannot be executed due to prohibition, limitation or uncertainty in the legislation or due to errors in the interpretation of the same.

- Risk inherent to capacity: it is defined as the risk that one of the parties to the deal is not empowered to comply with the duties and obligations of an agreement or that they have some obstacle to to commit or execute the agreements made.

The impacts of these risks could be: fines, penalties, convictions, loss of reputation, lack of enforceability or loss of profits. But the good governance of an organization requires anticipating the impact of the decisions made, as well as evaluating the consequences and the scope of the risks taken.

The assessment of legal risks enables better planning of actions and decision-making.

Organizations need to systematically identify the possible concrete causes of legal risk, as well as the various and possible effects that the organization must face.

Contractual risk management

According to the Argentine Civil and Commercial Code, the contract is a legal act by virtue of which two or more parties agree to create, regulate, modify, transfer or terminate legal relationships of a patrimonial nature.

The contract is based on the principles of: a) autonomy of the will (the parties can contract freely), b) public order, morals and good customs are not affected) and c) good faith. They are also based on the ability to contract (the person has the legal age and doesn't have any incapacity or disqualification) and consent (freely and without any type of coercion, deception or error).

Once the agreement (contract) is established, the parties must submit to the provisions as if it were the law itself (called: binding effect of contracts).

Among the elements of the contracts we can identify:

- The object (subject matter). The object must be lawful, possible, determined or determinable, of interest to the parties and subject to economic valuation.
- The cause (why and why it is negotiated). The cause must exist from the moment the contract is signed and until its conclusion and execution.
- The form (if it must be done by public deed, by private document, in writing, with witnesses, or orally in some jurisdictions, etc.).

Many people and companies use contracts on a daily basis. As for individuals, they do so in an employment relationship, when they buy a home, when they take a loan, when they rent a house, when they take out a plane ticket, among other examples. On the other hand, companies do so with each acquisition from a supplier, with their sales, with the hiring of the security for their facilities, with the hiring of a consultant, among others.

Most of the legal agreements or contracts are fulfilled as they were thought and established in which the two parties obtained what they expected (each party fulfills its promise). However, an important part of the contracts do not end in good terms; even some that ended in good terms, could have caused problems between the parties if something had happened that was not foreseen or that was wrong or unclear.

When the parties have different interpretations of the responsibilities and obligations of each of them, problems, economic losses and loss of time are generated. In addition, there is a need to go to court to resolve the situation. On the other hand, the resolution may be contrary to the interests of the party.

This is the contractual risk. For this reason, risk management from contractual relationships is required and that helps people and / or organizations to optimize relationships with other people or companies to improve business processes, manage costs, manage risks, effectively strengthening relationships and increase performance. In short, it helps increase the chances of meeting the objectives that are established.

The objective of contractual risk management is to identify, establish and prevent events that pose dangers or threats to people or companies⁵⁸.

The management of contractual risk is one of the areas that have become more relevant in organizations in recent times and requires the full attention of those responsible for all areas that have contractual relationships with third parties.

Risks are the possibility that transactional agreements are not fulfilled due to contingencies of all kinds. The impacts are financial losses, delays, additional expenses and could even affect reputation.

On many occasions, the contractual risk has its origin in the failures in the legal areas of the companies, in which there were no safeguards to prevent the risks of breach of the contracts. Even in the private sphere, those gray areas that could generate a problem in the future are not always identified. Many times, it is not clear what the date of fulfillment of an obligation will be or it is not clear what will happen if it is not fulfilled in a timely manner or it is not clear how a certain obligation will be fulfilled.

The traditional system used by lawyers to face possible threats of breach of contracts had been the reactive one; that is, it was oriented to respond once the negative events had already occurred. Even when protection mechanisms were established in the contracts, they were only applied once the facts caused damages, but with very little attention to preventive aspects.

Thus, risk management consists of identifying and preventing unwanted events that may have negative consequences. This area seeks to reduce and adequately manage the risk that private or business contracts may not be fulfilled, prevent negative situations and, at the same time, optimize contracts with other counterparties, to establish mechanisms that are helpful to both parties.

It is intended to create protection mechanisms within an established and preventive system. Therefore, a proactive vision must be taken towards the future, exploring possible risk situations and threats before they arise, and establishing measures to avoid their negative impact.

Contractual risk management must be considered as a part of the total management of the company, insofar as it involves all areas and their efficiency. Tools to manage risk include:

- Identification of legal risks.
- Establishment of settlement mechanisms according to applicable laws.
- Analysis of commercial risks (not only legal).
- Inclusion of risks in contracts (and ways to mitigate risk).
- Reduction or elimination of risks before they arise.
- Establishment of clauses in contracts that foresee situations that are not legally regulated.
- Application of the preventive model, which seeks to avoid situations that could lead to conflicts or non-compliance.

The risk management analysis must be incorporated into the contracts, by including those aspects that have been defined as potential risk, both from the legal perspective and with respect to financial or business risks.

Contracts must include aspects that refer to the strictly legal, as well as matters not subject to specific regulations, but which are relevant to the parties involved. These aspects should cover the risks of responding to the negative event, but also focusing on mitigating its effects.

Additionally, it is essential to monitor all contractual clauses to reduce the risk of fines or penalties for non-compliance with them.

A lease contract is presented below and, subsequently, certain risks not contemplated in the contract are identified, which could be the subject of problems in the future:

LEASE CONTRACT

Between the Provincial Insurance Institute (PII) represented in this act by its president Dr. José Pérez - -passport No. 454,980, with registered address at Calle AA, in the city of Viedma, Capital of the Province of Río Negro, in hereinafter THE TENANT, on the one hand and on the other, Mrs. María López passport No. 678,901 residing at: Avenue Fourth of the town of Fernandez Oro (RN), hereinafter referred to as THE LESSOR, agree to enter into this LOCATION CONTRACT, subject to the following clauses:

FIRST: PURPOSE: THE LESSOR assigns the location to the TENANT, and he accepts, the property of his property, located at Calle San Martín 1,320 in the town of Fernandez Oro (RN).

SECOND: CONDITION: The premises are in a good state of conservation and maintenance, and the LESSOR undertakes to keep it and protect it for its correct return at the end of the contract or termination of the contract.

THIRD: TERM: The term of the present lease is stipulated in TWENTY-FOUR

(24) months from May 1, 2015, expiring on April 30, 2017; with the option to extend for the same period, with the prior agreement of both parties.

FOURTH: TERMINATION: THE TENANT may terminate this contract in all its terms, and its decision must be duly notified to THE LESSOR, at least thirty (30) days prior to the date on which the leased will be finalized, without this any right to compensation arises to the LESSOR.

FIFTH: LOCATIVE FEE: The rental fee of this LOCATION CONTRACT is agreed in the sum of THREE THOUSAND PESOS (\$ 3,000.00) monthly for the first year and the sum of THREE THOUSAND FIVE HUNDRED PESOS (\$ 3,500.00) for the second year; payable in advance from one (1) to ten (10) of each month upon presentation of the corresponding Payment Receipt.

SIXTH: DESTINATION: The premises that are the reason for this will be used by the LESSEE, for the operation of the PII Delegation in said district.

SEVENTH: SERVICES: During the period in which this location is extended, the payment of electricity, gas and telephone consumption will be borne by the TENANT, while the tax levies related to the property will be in charge to the LESSOR.

EIGHTH: SEALED: THE LESSOR must seal this contract at 50% of the current rate that corresponds by Law.

NINENTH: JURISDICTION: The parties expressly agree that any emanating from this location will be settled by the Ordinary Courts of the City of Viedma (RN), renouncing from now on any other jurisdiction, and establishing the

above-mentioned domiciles as procedural addresses.

In proof of conformity, three copies of the same tenor and for a single purpose are signed in the city of Viedma, on November 11, 2015.

Risks not identified and contemplated in the contract:

- SECOND:

Who will be responsible for the costs of repairs that occur during the course of the contract (tenant or landlord)?

What actions should the landlord take when returning the premises (paint, repair, change)?

How will the necessary actions be carried out if the property suffers damage?

- THIRD:

What is the penalty for not returning the property on the agreed date?

- FOURTH:

What happens if the landlord wants to finish the contract?

- FIFTH:

What is the cost if the landlord does not pay in a timely manner?

- SEVENTH:

How will the costs of electricity, telephone, etc. be determined?

Who would take care of an extraordinary expense?

- MISSING CLAUSES:

Isn't there a guarantee from the tenant?

Can improvements or changes be made to the property?

How would actions requiring urgent measures be handled?

Can the tenant review the property eventually?

Who should keep the property insured and against what risks?

How will the breaches of either party be handled?

What would happen if due to force majeure (fire, war, and expropriation) the tenant could not use the property?

Some of this identified risks might be dealt with local laws; nonetheless, it is better to set it in the contract.

Identifying risks and managing them within contracts is a practice that is increasingly necessary to prevent unwanted situations and anticipate negative events.

What is human resource risk?

“The most valuable asset a company can count on today is the intellectual capital of its employees”.

Managing human talent risk plays a vital role in organizations of all sizes. It influences all decisions and all aspects of business. Organizations are more effective if they manage their human capital strategically. In this way, they increase their value, efficiency and achieve their mission through the development of people and their alignment around values, a shared and joint vision.

But what could be the main strategic risks of human resources?

- Due to the lack of promotion and dissemination of the values of the institution and / or of the staff (integrity and ethics), violations of ethical principles and values could be generated in decision-making, causing economic losses and damage to the reputation of the institution.
- Due to poor monitoring of personnel, due to changes in the environment, organizational changes or increased workload, there could be a lack of staff capacity and operational events, poor job performance and poor organizational management may occur.
- Due to low recognition, excessive workload, unfavorable work environment,

lack of right incentives, excessive pressure, and an unfavorable work environment might occur and affect staff motivation and productivity.

- The lack of training or the lack of relevance in the contents of the training, poor monitoring of personnel, changes in the environment or organizational changes could result in the staff not being adequate for the position, limiting the strengthening of human capital and its impact on the organization.

- Due to the lack of a career plan, a growth plan (personal and professional) or due to job demotivation, the rate of staff turnover increases or loss of qualified human resources, causing inconveniences for meeting goals and costs at the organization.

Following, we locate the causes of the risks associated with people:

- Hire oversized or over profile staff; that is, with a profile much higher than that required for the position.

- Hire underqualified personnel or with a lower profile than required to fill the job.

- Poor job design, determining an inappropriate or inconsistent position profile with the activity and processes involved.

- Hiring of personnel “referenced” by directors or senior management, with “friendship” predominant, thus omitting the due process of recruitment, selection

and employment.

- Uncompetitive remuneration and compensation policy, unfair or undervaluing jobs.
- Failure to carry out tests and inquiries of candidates for positions in the organization.
- Preferential treatment with certain employees to establish special economic allowances.
- Arbitrary selection for training program or training at discretion.
- Worker performance or performance evaluations, loaded with subjectivity.

In short, for a successful risk management of human resources, which generates an increase in productivity, actions must be established in six lines: excellent leadership, communication, training, motivation, conflict resolution and skills assessment. Each one is detailed here:

Leadership: successful leadership involves trust, motivation, planning, delegation of authority, and developing policies and procedures to document best practices.

Communication: communication is essential in reducing risk and increasing

efficiency and productivity. Listening, delivering clear messages, and encouraging two-way communication is critical.

Training: training involves a systematic approach, patience and the creation of plans designed jointly with each of the organization's employees in order to produce the desired results.

