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A quantitative measurement of reputational risk

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"Belief in oneself is one of the most important bricks in building any successful venture"

Lydia Maria Child

Introduction

The study aims at developing an integrated research of a relatively new topic, source of higher interest and concern for companies: reputational risk. The possibility that an event could compromise a corporate reputation and its financial results is the reason why this kind of risk has today assumed a central role in the risk management processes implemented by organizations. The idea of corporate reputation has attracted scholars since the second half of the twentieth century and has become one of the hot topics in the new millennium (Barnett et al., 2006). Indeed, in recent years, it started by understanding reputation has a value and as such liable to losses or gains, threatened by all kind of risks, which have reputational implications, because they involve the ability or inability of the company to manage processes and resources in an optimal way. However, it is necessary the awareness of reputational risk as a risk itself, unpredictable, difficult to measure and therefore even more dangerous for the company. Reputation is an intangible asset, the essence of what the company is and how it appears in the eyes of the stakeholders who are the main subjects to whom the company relates and on whom its very existence depends. Indeed, corporate reputation is perceived as “the sum total of how stakeholders perceive you” (Fitzsimmons & Atkins, 2017) or as “the aggregation of a single stakeholder’s perceptions of how well organizational responses are meeting the demands and expectations of many organizational stakeholders” (Wartick, 1992). In literature there are many contributions on the value and measurement of corporate reputation and on the concept of reputational risk.
The core of that thesis is to evaluate ex post the impact of reputational risk in relation to the performance of companies, particularly with respect to the stock prices of listed companies in line with the study made by Perry and De Fontnouvelle (2005).
The study begins with the definition and the nowadays importance of reputation and reputational risk. The first chapter gives some explanations about the notion of reputation, as explained above, through many scholars who identify its main components such as corporate identity and image. About that, Fombrun (1996) assesses that if there is a right correlation between image and the underpinning corporate identity, then this will have an enduring value. Subsequently, the three main values that arise from reputation are presented: financial, operational and strategic value. The first one is explained by Fombrun and Van Riel (2004), the second one by Šmaižienė (2008)

and the third one by Fombrun and Shanley (1990). In the third section is explained the meaning of reputational risk from the Federal Reserve System (2004) point of view: it considers reputational risk as the potential that negative publicity regarding an institution's business practices, whether true or not, will cause a decline in the customer base, costly litigation, or revenue reductions. In the fourth section are described several ways by which reputational risk can induce losses for firm (Perry & De Fontnouvelle, 2005) and the most famous reputational problems (Masiukiewcz, 2009; Docherty and Viort, 2014), which can lead to an immediate bankruptcy or long-term loss of customers and business partners with the destruction of the brand and perception of the company, decreasing firm' expected future cash flows. In the fifth section the determinants of reputational risk are pointed out: reputation - reality gap, a bad employees' behavior and ethics, defective products, some changing in beliefs and expectations, bad financial performance, weak internal coordination and bad media communications. Finally, it is outlined why the study of corporate reputation has significantly increased in the last few years. About that, the most important issues are stakeholders' importance, globalization, internet and media and the growth of intangible assets that in particular increased from 1975 to 2010 by 17% to 80% and the decrease of tangible assets from 83% to 20%. To date, the intangible assets represent the comprehensive advantages of the enterprises in market competition and have become the strategic resource in the developments of enterprises. They have a significant role in production, operation and management.
In the second chapter the more relevant techniques and tools employed and applied for the estimation of reputation and reputational risk are shown.
In the first section is proposed an extract by Fitzsimmons and Atkins (2017) about recommendations addressed to corporate board and to corporate management in order to ensure that reputational risks are proactively identified and managed. After that, some ex-ante and ex-post treatments by Floreani (2012) are set out. The first one consists in the identification of potentially harmful events: indeed, companies must prevent the favorable conditions for the emergence of the aforementioned risk. The second one focuses on supporting the development of reputation mitigation or management solutions and the design of monitoring programs for the latter. The section ends with the development of two different models: one is proposed by Larkin (2003) and structured in six steps that a company management must follow in managing reputational risk, the other by Regan (2008) who wanted to integrate the reputational risk management process into the ERM framework.

The last two sections describe some methodologies used to assess reputation and reputational risk.

In the third section some qualitative and quantitative methods aimed at assessing reputation are introduced. The first category intended to attribute a numeric result to the corporate reputation level: in particular, the techniques described are Reputation Quotient, RepTrack, Reputation Index and Fortune's Most Admired Company (AMAC). The second category shall aim to assess the economic value of the whole reputation value or just some of its aspects. In relation to that, Gabbi and Patarnello (2010) outline four different methods to assess the value of reputation: the organizational, accounting marketing and financial approach. Lastly, another method by Kaplan and Norton (1996) is developed: the Balanced-Scorecard which aim is to measure business performance. In the fourth section some qualitative and quantitative methods aimed at measuring and assessing reputational risk are presented. In particular for the first category the Gap Analysis methodology is used thanks to the study made by Honey (2009). From a quantitative view, Perry and De Fontnouvelle (2005) evaluate the ex-post correlation between loss of market value and reputational loss. The analysis carried out by the authors makes use of the Event Study methodology, developed by MacKinlay (1997). The latter estimates the impact of positive or negative news regarding the company on its reputation, as it measures the effect of an event that has already occurred. Indeed, it determinates if and how much an event has a lasting reputational impact on the stock prices of the companies considered. Using this methodology, a reputational loss is interpreted as any losses that exceed the announced loss amount. This is the aim of the third and last chapter.

In particular, in the second section is considered a sample of 37 events regarding international companies which have suffered from an operational loss announcement. The sources of information regarding dates and events refer to newspapers, periodicals, news agencies and information sites available in the Factiva database. In the third section the methodology above described is implemented. In the fourth and last section are presented the aggregate results adopting two different benchmarks and three-time windows in order to enhance the robustness of the analysis. The chapter ends with some comments to the most statistically relevant cases.

Chapter 1
Definition and importance of Reputational Risk

1.1 Introduction

In the last few years, reputation is having a main role in everyday life and it has become a central topic especially in corporate reality. In this sense, there is a constant quest of what is “good” or “worse”, but there is no a right answer. You need to look at “The overall perception and a construct in the collective mind of your stakeholders and not your own opinion” (Wartick, 1992). Reputations reflects the stakeholders’ opinions on the actions and communication that a company performs with respect to the competing companies.
This chapter begins with the analysis of some basic definitions of reputation given by important authors that clarify the most relevant aspects of it and, in particular, the importance that it has for the organizations with a focus on differences between corporate identity and image that are the main components of reputation.
After that, there is the explanation of the three main values that arise from reputation: financial, operational and strategic values.
In the third and fourth sections has been introduced the concept of reputational risk according to the Enterprise Risk Management Academy. It is discussed the measurement issue because of the lack of a clear definition and a stand-alone category of reputational risk and the negative effects that derive from the latter, in particular the bad impact it has on corporate cash flows.
Finally, in the last section are analysed the main determinants of reputational risk that should be taken into consideration to be able to manage it and it is made an aside about why reputation and reputational risk are important nowadays.

1.2 Reputation basics

There are a lot of definitions of “reputation” and in particular “corporate reputation”.
The *Oxford English Dictionary (1993)* gives a general explanation of the notion as perceived in everyday language: “Reputation is the general opinion or estimate of a person’s character or behavior etc.; the relative esteem in which a person or thing is held.”
Despite this definition raises a right intuition in the reader, in an economic context a more technical statement is desirable. Indeed, it is necessary to take into account the concept of a Corporate Reputation that is “The sum total of how stakeholders perceive you” (Fitzsimmons & Atkins, 2017).
This simple statement brings to several important consequences:

- Your reputation is about how your stakeholders are aware of you, and not how you perceive yourself.
- Your reputation is connected with how others behold you to be, not the reality of your true nature.
- That “sum total” may change depending on which stakeholders are most influential and essential at a given time.
- It is important to know deeply your stakeholders, involving when their feelings may become more or less essential and relevant.
- You decrease your reputation when stakeholders start to retain, rightly or wrongly, that you are not so good as how they felt before.