Motivation: employee motivation helps the organization meet its mission, goals and objectives, while helping people achieve their personal and professional goals. The responsibility of management is to create and maintain an environment in which employees are motivated to perform at their highest level. Understanding and meeting the needs of workers, awarding fair compensation, and treating people fairly is paramount to providing positive motivation.

Conflict resolution: in work environments, confrontations would be unavoidable. Administration or management must properly manage conflicts. Postponing conflict resolution only causes more severe problems down the road.

Evaluation: Employees want to hear from managers how they are performing. They must ensure that evaluations are clear, fair, consistent and timely. The evaluation period is the best time to listen to the needs of employees in order to allow them to be more productive.

In short, this way:

- They achieve greater commitment at work.

- Maintain and increase worker satisfaction.
- Create leaders.
- They help create effective, profitable and high-performance work teams.
- Detect, empower and retain talent.
- Develop personal who would take better decisions and with the desired amount of risk.

What is environmental and social risk?

Environmental and social risk is the possibility of losses due to the occurrence of environmental and social conflicts related to the business of an organization. Additionally, for a financial institution, it includes the risk of environmental and social conflicts that could arise in the projects that it finances and that may significantly impact the economic, social or environmental system in which they are developed.

The main socio-environmental risks identified are related to pollution, the emission of gases, the generation of waste and wastewater, the impacts on health and occupational safety, regarding the handling of chemical and toxic substances or effects on the community.

The main environmental and social risks are:

- Lack of compliance with environmental laws could result in activities that a negative environmental impact causing damage to the reputation of the institution.
- A deficient identification, management and supervision of the activities of the organization or institution could produce social or environmental damage to the communities in which they develop, damaging the reputation of the organization.

- Due to deficiencies in the management of the social and environmental risk of the projects financed by the institution (for example: establishment or monitoring of environmental and social action plans), there could be adverse environmental and social impacts within the projects, generating damage to the reputation of the institution and to the communities.

- Lack of compliance with environmental laws could result in the financing of projects that could have a negative environmental impact causing damage to the reputation of the institution.

- Poor supervision of the projects in execution, non-compliance of the counterparts with the national legislation, could give space for the client to carry out social or environmental damage within the projects, damaging the reputation of the institution.

Therefore, it is sought that the activities are developed in a sustainable manner. Referring to the rational and responsible use of the natural resources of a certain place, taking care that they are not damaged so that future generations can also make use of them, emphasizing the regeneration of available resources and the mitigation of possible impacts environmental.

On the other hand, efforts should be made to minimize the environmental impact of the activities. This, understood as any modification of the environment caused by works or human activities that have as a consequence (negative, direct or indirect), affect life in general, biodiversity, quality or a significant amount of natural or environmental resources, and its use, well-being, health, personal safety, habits and customs, cultural heritage or legitimate livelihoods.

It should be noted that proper management of socio-environmental risks allows organizations to promote efficient environmental management and responsible

social development.

Environmental management involves being aware of how activities, operations and business affect the environment and can include energy consumption and emissions, water use, and waste management.

Proper management of the environment brings, among others, the following benefits: cost reduction, improved reputation, reuse of materials, safer working conditions, legal compliance and lower risk.

What is information technology risk?

Information technology (IT) is an inherent and intrinsic part of the business. That is why technology is a key factor in the productivity and competitiveness of any organization. Then, the risks derived from the business become critical aspects that need to be dealt with through proper governance and management⁵⁹.

Certain international standards, such as ISO 38 500: 2015, and reference frameworks such as COBIT establish guidelines regarding risks as part of the governance and risk management of information technologies.

Technology is the great enabler, but it also presents pervasive, potentially high-impact risk. The risk of technological origin can affect the organizational goals and objectives and be the cause of other types of risks. Therefore, the damage, interruption, alteration or failure derived from the use of IT can imply significant losses in the organizations, financial losses, fines or legal actions, affect the image of an organization, harm a client, damage the reputation and cause drawbacks at the operational and strategic level.

On the one hand, organizations face the risk of misaligning business and IT strategies. In addition, management decisions can increase the cost and complexity of the IT environment and not respond to business and customer needs.

IT risk management is a systematic method that allows planning, identifying, analyzing, evaluating, managing and monitoring the risks associated with an activity, function or process, so that the organization can reduce losses and

increase its opportunities; in this case, the activities, functions, processes and resources that are part of the Information Technologies.

Certain IT threats are common such as viruses, software bugs, network drops, equipment loss or theft, communication failures, spyware, Trojans, spam. Other more sophisticated threats, such as the so-called Advanced Persistent Threats (APT), lead to the need to assess and manage risks, taking actions that allow the implementation of adequate controls to try to guarantee acceptable levels of risk.

On the other hand, this risk is also present in cyber risk, in the form of data theft, compromised accounts, destroyed files, disabled or degraded systems.

IT management focuses on managing and implementing day-to-day and long-term technology strategy. At the same time, it focuses on the processes required to guarantee acceptable levels of risk of the information and of the technological infrastructure incorporated in the day-to-day business.

In any organization, technological risk is of high impact and its management is necessary; however, in a financial institution it is even more critical.

Organization's technology can become outdated, compromised, or uncompetitive, or inefficient and costly. The speed of response to a request to improve the offer of products and services can be essential for the business.

Technology risk has strategic, financial, operational, regulatory and reputational implications.

Generally, according to Deloitte⁶⁰, IT objectives are: to facilitate business growth, achieve technological innovation and agility, promote cost reduction, support the customer and call center, and solidify effective risk management and compliance.

According to its model, the six necessary operating components required to support IT risk management throughout the company are:

- a) Governance and oversight,
- b) Policies and standards,
- c) Management processes,
- d) Tools and technology,
- f) Risk metrics and risk reporting and
- g) Risk culture.

What is fraud, corruption and bribery risk?

“It takes 20 years to build a reputation and five minutes to ruin it.”

Warren Buffett

In this section, each of these concepts will be defined first and then the importance of these risks will be discussed:

- **Fraud:** is any intentional act or omission, designed to mislead others; carried out by one or more people with the aim of appropriating, taking advantage of or taking advantage of a third parties asset, whether material or intangible, improperly, to the detriment of another and generally due to the lack of knowledge or malice of the affected party. Fraud is the generic name of criminal conduct committed by action or omission, with intent or fault, by third parties, employees or managers of an organization.
- **Corruption:** defined by Transparency International as the “misuse of power” or “the misuse of entrusted power to obtain private benefits”. This includes not only a financial gain but also non-financial benefits. Political corruption refers to criminal acts committed by public officials and authorities who abuse their power and influence them to intentionally misuse the financial and human resources to which they have access, anticipating their personal interests or those of their relatives, to gain an illegitimate advantage, usually secretly and privately.

- Bribery: is offering, promising, giving or accepting an improper pecuniary gain or any other advantage for or by: a) a public official at the national, local or international level, b) a political party, party official or candidate or c) a director, officer, employee or representative of a private company; to obtain or retain business or other improper advantage, for example in connection with regulatory permits, taxes, customs procedures, legal or legislative proceedings.

Integrity, ethics and transparency are key values to carry out the business of any organization. For this reason, it is necessary for organizations to adequately manage the risk of fraud, corruption and bribery, avoiding losses and irreparable damage to reputation.

The negative impacts or consequences of these actions contrary to integrity have to do with two aspects. On the one hand, they cause direct economic damage; on the other hand, they cause indirect economic damages, affecting the image and reputation of companies, affecting the motivation of workers, affecting relationships with regulators and, especially, generating costs caused by external forensic that will be later necessary to investigate and mitigate these risks (lawyers, experts or accountants, auditors).

It is necessary to identify, measure, control, investigate and correct situations of fraud, bribery and corruption, promoting organizational values, establishing a culture of compliance and protecting the reputation of the organization.

This system of principles, values, and rules begins at top management. And from there, through a code (of conduct or ethics), appropriate behaviors and the design and communication of the corresponding policies and procedures, it is projected to the rest of the organization.

It is customary to have the following elements:

- A collegiate or unipersonal body, dependent on the Board of Directors, that ensures the application of the Code of Conduct or Ethics and serves to ensure professional, ethical and responsible behavior of all members of the organization.

- A Code of Conduct or Ethics or Good Practices that defines the principles and values that govern the relations of the organization with its different stakeholders (employees, customers, shareholders, business partners and suppliers) and that is implemented, is disseminated and is accepted by all interest groups.

- The commitment of top management.

- A communication and training and awareness plan for all staff.

- An effective program for the prevention, detection and investigation of situations that are considered deviations from the Code.

- A complaints channel, as a means of internal and external communication that allows reporting possible breaches of the Code.

Risk tolerance varies from organization to organization; however, it should be low. Senior management establishes the level of risk tolerance taking considering their responsibility towards partners or shareholders, financing entities and other interested parties.

Some organizations prefer to manage only the risks of fraud with a material impact on the financial statements. Others implement stricter fraud response programs with “zero tolerance” policies.

Managing the risk of fraud, corruption, and bribery consists of three stages: prevention, response and detection.

- Prevention: consists of the configuration and identification of risks, process diagnosis, surveys, development of a culture and values plan, organization commitment's and especially of senior management, training, communications and campaigns.
- Detection: includes reporting channels, help desk, audits and consultancies.
- Response: consists of the investigation, collection of evidence, presentation to justice (eventually), determination of the conduct by the organization and reporting.

The following Figure shows how corruption can have serious consequences:

Figure 27. Terminal Once Accident 2012



Source: TN (2013). Línea Sarmiento: el día trágico. Available in:
https://tn.com.ar/sociedad/el-dia-tragico_373833

The 2012 “Once” railway accident, which was commonly called as the Once Tragedy, was a railway accident that occurred in Buenos Aires, Argentina, on Wednesday February 22, 2012, in which 51 people died and 789 were injured. The crash occurred at 08:33 am, when the train № 3,772, identified with plate 16, of the Sarmiento line, of the company Trenes de Buenos Aires SA, was arriving at platform number 2 of the station Eleven terminal. The train did not stop its march and collided with the containment bumpers. The corresponding risk analysis is carried out below:

- Risk identification

Before the tragedy, this risk could occur: “As a result of a brake problem, the train could not stop on time, crashing, and could affect the lives of passengers.”

- Risk analysis

Probability: a “Low” probability is estimated.

Impact: could have a “Very High” impact (accident).

Controls: The maintenance of the trains.

- Risk evaluation (against the risk appetite)

$$\text{Risk} = \text{Probability} * \text{Impact} - \text{Controls}$$

Both the concession company (Trenes de Buenos Aires) and the National Government (through the Ministry of the Interior and Transport) considered that the residual risk was low. Nonetheless, the outcome was:

- Outcome

The control was ineffective. The brakes did not work properly.

- Impact

51 people died and 789 were injured.

- Learned lessons

The lack of risk management at the concession company and the inadequate supervision of the control body contributed to the accident that cost 51 lives and left almost 800 injured.

As a result, the court determined that businessmen and state officials had greater responsibility due to the fraudulent administration of resources and, in some cases, also to aggravate the risks that influenced the incident.

It generated harsh sentences for those found responsible.

What is the risk in purchase and procurement?

Risk management is a fundamental aspect of purchasing or acquisitions. We have already seen that risk is defined as: “The effect of uncertainty on the established objectives”.

The general objective of purchases and acquisitions could be established: “Acquire goods, services, consultancies or works efficiently; that is, at the minimum cost that is consistent with the need to achieve an acceptable quality product within an acceptable time frame and in a transparent manner”.

Risk management mainly establishes the following stages: risk identification, analysis, evaluation and mitigation. In general, the following risks can be identified:

- Due to inadequate budget planning, lack of clarity of objectives (goods and services) or the absence or inadequate application of controls, we could incur in the acquisition of goods or services not in accordance with the needs of the organization, which entail losses or inappropriate use of resources.
- Due to deficiencies in the procurement norms and / or application thereof, deficiencies in the execution of the purchasing process (requirements, evaluation of offers, etc.), acquisitions that are not the most “convenient” could be made (i.e. that is, in terms of prices, quality, guarantees, etc.), which could lead to non-compliance of objectives and losses for the organization.

- Due to weaknesses in the policies in place, absence or inadequate application of controls (review, verification, approval, etc.), inadequate segregation of functions in the process, pressures and / or obtain a personal benefit or that of a third party (p. economic), etc., fraud could be carried out, leading to losses or inappropriate use of the organization's resources.

- Due to poor planning, poor definition or lack of clarity of requirements, lack of participation of bidding companies, inadequate budget allocation, the process cannot be completed (it is declared void or failed) and objectives and organizational commitments are not fulfilled.

For implementing controls that mitigate the identified risks, certain criteria must be considered. It will not be the same to carry out a remodeling work on the building than to purchase paper. There is a criterion of relevance and materiality that must be considered.

On the other hand, there are other elements that should be considered to establish more robust procurement processes (greater competition) to ensure compliance with institutional objectives, among them, internal factors (previous experience in the good or service sought, experience of buyers and evaluators, critical or key good or service for the fulfillment of institutional objectives) and external factors (number of bidders, quality of the same, certifications they have, etc.).

Once the process is completed, the risk of the selected supplier should be specifically evaluated, based on:

- Financial situation

- Technical capacity
- Relevant certifications, continuity plans, succession plans, etc.
- Information security, confidentiality, management, etc.
- If it were a supplier from abroad, the situation of the country where it is located.

All suppliers (third parties) should be classified in terms of their level of risk: high, medium and low. For high-risk third parties, work should be done with suppliers to mitigate the identified risks. Likewise, work should be done to identify alternative suppliers in case they subsequently have problems.

54 <https://www.master-finanzas-cuantitativas.com/que-es-riesgo-credito/>

55 <https://www.bbc.com/mundo/noticias-48958753>

<https://retos-operaciones-logistica.eae.es/es-interesante-contar-con-un-diagrama-de-procesos-en-tu-empresa/>

<https://www.mindomo.com/es/mindmap/teoria-de-sistemas-16883e139812499bb4f777370fb618a2>

<https://www.bioseif.com.ar/melisam-matafuego-polvo-abc-10kg--det--INMA013>

56 [Risk.net](#)

57 https://www.sib.gob.gt/c/document_library/get_file?folderId=4528328&name=DLFE-29601.pdf

58 <https://www.webdox.cl/blog/la-gestion-del-riesgo-contractual-como-herramienta-de-negocios>

59

https://www.researchgate.net/publication/311206737_Gobierno_y_gestion_de_ri

60

<https://www2.deloitte.com/content/dam/Deloitte/co/Documents/risk/Riesgos%20>

Chapter X. Tools to manage or mitigate risk

“It’s better to prevent than to cure”.

What is a control?

It is any action aimed at mitigating or minimizing an identified risk and improving the probability of achieving the objectives set. Actions are aimed at reducing the probability of risk occurrence, its impact (consequences), or both.

There are two concepts of risk:

- Inherent risk: born with the activity. For example, for an organization it would be the risk of suffering a fire in its facilities.
- Residual risk: it is the risk that remains after the application of the controls. Continuing with the previous example, to mitigate the risk of fire and loss of facilities, the organization establishes a series of measures (controls): cameras, surveillance, alarms, smoke detectors and purchase insurance. After these controls, the company's exposure to risk has decreased (the probability and impact of the risk decreases), so that is the residual risk.

Let's look at some more examples:

o The traffic law that establishes a maximum speed and a regular inspection of automobiles: it seeks to reduce traffic accidents.

o Purchasing home insurance: try to eliminate or reduce the impact of an event.

- o Carrying an umbrella in case the Meteorological Service estimates that the probability of rain is greater than 50%: try to avoid arriving wet at the place where you are going.

- o Having a healthy diet and exercise regularly: try to improve physical condition, improve our appearance and reduce diseases.

- o Establishment of the 911 number: make it easy for people to remember you when they have an emergency.

- o Establishing a check and balance control over a purchase (A verifies what B does): try to avoid fraud or error by B.

In the following Figure we see a practical example:

Figure 28. Inherent risk, controls and residual risk - Example



Source: Own elaboration.

We see then that the controls have different forms and that they were designed to mitigate a risk and increase the probability of meeting an objective or not suffering a loss.

Risk characteristic

Once a risk or probability of loss is identified, a control (risk mitigation) must be designed and implemented. Many times we think that the other is going to carry out the control (eg: carry the umbrella), but it was not clear that it was going to be like that and the control does not end up being effective.

Design

Therefore, in the business environment, there are five (5) essential characteristics that a control must have in order to be effective.

- Who is responsible? It must be clearly established who is responsible for carrying out or executing the control.
- What is the control (What)? Establish what the control is or what the activity to be carried out is.
- When is the control run / how often? Establish the frequency of control activity.
- How the control is implemented (what documentation is needed)? Establish how the execution of the control will be documented.

- Why is the control (purpose) executed? It must be clear why the control is going to be carried out and what the objective is.

After having answered these questions, this would be the wording of a control: “Annually, the owner of the vehicle must go with his car to the VTV (Vehicle Technical Verification) to carry out its verification, in order to ensure that it is fit to circulate and thus reduce the probability of an accident, obtaining the corresponding certificate”.

And here are the answer to the five questions:

- Who? The owner of the vehicle.
- What? You must attend the VTV (Vehicle Technical Verification) with your vehicle.
- When? Annually.
- How? Obtaining the corresponding certificate.
- Why? To perform the verification of your vehicle, ensuring that it is roadworthy and thus reduce the probability of an accident.

Likewise, when you design a control, you must consider the scope or coverage of the control (what is it going to cover), if it is manual or automatic, and if it is preventive, detective or corrective.

The following Table shows some examples of preventive, detective, corrective, manual or automatic controls.

Table 11. Examples of controls

■

CONTROL	DEFINITION
Preventive	They act on the cause of the risks. Its purpose is to reduce the prob.
Detective	They are designed to discover an event, irregularity or an unforesee
Corrective	They allow the reestablishment of an activity, after an undesirable c
Automatic	Done by an information system.
Manual	Done by a human.

■

Source: Own elaboration.

Execution

After the design of the control, the control must be implemented and executed, ensuring that the control works as designed, satisfies the objectives set and increases the probability of meeting the objective sought or reduces losses. If it is a manual control, the person responsible for the control must execute it when required, as established, and leaving it documented.

Effectiveness

After the execution of the control, we must validate that the control is effective. This means that the control has the ability to achieve the desired, expected or desired effect. It will be effective if the control mitigates or minimizes the risk as planned and allows the achievement of the objective.

Figure 29. Examples of controls (effective and ineffective)

■

Effective control: Use of umbrella and pilot. Outcome: Dry.

Source: Wikipedia (2020). Consulta Paraguas. Disponible en: https://es.wikipedia.org/wiki/Consulta_Paraguas

Control evaluation

To determine the effectiveness of a control, you must evaluate it, considering the following:

a) Design: reflect on whether the control is capable of preventing, detecting or correcting a risk. The layout or design establishes how it should work. For the evaluation of the control design, the following attributes should be considered:

- Level of Formality (regulated or not).
- Description: consider the five design criteria (when, who, what, why and how).
- Level of segregation of duties.
- Type of control: preventive, detective or corrective.
- Automatic, semi-automatic or manual.
- Scope: total or partial.

b) Execution (working): if the control is executed as established and provides reasonable assurance of risk mitigation, it will be determined according to whether each of the design criteria is executed. That is, if it is implemented correctly according to its design.

c) Effectiveness of the control: subsequently, the degree of effectiveness of each control is verified, considering their general effectiveness.

The final effectiveness of the controls associated with a certain risk is presented below:

Table 12. Effectiveness of controls

■

EVALUATION	DESCRIPCIÓN DE LA EFECTIVIDAD DEL CONTROL
Very high (5)	Controls are very effective in mitigating risk.
High (4)	Controls are effective in mitigating risk.
Medium (3)	Controls are somewhat effective in mitigating risk.
Low (2)	Controls are barely effective in mitigating risk.
Very low (1)	Controls are not effective in mitigating risk.

■

Source: Own elaboration.

Something to highlight is the importance of the consequences that those who design the controls should establish for non-compliance with them. If the consequences of not complying with the controls are low or null, compliance with them will be low; On the other hand, if the consequences of not complying with the controls are high, those responsible for them will abide by them completely.

For this, there are two fundamental concepts: the cost of non-compliance and the security of the application of the punishment. The higher the cost and the greater the certainty that I will receive a penalty, the more I will comply with the control. As Ernesto Bazán (2020) points out, Latin Americans do not comply with traffic laws in their countries (due to low fines and low enforcement). However, the same people with the same culture tend to respect traffic laws when they go to other countries where the penalties are high and the applicability of the rule more severe.

Efficiency

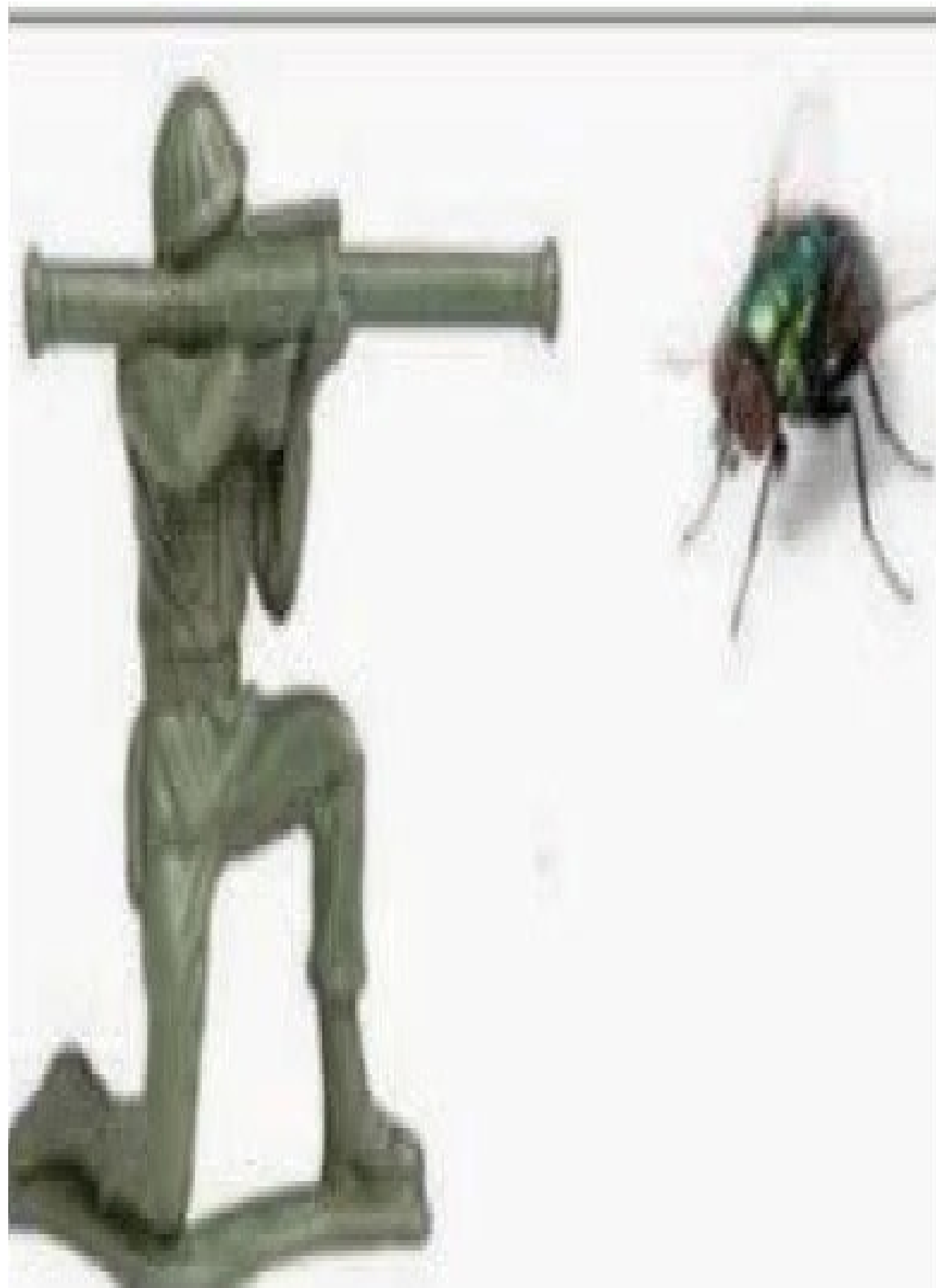
The cost / benefit analysis of the control and the strategic objective must be carried out. The decision to implement a control should be based on efficiency and expectations.