So, there is a question that raises. What is “good” and “worse”?
The *Oxford English Dictionary* definition correctly answers with a link with “a person’s character or behavior etc”.
As regard as individuals, like leaders, also the perceptions of their personal character, motivation and integrity are important. Perceptions of history also is a relevant aspect.
Usually, reputations are justified by reality: however, there is a possibility that stakeholders get it wrong and if it happens, you, not your stakeholders, have a problem.
Generally, people are responsive to have a reputation worse than they fell they deserve and likely would like to correct the misunderstanding.

However, the opposite could happen: that is that a reputation is undeservedly good. In this case, there could be the temptation to take advantage of this situation, but it is a mistake because the risk is that when stakeholders discover that you are not as good as they thought, they will not blame themselves: healthy humans resist blaming themselves (Fitzsimmons & Atkins, 2017). Indeed, having a reputation that is better than you deserve is a reputational risk, for two reasons. First, there is the natural risk that your reputation will decrease to the level that belongs to you. But more dangerous is the risk of overshoot, that is the risk that your reputation exceeds to fall below the level of reputation you actually deserve.

They are more likely to blame you for overstate your strengths and minimize your weaknesses: this could lead to a person untrustworthy to certainly disloyal.

Therefore, your reputation is "the overall perception and a construct in the collective mind of your stakeholders and not your own opinion".

The latter statement can be represented by this definition:

"The aggregation of a single stakeholder's perceptions of how well organizational responses are meeting the demands and expectations of many organizational stakeholders" (Wartick, 1992).

Indeed, reputation reflects the stakeholders' opinions on the actions and communication that a company performs with respect to the competing companies.

According to this distinction between internal and external perceptions it is possible to manage one's reputation through the adoption of a behavior to be adopted. It is important to be able to satisfy the needs and expectation of its shareholders. Therefore, reputation is considered as a result of a set of impressions on socially shared companies.

An organization's reputation allows to find out the not observable quality, that lead an organization with a high reputation to obtain more benefits than low reputation organizations of the same quality (Rhee & Haunschild, 2006).

Corporate reputation is thought as a long-term evaluation, identification, or value judgment of companies by relevant stakeholders (Balmer, 1998; Fombrun, 1996; Fombrun and Shanley, 1990). Therefore, the role of perceivers is more active, although not all stakeholders spend time on the same corporate issues when they estimate a firm.

Besides, Chun (2005) classified three schools of thought in the reputation model based on which stakeholders are taken as the focal point: In the ''Evaluative school'' shareholder evaluated reputation; in the ''Impressional school'' internal stakeholders as employees and customers assessed for reputation; while in the ‘‘Relational school’’ reputation is based on the point of view of both internal and external stakeholders.

Because corporate reputation is a collective assessment built on a long-term basis about a firm, it follows the company’s identity that is what a firm really is and how it presents itself and develops as the company tries to build a favorable image through a short-term and immediate impression of the firm (Barnett et al., 2006; Christensen and Askegaard, 2001; Dhalla, 2007; Fombrun, 1996; Fombrun and Shanley, 1990). Therefore, corporate reputation is related on what the company is, its character, and how the company appears itself to a public picture. Thus, image and identity are the main components of reputation.

Fombrun (1996) contribute to determine a consistent and widely adopted framework that explicates relationships between reputation, identity and image.

He proposes that identity may be represented through names and self-presentations and proposed through customers, community and employee’s images, into corporate reputation. Identity is a way of differentiation according to culture, history and operations, including management: it grows with the company, based on its organization’s culture and consists of current practices, history, values and behaviour (Melewar et al., 2005). An organization’s culture is the code by which its members behave: “The way we do things around here”, as the UK’s Health and Safety Executive said.

Whetten & Mackey (2002) contribute also to provide the most common definition of organizational identity: they identify it as “that which is most central, enduring, and distinctive about an organization”. Identity has been usually viewed as the ‘core’ or ‘basic character’ (Barnett et al., 2006) of the firm from the employees’ perspective.

Fombrun believes that corporate image sometimes accurately reflecting a company’s identity.

Image develops inside the mentality of external stakeholders; it is related to their belief of the organization that varies over time by direct or indirect experiences: in other words, it reflects how they perceive the organization’s identity at a given point in time (Balmer & Greyser, 2002; Melewar et al., 2005).