A control is efficient to the extent that its cost is less than the benefit it protects (or the value of the asset that is hedged). That is, rationally, I would not purchase insurance costing \$ 10 a year to protect an asset worth \$ 7 (unless my expectation is that it is highly probable that it will suffer an event within the next

year).

On the other hand, it would not be efficient to set up multiple controls to secure something minor.

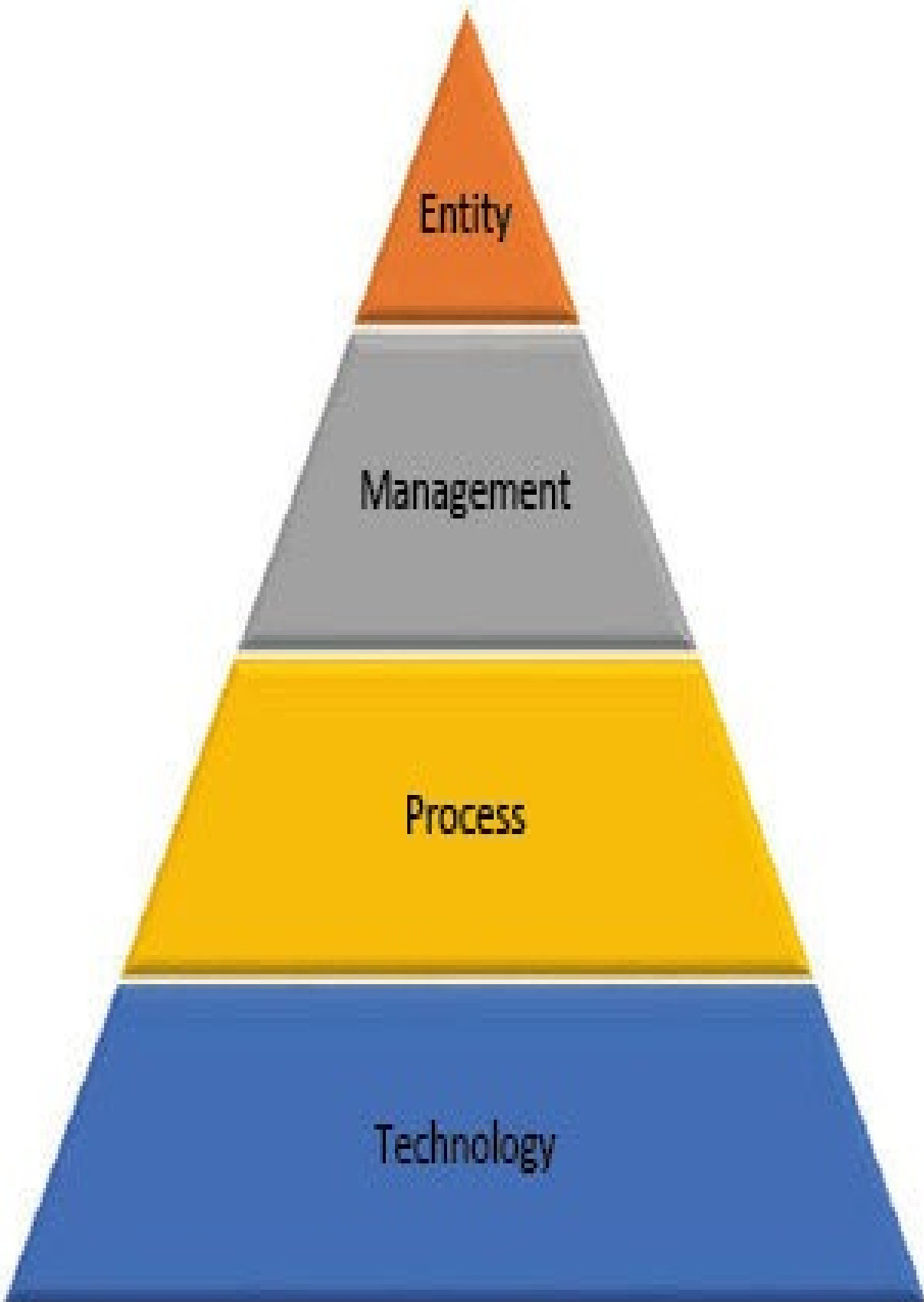
Figure 30. Inefficient control



Source: No construyas una bazuca para matar un mosquito (2020). Available in:
<https://uxdesign.cc/dont-build-a-bazooka-to-kill-a-mosquito-e71613511c5b>

In an organization, controls could be grouped as follows:

Figure 31. Control classification



Source: Own elaboration

Each of these levels is defined as follows:

- Entity: these are the controls that provide governance at a general level in the organization. Controls at this level are reflected in the way an organization operates and include high-level policies, procedures and other practices that set the tone for the organization. For example the code of ethics or conduct, review of a remuneration committee, etc.
- Managerial: high-level control activities carried out by management or administration that generally involve greater aggregation of data and less consideration of details. Issuance of a report in conjunction with the issuance of financial statements.
- Processes: process-level controls are the activities carried out in management processes or procedures aimed at mitigating a risk.
- Technology: these are the Information Technology (IT) controls established to guarantee the correct development and execution of applications, as well as the integrity of the software, data files and IT operations, which support the operation of the institutions. These controls include access management, network management, database management, operating system management, storage management, management of facilities and their services, and security administration.

Here is an example of what was just explained:

Situation: adequate risk management “Polio Vaccine”.

- Risk identification: since it is a disease that is transmitted from person to person and we are in an area with a temperate climate (it is transmitted more quickly), I could get polio, which affects the nervous system and could be transmitted to a large part of the population.

- Risk evaluation:

Probability: Medium.

Impact: Very high (causes muscle weakness and flaccid acute paralysis).

- Controls:

Go to a place with very cold weather.

Isolation

- Risk level

$$\text{Risk} = \text{Probability} * \text{Impact} - \text{Controls}$$

Risk: (Medium * Very high) - Controls (relatively effective)

Residual risk: Medium - Low (due to controls)

- Action plan: Jonas Salk and Albert Sabin developed a vaccine using attenuated poliovirus.

- Result: The use of the vaccine was authorized in 1962 for preventing polio. The vaccine controls the propagation of the disease.

Internal control system

Many organizations seek to meet certain objectives and to do so, they use controls. The use of controls to meet objectives in a methodological way is called an internal control system. The most common use by organizations of an internal control system is for the issuance of financial information (financial reporting). In this case, the objective is to ensure, to a considerable extent, the reliability of the financial information. An internal control system is a fundamental tool for large organizations, especially those that issue debt in capital markets to ensure financial information. It can also be used for other purposes.

The purpose of internal control is to safeguard the resources of the organization or business, avoiding losses due to fraud or negligence, as well as detecting deviations that arise and that may affect the fulfillment of the organization's objectives.

In the Internal Control System (ICS), all the organization's personnel is involved and responsible for applying the control guidelines established to mitigate the various risks associated with their activities, in order to contribute to the effectiveness of internal control.

COSO (Committee of Sponsoring Organizations of the Treadway) is a voluntary Commission made up of representatives of five private sector organizations in the United States, to provide thought leadership on three interrelated issues: enterprise risk management (ERM), control internal and fraud deterrence.

Since it was created in 1985 in the US, after bad business practices and previous years of crisis, COSO has studied the factors that can lead to fraudulent financial information and has prepared texts and recommendations for all types of organizations and regulatory entities such as the SEC (U.S. Securities and Exchange Commission) and others. Its mission is: “... to provide thought leadership through the development of general frameworks and guidance on risk management, internal control and fraud deterrence, designed to improve organizational performance and reduce the scope of fraud in organizations.”

In December 2014, the original framework was updated by the COSO 2013 Framework, a version sought for organizations to effectively and efficiently develop and maintain internal control systems that help in the process of adapting to changes, meeting company objectives, mitigation of risks to an acceptable level, and support for decision-making and government.

The COSO 2013 Integrated Framework establishes three (3) categories of objectives, which allow organizations to focus on different aspects of internal control. These categories of objectives are:

a) Operational Objectives: are those that refer to the effectiveness and efficiency of the organization's operations, including its financial and operational performance objectives, and the protection of its assets against possible losses.

b) Information Objectives: these refer to the issuance of financial and non-financial, internal and external information, and may cover aspects of reliability, timeliness, transparency or other concepts established by regulators, recognized bodies or policies of the organization itself.

c) Compliance Objectives: are those that refer to compliance with the laws

and regulations to which the organization is subject.

Figure 32. COSO Framework 2013



Source: KnowledgeLeader (2020). Available in:
<https://info.knowledgeleader.com/bid/161685/what-are-the-five-components-of-the-coso-framework>

Next, the exposed Figure is developed. This framework is made up of:

- Three categories of objectives: operational, informational and compliance. They are represented by the columns.
- Five components: control environment, risk assessment, control activities, information and communication, and supervision. They are represented by the rows.
- The organizational structure of the entity is represented by the third dimension. At the entity, division, operating unit or function level.

Each component (row) is made up of principles (seventeen) and focus points (recommendations) that must be met (and working together) and demonstrated to validate compliance with the Framework. Let's see, then, a summary of the Framework:

1) Control Environment

This component is the set of standards, processes and structures that provide the basis for carrying out internal control within the organization. The commitment

of the highest hierarchies of the organization, how they lead by example and how they establish the expected standards of conduct must be demonstrated.

Factors in this component include: integrity, ethical values and competence of the personnel, the philosophy and style of operation, the way in which management assigns authority, holds responsibility, and how it organizes and develops its people.

2) Risk Assessment

The risk assessment component involves a dynamic and interactive process to identify and analyze the risks that could affect the fulfillment of the institutional objectives, which forms the basis for determining how those risks should be managed. Management takes into consideration possible changes in the environment and in the business organizational model that could affect the organization's ability to achieve its objectives.

3) Control Activities

Control activities serve as mechanisms to manage the fulfillment of institutional objectives and are a very important part of the processes, through which the organization strives to meet or achieve these objectives.

Control activities are actions established through policies and procedures that contribute to compliance with the guidelines that management establishes for the mitigation of the risks associated with meeting objectives. They are carried out at all levels of the organization, in various stages, throughout the business processes and within the technology environment. Their nature can be

preventive or detective, and they can encompass a wide range of manual and automated activities, such as: authorizations, approvals, verifications and evaluations of business performance.

4) Information and Communication

Information is vital for the organization to carry out the internal control responsibilities necessary for the fulfillment of institutional objectives. Management obtains or generates and uses relevant information, with adequate quality, internal and external, to support the operation of the internal control system.

This component supports the functioning of all the other internal control components and contributes to the fulfillment of the institutional objectives.

5) Supervision

Monitoring activities assess whether each of the five relevant components and principles of internal control are present and working together. Organizations can use ongoing evaluations or periodic (separate) evaluations, or a combination of the two to determine whether each of the five components of internal control and the controls corresponding to the principles, within each component, are present and functioning.

Continuous assessments are routine operations, integrated into business processes and performed in real time, in accordance with changing business conditions. On the other hand, separate evaluations are performed periodically by objective administrative personnel and by internal and / or external auditors,

among others.

Key controls

They are controls associated with the mitigation of the main risks at the institution's internal control processes, policies and environment, and which are related to any of the categories of the Model (Information, Compliance, Operations).

Control evaluation

Regarding the third component (Control Activities), it is required that:

- a) The organization chooses and develops control activities that contribute to the mitigation of risks for the achievement of objectives at acceptable levels.**
- b) The organization chooses and develops general control activities on the technology to support the fulfillment of the objectives.**
- c) The organization deploys control activities through policies that establish what is expected and procedures that put such policies into action.**

An evaluation method can be used by a specialized or independent area, by another area (cross-review) or by the area itself (self-assessment).

The conclusion about the effectiveness of the controls can be:

- **Effective:** these are controls that, after an evaluation process, show that they are operating according to their design and expectations, which will allow them to meet the objective for which they were created (e.g.: mitigation of a related risk).
- **Ineffective:** these are the controls that, as a result of their evaluation, it is determined that they are not working according to their design and / or execution, so that, at some point, they could lead to the materialization of a risk (or risks) and generate an impact on the objectives of a certain process or the institution.

There is a deficiency when: a) there is no control; b) the control is improperly designed; c) the control does not operate effectively. A deficiency implies that there is at least a reasonable possibility that an event could exist, even though the event did not occur. These control deficiencies can be of two types:


- **Design deficiency:** occurs when there is no control necessary to meet the control objective or when an existing control was not designed properly so that, even if the control operates as designed, it would not meet its objective.
- **Execution deficiency:** occurs when a control that was correctly designed does not operate in the way it was designed, or when the person who executes it does not have the authority or qualification necessary to apply the control effectively.

The deficiencies are associated with the control that failed and allowed an event to occur. A deficiency reduces the probability that an organization will meet its objectives. The exercise must conclude on the identified deficiencies that are classified as:

- Control deficiency (lowest gravity): exists when the design or execution of a control does not allow management or officials (in the normal course of performing their duties) to prevent, detect or correct errors in a timely manner.
- Significant deficiency: is a deficiency or a combination of deficiencies in internal control, which is less severe than a material weakness, but sufficiently important to warrant attention. Results in the probability that the internal control will fail to prevent or detect material errors.
- Material deficiency (more severe): it is a deficiency or a combination of deficiencies in internal control, which leads to a reasonable possibility that an event will not be prevented or detected in a timely manner and that could severely affect the fulfillment of the objectives.

An adequate internal control system allows to provide security, in a reasonable way, regarding the objectives set by the organization, whether they are the effectiveness and efficiency of various operations, the reliability of the information (financial or non-financial) or compliance with applicable legislation and regulations that affect to the organization's operations.

In general, an audit firm is used to certify the effectiveness of the internal control system.



What tools to use to mitigate risk?

Diversification

In general, diversification is known as an investment strategy in which you invest in different classes of assets (or different assets) to reduce the overall risk of the portfolio. By diversifying the portfolio, there is less risk that a single event or bad investment decision will significantly damage the portfolio's performance. It seeks to generate a higher average return, with less risk than any asset individually. It is important to consider the relationship (correlation) between groups of assets or assets to know for sure if we will really reduce risk.

Diversification alone is not going to increase profitability, but it will provide a better expected level of return for a given level of risk (reduces portfolio risk).

We must apply this same concept of diversification to other areas. We can diversify our risk if we have several important clients (instead of just one important one). If we sell most of our sales to a single customer, anything that happens to him will bring us a problem. Or the same thing happens with a supplier. If we only have one supplier and it falls into difficulties, we will have difficulties (go out to get one, create a new relationship, agree on conditions, quality, etc.).

Another example is given in the source of our income. We have seen with the pandemic and the isolation or quarantine measures taken by the authorities and how certain companies that had a certain way of selling (or a single sales channel) saw their income affected, while their business was in danger. For this

reason, it is also necessary to have different sources of income, even different businesses (with different risks) that offer greater probabilities of better survival.

Along the same lines, you can have a concentration of risk to a key person (for their information or for the tasks they perform). Then, it is also necessary to have various options to be able to perform the tasks or have that information if something happens to him (or her).

An additional example could be working with a single bank and having a line of credit with that bank (and products). If something happens with the bank (closure, sale, change of owners, change of the personnel that attends, change of strategies, etc.) it could be difficult to replace that funding and operability.

It is important to study the business in detail to identify any risk factor (even some second-order concentration) to improve the risk profile.

In the case of an agricultural producer, we see that his income or business depends, to a great extent, on nature since his income depends on the climate and is extremely vulnerable. Droughts, floods or a plague will have a high impact on the income and profitability. Additionally, the climate is not something that is in the power of the producer nor does it depend on what he does. One way to mitigate your risk is to obtain climate insurance (it can be individual or collective with a cooperative), another is to divide your planting into different crops (although it would have a cost in the economy of scale of each crop) or it can also be through an agreement with a producer from another area (less correlated, the better) to diversify the risk of both; that is, one compensates the other (they distribute the risk).

Hedging

Derivative financial instruments

Generally, to hedge a financial risk, a derivative financial instrument is used, which meets the following characteristics:

- The value of the derivative changes in response to changes in an underlying asset (specified interest rate, price of a financial instrument, raw material, exchange rate, in an index or as a function of another variable).
- Does not require a net initial investment or only requires a lower investment than would be required for other types of contracts; with which, it allows taking greater risk than the investment made.
- It will be settled at a future date.

There are different derivatives: forwards / futures, interest rate swaps, currency swaps, options. Next, we will see some of their characteristics:

Forward / Future

A forward or financial future are agreements through which two counterparties agree to buy or sell the underlying asset in the future. In this operation, the basic conditions of the operation are set, such as the price.

Therefore, they are contracts in which the counterparties decide to agree, buy or sell a certain amount of an asset on a certain pre-established future date and at a certain price.

The difference between the two instruments is that futures are standardized contracts (regarding the quantity and quality of the underlying asset) and that they are traded on organized markets, such as stock exchanges, and are subject to guarantees (margins). On the other hand, forwards are operations carried out bilaterally between two counterparties.

When trading on stock exchanges, futures prices are public and have daily settlement (they require compensation for price differences). Meanwhile, forwards are transactions between parties, without observable prices and with counterparty credit risk.

The underlying assets could be currencies, stocks, bonds, or commodities (e.g., wheat, soybeans or copper).

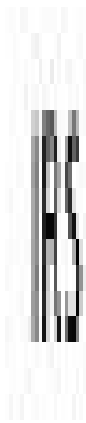
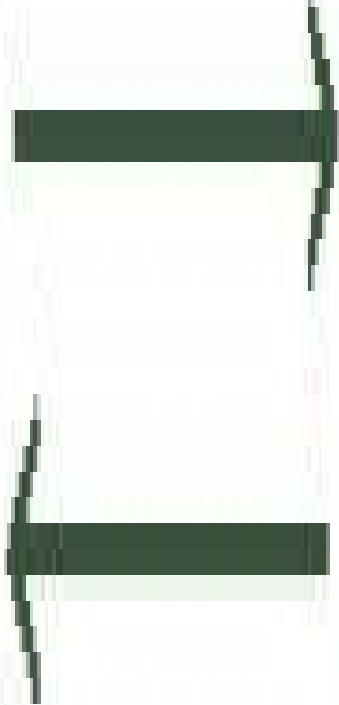
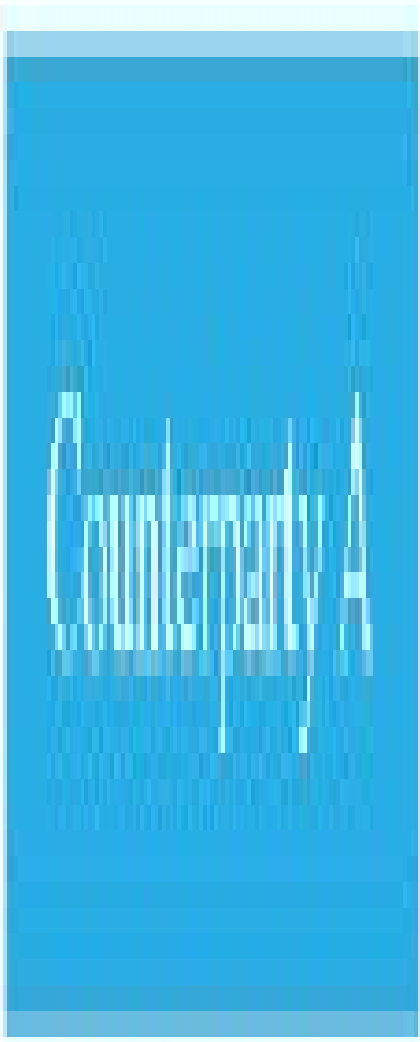
Interest Rate Swap – IRS

It is an agreement to exchange flows that are established on a nominal amount and depend on interest rates. Generally, there is no exchange of notional (neither at the beginning nor at the end of the transaction). Additionally, certain payment periods are established during the life of the agreement. The obligation of each

of the parties is computed using a different interest rate.

A plain vanilla swap is an interest rate swap where one party pays according to a fixed rate and the other party pays according to a variable rate on pre-established dates. It is used to mitigate the risk of changes in the interest rate. Depending on whether you have an asset or a liability, and the expectation of interest rate movement, a certain position will be taken on the derivative.

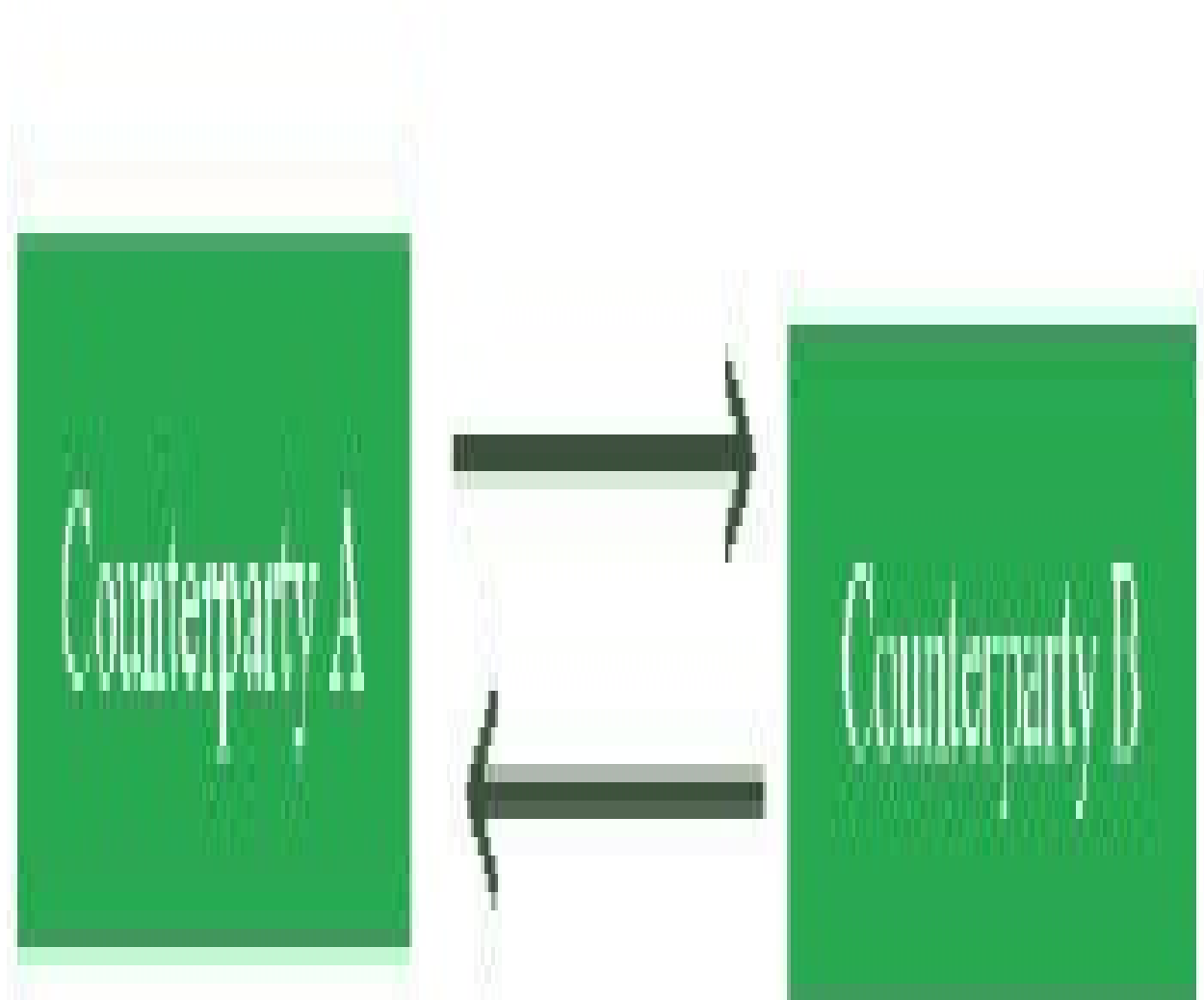
a) At the beginning of the IRS (no exchange of flows):



b) At the beginning of the IRS (no exchange of flows):

Variable or floating rate

Interest payment



Cross Currency Swap – CCS

They are transactions of exchange of flows of capital and interest funds in different currencies. Payments are established on the basis of nominal reference values in different currencies for each party and commitments, in charge of each party, at an interest rate (fixed or floating). There is an exchange of principal at the beginning and at the end, and certain payment periods are established during the life of the agreement.

a) At the beginning:

OS

Transfers credit

risk

Counterparty A loses

up credit risk on A

Counterparty B

b) During the life of trade (if no default):

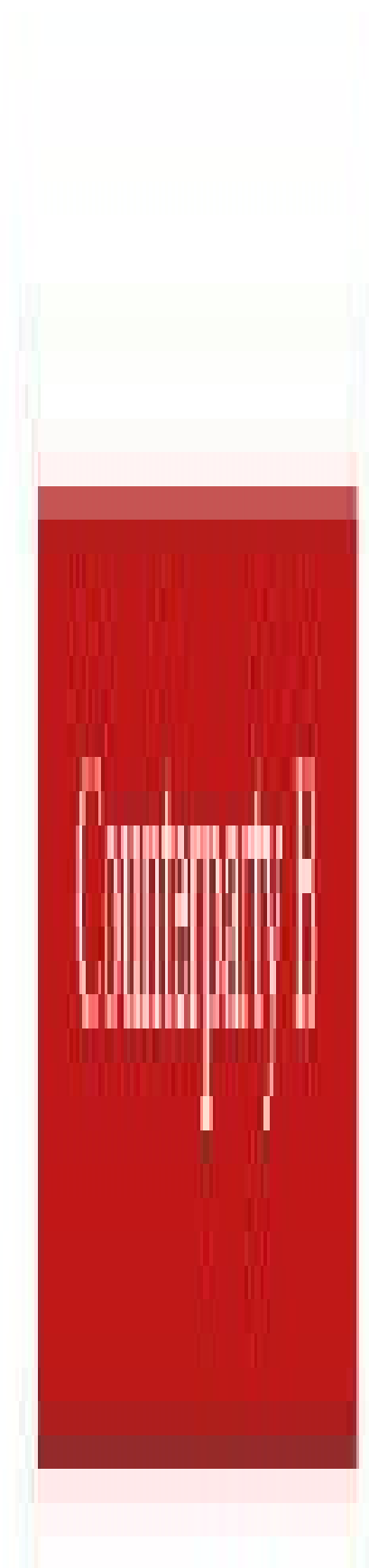
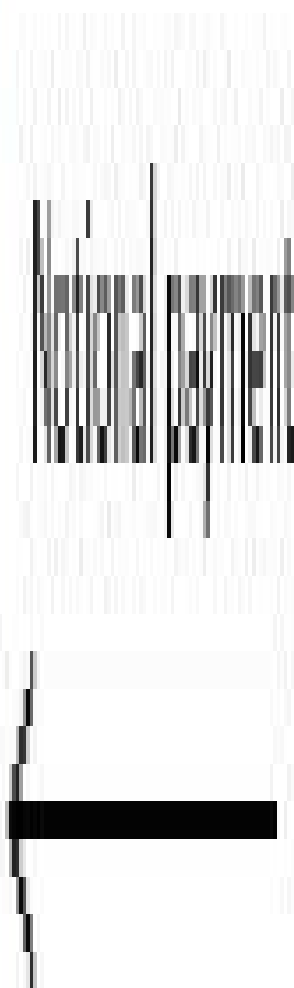
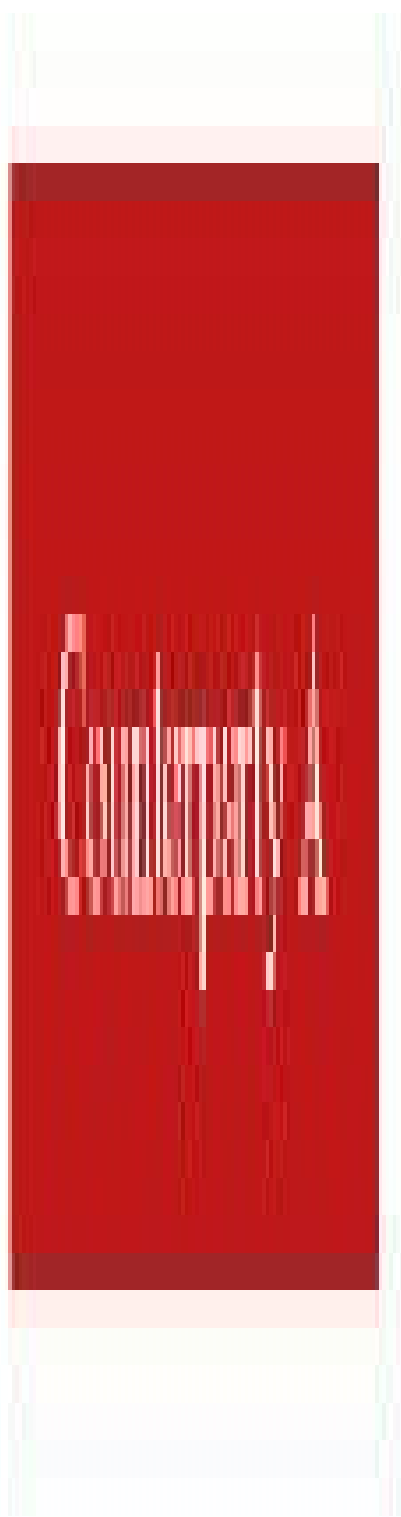
Spread payment

1. **Initial investment**
2. **Periodic payments**
3. **Final payment**

1. **Initial investment**
2. **Periodic payments**
3. **Final payment**

1. **Initial investment**
2. **Periodic payments**
3. **Final payment**

c) If X default:



Credit Default Swap (CDS)

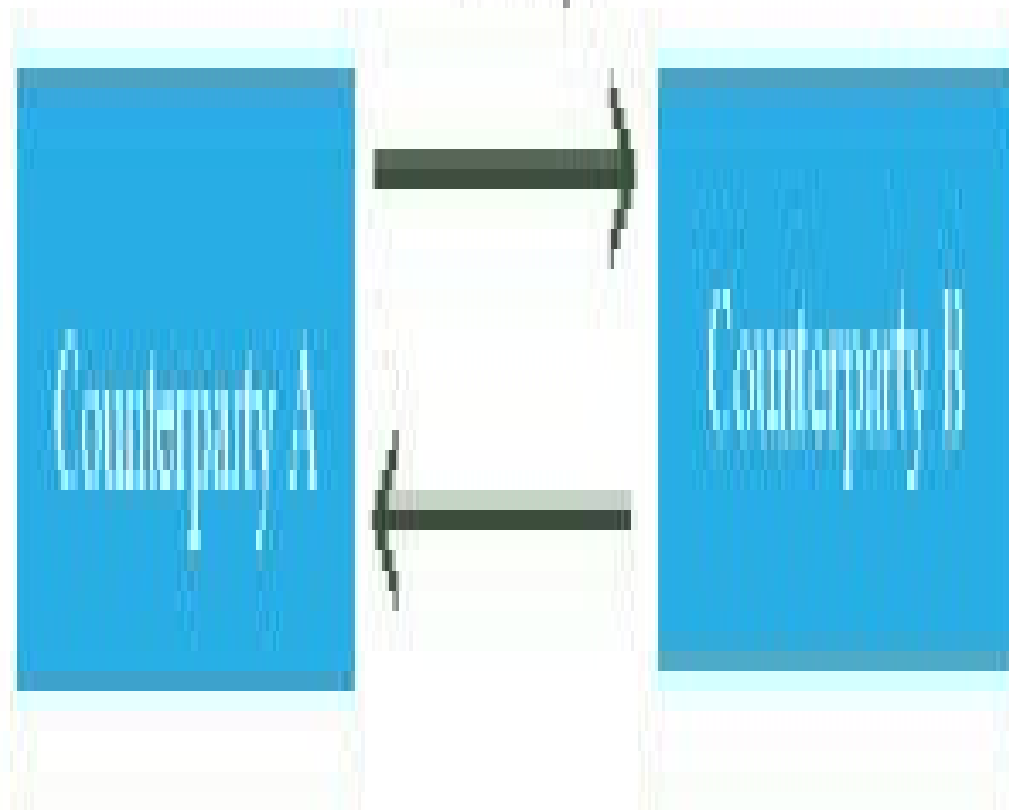
A Credit Default Swap (CDS) is a contract between two entities in which credit risk is transferred or acquired. It is used to acquire or assign credit risk. When acquiring a CDS, a counterparty assumes the credit risk of a third party in exchange for the payment of a series of regular payments. In the event that the third party defaults or defaults, the counterparty must purchase the asset from which it purchased the credit protection.

The buyer of the CDS receives a credit protection and the seller receives the credit risk of the third party. Credit risk is then transferred from the asset holder to the seller of the CDS.

a) At the beginning (there is initial exchange):

CS

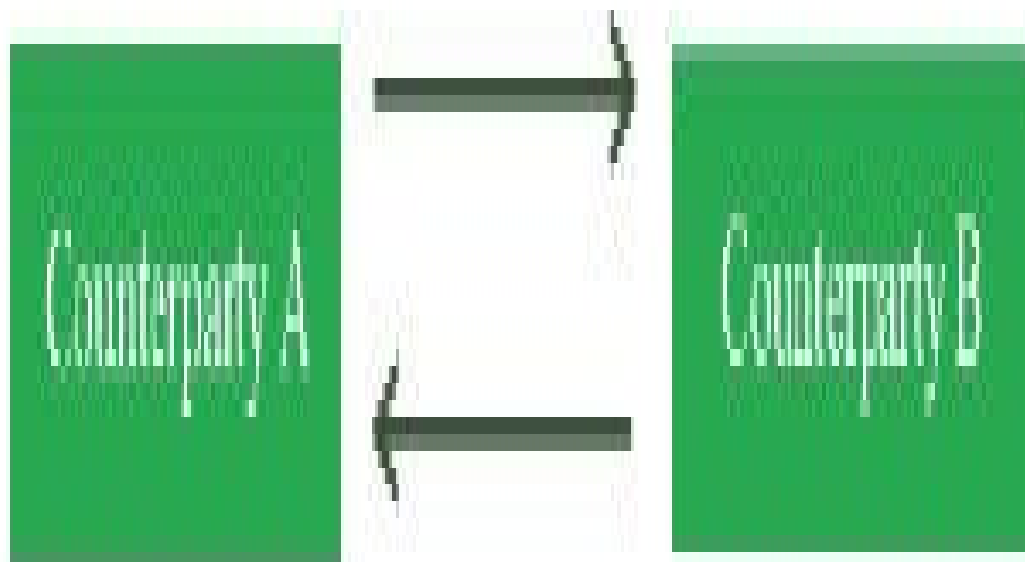
Currency A



Currency B

b) During the life of trade:

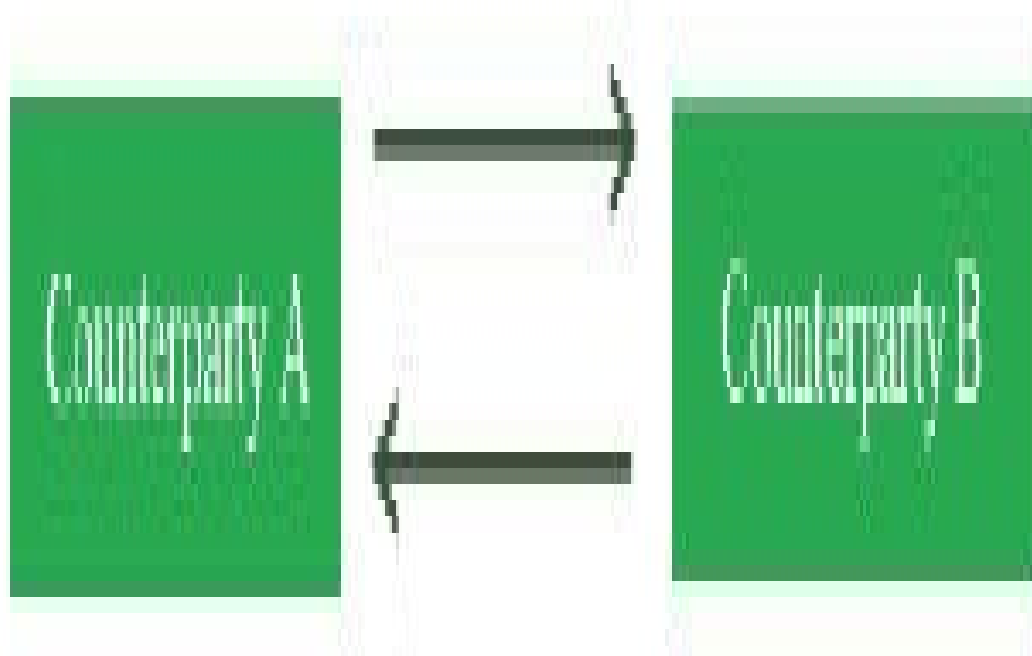
Interest rate payments
in one currency.



Interest rate payments
in another currency.

c) At maturity:

Interest rate payments
in one currency.



Interest rate payments
in another currency.

Credit Link Note (CLN)

It is a financial instrument with a Credit Default Swap embedded or incorporated. The issuer transfers the credit risk of the counterparty to another counterparty. This counterparty (investor) receives a fixed or variable rate for the life of the note. At maturity, they receive the face value, unless the reference asset has defaulted or has filed for bankruptcy.

a) At the beginning:

CLN

Transfer risk

Counterparty A -

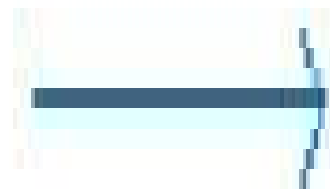
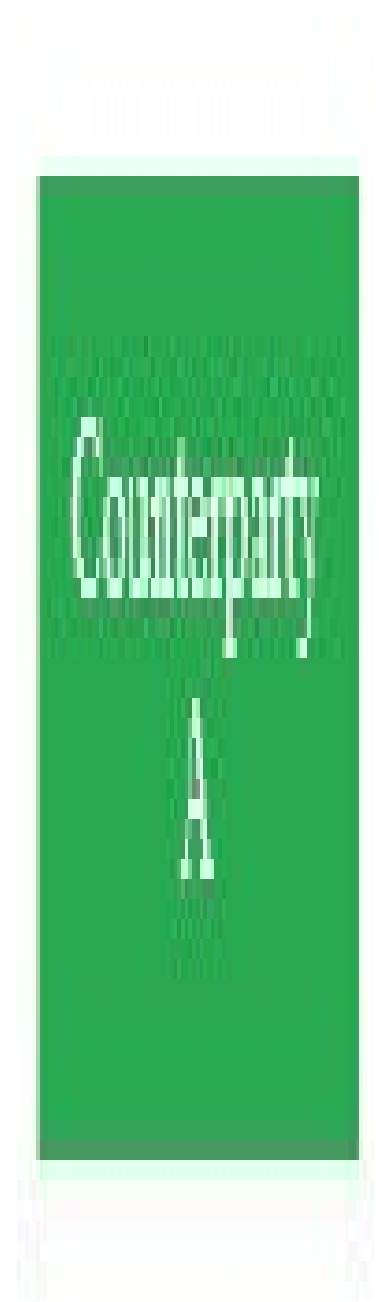
Sale CLN

Counterparty B

(Invests)

Notional

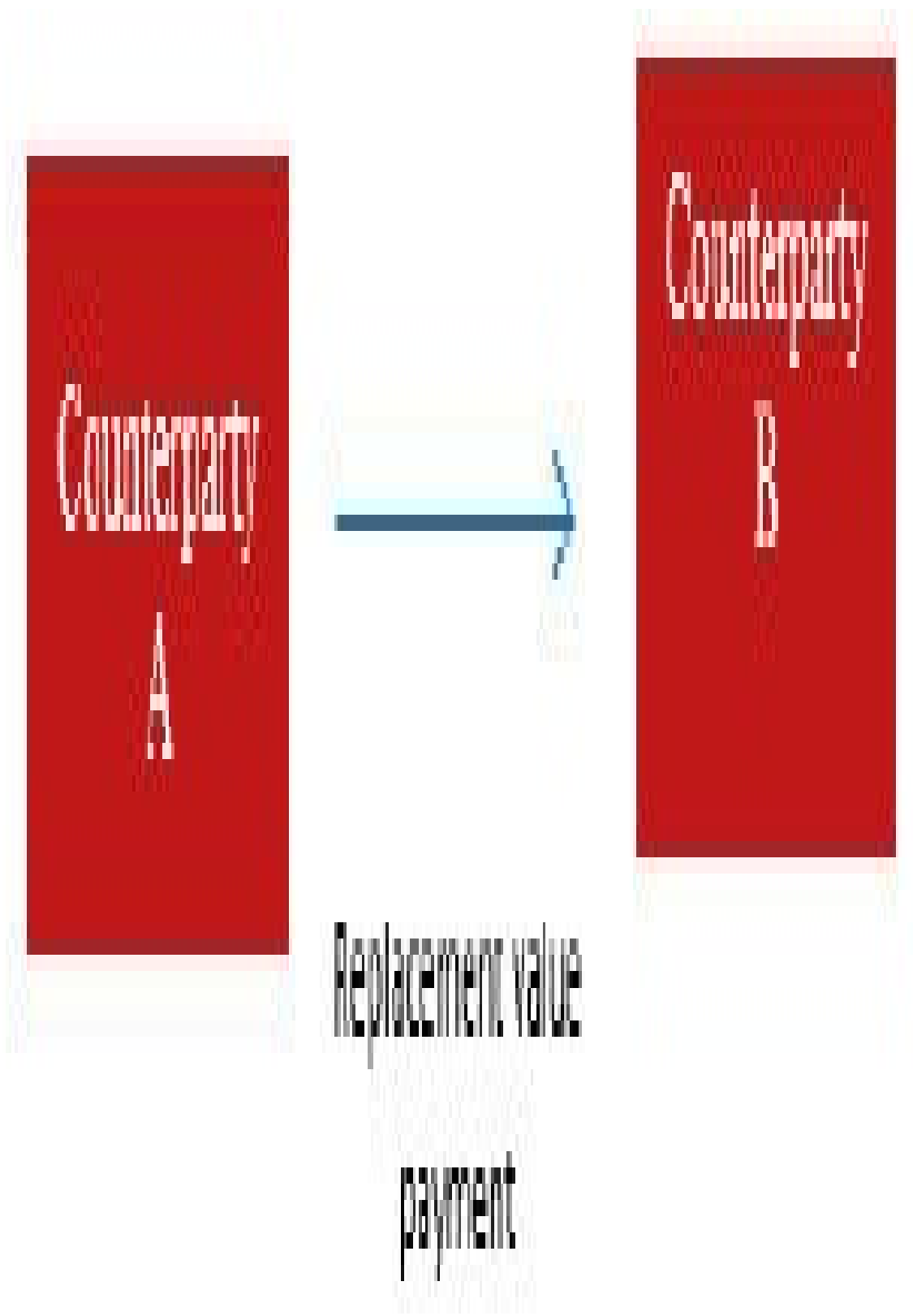
b) During the life of trade (unless default):



Interest payment /
Notional



c) If default:



Options

An option is a contract that gives the buyer the right (but not the obligation) to buy or sell an underlying asset at an agreed price, in a specified period of time or date. Unlike futures or forwards, there is a payment at the time they are contracted (called a premium).

The one who buys the option pays a premium to the seller for owning the right; meanwhile, the seller collects the premium and has an obligation. The buyer can exercise his right while the option is in force and his maximum loss is the premium paid. The seller has an obligation to fulfill in the future.

Insurance

Having adequate insurance coverage helps protect a business, its income, customers, and employees. To do this, you need to understand the risks you face, the different insurance alternatives and which ones are necessary for the business. The first thing to keep in mind is that insurance usually protects:

- Business assets
- Customers
- Employees

- Business owners

- Income or earnings

In some situations, certain insurances are required by local laws: employees, third party liability, among others. Let's see some peculiarities of the various existing insurance:

- Insurance for employees: provides coverage against the risk of an accident or illness. In the event that an employee suffers an accident or illness, he or she gets help, compensation and rehabilitation.

- Personal insurance or for loss of income: in these types of insurance, there are different alternatives, among them, insurance that protects against the loss of income due to an accident or illness, life insurance, disability insurance, insurance for the interruption of a business or loss of income, insurance against liabilities of managers or directors, insurance against fraud, etc.

- Insurance for assets: insurance for facilities, insurance against theft, insurance against damage to inventories, insurance for electrical damage, insurance for crops, insurance for goods in transit, insurance for damage or theft to machinery, etc.

- Product insurance: In the event that one sells, distributes, delivers or repairs any product, they could be liable if the product causes damage, injury, death, etc.

- Product insurance: In the event that one sells, distributes, delivers or repairs any product, they could be liable if the product causes damage, injury, death, etc.
- Professional insurance: in the event that a person provides professional advice and has associated legal costs, they can obtain coverage. If the results of the contract are not obtained or due to negligence in the advice, this insurance would cover these risks.
- Technology insurance: protection against the risks generated by the new technology (equipment, attacks, cyber-crime, interruptions, etc.).
- Insurance against natural disasters.

In summary, it is necessary to identify the risks to which the business is exposed, evaluate them (measure the level of risk), compare against the appetite (or ability and capacity) to take the risk and then manage it; and one option to cover risks is to do so through the appropriate insurance.

Insurance companies cover certain economic risks (insurable risks) to economic agents (individuals or companies). Its activity is to insure many subjects exposed to risks (to unfavorable economic events) to allocate the collections then, to whom the need arises. In a way, insurance companies operate like a casino, collecting premiums from all policyholders and then paying those who suffer losses. This one takes out the losers to give to the winners (keeping a slice of the cake as their benefit). Or seen in another way, it follows the principle of mutuality, seeking solidarity among a group at risk.

Chapter XI: The risk converted into an opportunity

“Risk and opportunity come in pairs”.

Bangambiki Habyarimana

While risks, in general, are associated with something negative, they need not be. It's about uncertainty (something that could happen in the future) and that could affect us. However, those same risks can be used to create opportunities to improve our performance or the achievement of our objectives.

For example: a company that faces the risk of losing market share because customers begin to demand that products use disposable and recyclable materials. Let's phrase the risk, as we've seen before:

a) The cause is the change in consumer taste.

b) The risk is losing sales and market share.

c) The impact is the economic loss associated with those sales that fell.

However, the company could adequately mitigate and manage the risk. To do

this, if you quickly detect the change in the taste of your customers, you would change the use of materials and your product. Changing materials could make you even more profitable, as these customers are usually willing to pay a premium price for “green” products. Addressing risk can create an opportunity.

The same happened with the arrival of the Coronavirus. Companies that had a business continuity plan (risk of disruption) had a better chance (opportunity) against their rivals that did not have one.

In September 1982, several people died in Chicago, United States, after taking Extra Strength Tylenol capsules. This product was the star of the pharmaceutical company Johnson & Johnson (it represented 17% of the company's profits). The pills contained cyanide, as someone had managed to add the poison at some stage in the drug's development.

The market predicted that the impact on the company would be considerable; its market share fell from 37% to 7% in a couple of months. However, the reaction of the company was remarkable and used it to its advantage. Within two months of the incident, the share price had recovered to the previous price. Within four months, the market share for painkillers had returned to 30%.

The event caused seven deaths, a considerable economic impact and severely affected its reputation. So how did the company recover? The first thing it did was run an advertising campaign to ask the public not to take the medicine. Later, it temporarily suspended the production of Tylenol in all its variants. It then ordered the recall of all its Tylenol products in Chicago and after all the states where it had been sold. Likewise, it created a toll-free line (0-800) to answer any questions related to the subject.

Despite the fact that the sabotage had only been in some products (the person

responsible was never identified), the company's determination to withdraw the product at the minimum risk for any of its customers was decisive for its image.

On the economic loss side, it includes the recall of 31 million containers (1,550 million life-threatening capsules) from the 34 states in which it had been distributed, at a cost of more than 100 million dollars⁶¹.

The company's great communication campaign (media and publicity) showing its concern about the incident, showing the actions it had taken and the clarity of communication was key. Its president appeared publicly several times giving details of the incident and the actions that the company had taken.

On the other hand, it created a triple security control for its products and six months after the incident, it was the first company to use a new container with a plastic cover.

Leadership, determination, clear communication, and concern for the safety of their clients was what saved J&J. In the end, the company took advantage of the situation and transformed the risk into an opportunity.

The risk appetite and opportunity

“Only those who risk going too far are those who discover how far they can go.”

Thomas Stearns Eliot

Risk presents an opportunity if, for example, we see that we are taking little risk and our capacity and appetite is greater. On certain occasions, we dream of taking a leap into the unknown, leaving an easy and safe way of life; we may be afraid to take that greater risk.

There is also the risk of not trying. Some say that doing things the same way they have been doing is a way of not making progress and can be “risky” too.

Only some are willing to take great risks in order to reap great benefits. Mark Zuckerberg used to say that: “Those who do not risk are on the road to guaranteed failure.”

There are several factors that influence our ability to seize an opportunity and feel comfortable with the unknown, including our psychological makeup, the physiological functions in our bodies, the culture in which we grew up, and social acceptance of acceptable behaviors.

Also, there are studies that link our individual testosterone levels with our risk

appetite; therefore, given that men tend to have higher levels of testosterone they are usually more willing to act impulsively and take risks. London-based neuroscientist and leadership trainer Dra Tara Swart notes that when you prepare for a fight or take a well-rewarded risk, testosterone levels rises and you become more confident. The same thing happens when a person lives with failure, their testosterone level drops and the person becomes less prone to taking risks⁶².

If you have in your memory moments when things went wrong, you probably have less and less risk appetite. That is why our experiences, stories or emotions are relevant when determining how we take risks. Furthermore, we depend on how society or narrow circle recognizes successes and failures for our willingness to take risks.

So, how do you increase your desire to take risks? One way is through the mind education (or training). For this, it is necessary to live in the present, not thinking about what happened in the past or worrying about what might happen in the future (which has not happened yet). Likewise, it is necessary to master stress (especially adrenaline and cortisol levels) to better manage these distressing situations with a healthy level and quality of life. It is necessary to train the mind to take the risks that one can and balance between more risk (less certainty) and more risk (more uncertainty).

Personality traits for risk taking

Taking risks is an attitude that has acquired an enormous social connotation. This risk taking is associated with entrepreneurship and financial success. However, it is also associated with other areas of life, such as gambling and extreme sports.

Historically, those who take risks open the way for others to follow safely and thus the human species can survive. Examples of the above are Christopher Columbus, Galileo, Newton or the Wright brothers.

As we have seen, genetic traits somehow identify risk seekers and that, the higher the presence of testosterone in the body, the more prone a person will be to take risks. In short, testosterone is responsible for aggressiveness and adventurous behavior.

Another key element for taking risk is dopamine, the neurotransmitter responsible for making people feel vital energy. Israeli scientists identified a gene called *Drd4*, which is found on chromosome 11. This piece of DNA was dubbed the “risk gene” because it is responsible for producing a protein that reabsorbs the dopamine present in the brain.

Lately, it is analyzed how certain psychological traits can define people who take risks. It can be seen that, in general, people who are outgoing and open to the new are the most willing to take risks. Also, these people can change profession and job, often without having a safe alternative.

On the contrary, those who are characterized as meticulous, neurotic and those who seek to please others, are the people least likely to take risks. This is because they avoid exposing themselves to the negative consequences that betting on something uncertain can have. In this group, only neurotics accept a certain level of risk and it is exclusively in aspects related to their health: they are the ones who report drinking and smoking excessively the most.

Risk-takers reveal that they are resilient people. That is to say, in the face of failure they do not collapse easily and they get up quickly, soon to be making a new bet.

A London Business School study on “Personality and Risk Propensity” determined the individual characteristics that most push risk taking⁶³:

- Extraverts: they are the risk-inclined per excellence. They look for new sensations, stimuli and the company of others. They need to be connected to the world and communicate, which allows them to handle stress well and not be afraid to take risks and gamble.
- Open to the new: they seek risk because they like excitement and adventure. They are imaginative, creative, and can quit a job with nowhere to go. They can also radically change their profession. In financial matters, they can bet all their eggs in the same basket, without fear of losing everything.
- Meticulous: they are self-disciplined, detailed and submissive, and in this way, they seek success. They plan their behavior step by step; therefore, they do not take the least risk.

- Neurotic: They are emotionally unstable, easily angry, distressed, depressed, and vulnerable to stress. They try to keep everything under control and therefore try to minimize risk as much as possible. Where they show their greatest aversion to this is in financial matters. The only risk they run is health: most say they drink alcohol or smoke.

- Complacent: they are always helping and cannot think badly of anyone. They seek to isolate themselves from everything that means exposing themselves to negative consequences. For this reason, they stay away from risk as much as possible.

Based on the above, we can group people into three types, according to their propensity or not to take risk:

a) They are prone to taking risks in all areas of life.

b) They are averse to taking risks in all areas of life.

c) They can take risks in certain areas of life, but do not take risks in other areas (it can be health, personal life, work life, finances, hobbies, etc.)

61 <https://www.nytimes.com/2002/03/23/your-money/IHT-tylenol-made-a-hero-of-johnson-johnson-the-recall-that-started.html>

62 <https://www.bbc.com/mundo/vert-cap-40267910>

63 La Tercera (2009). ¿Por qué las personas toman riesgos? Disponible en: <https://www.latercera.com/noticia/por-que-las-personas-toman-riesgos/>

Closing

“When in the midst of adversity, it is too late to be cautious”.

Lucio Anneo Séneca

“Without risk, you would never make anything great and memorable”.

Terencio

Risk is the effect of uncertainty and consequently, how it can affect our meeting of objectives. On the one hand, we must be able to identify and manage risks. Our task is to be prepared and prevent any event that could harm us. On the other hand, we cannot live without taking risks. Both in our personal life (every time we leave our homes) and in business life (to get a profit), we must take risks.

Our task is to know and understand the risks we are exposed to and to know our risk appetite (desire to take risk) and our capacity.

What I want to emphasize is that risk is not a bad thing, you should not be afraid of it. It represents an opportunity that we must take advantage of, to be one step ahead of possible events and cover ourselves against possible situations that put us in an unfavorable place. As long as we have calculated the possible risks, we

are covered. This is why, it is extremely important to know and manage it.

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DIEGO FIORITO

**THE PLOT
OF THE FIGHT
AGAINST
POVERTY**



The Organization for the Fight against Poverty (OFAP) is an international organization in the fictitious region of Meridecia, whose mission is to fight against poverty. The OFAP mobilizes projects and entrepreneurships that creates jobs, investments, growth and development.

In his novel The Plot of the Fight against Poverty, Diego Fiorito presents us with a unique and original story about the other side of that struggle. This novel expertly recreates a world where values are far from what they should be, where corruption and fraud are good parts of people's lives and where the systems try to maintain themselves.

In Meridecia, three seemingly independent episodes take place in different countries. These events turn out to have a common thread and several common factors.

Somebody's search for truth is at odds with the status quo of the system. Will he be able to defeat the system?