Organizational image reflected in corporate communications, can be described as ‘the various outbound communications channels deployed by organizations to communicate with customers and other constituencies’ (Balmer & Greyser, 2006). Therefore, corporate reputation is a result of image, relationships and corporate performance.

However, the image can change as the company tries to divert its customers through publicity and other channels of presentation, or as rumors develop from misunderstood statements of employees to peers, analysts, and reporters (Frangos, 2009).

Fombrun (1996) assesses that if there is a right correlation between image and the underpinning corporate identity, it will have enduring value. The figure 1 illustrates the structure on the relationship between identity, image and reputation.

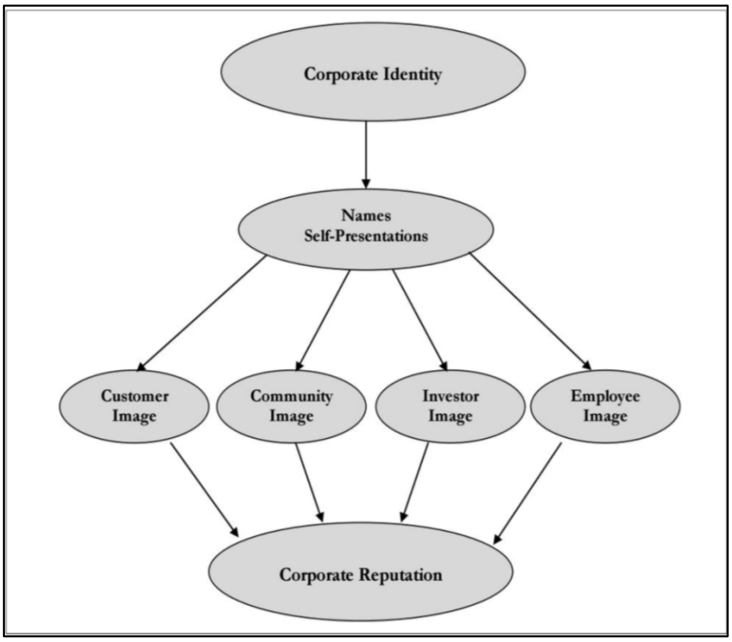

Figure 1 – Fombrun's 'From identity to reputation' construct (Lloyd, 2007)

However, Gray & Balmer (1998) affirm that "image can be attained relatively quickly but a good reputation takes time to build". This lead to the fact that, unlike image, corporate reputation is a long process to build but, once built, it is relatively stable.

On the other hand, it is important to observe that even if reputation is characterized by a certain stability, there may be some accidents that can shock it thoroughly as Warren Buffet, a US financier, supports: "It takes 20 years to build a reputation and five minutes to ruin it."

Given some definitions about the concept of reputation, image and identity it is important to highlight the 3 main values that arise from reputation.

1.2.1 Financial value

Fombrun and Van Riel (2004) identified three reasons that explain the relationship and connection between corporate reputation and its performance.

First, they explain that reputation can improve a company's operating performance by lowering the cost of key inputs and allowing the organization to apply a premium price for its products.

Secondly, in a situation like the one described above, a positive perception is helped by the market: indeed, the latter encourage the demand of company's shares and consequently the increase of their value.

Finally, an excellent and consolidated reputation will protect companies from unexpected threats, acting as a "stock of good shares".

Therefore, as Fombrun and Van Riel suggest in their studies, companies with a good reputation obtain better results over the medium term than those that have a bad one. Reputation must be considered a real investment aimed at improving performance rather than a cost for the company.

1.2.2 Operational value

The operational value of corporate reputation can be deducted from the analysis of the benefits that a positive image could bring to a company (Šmaižiené, 2008). The benefits vary according to the group of stakeholders that is taken into account. Indeed, it is possible to divided them into four macro-categories with their related benefits:

A. Customers → greater attractiveness of new customers; reduction of doubts and uncertainties regarding the quality of the products; decrease in the perceived risk in buying a product or service; encourages greater loyalty from consumers; adds extra psychological value to the product and service; help to choose between products and service that are perceived by customers as functionally similar.
B. Employees → entice top recruits to apply positions; attracts better applicants for its workforce; reduces uncertainty of recent and future employees with regard to employer characteristics; encourages greater loyalty from employees; increase employee satisfaction; raises employee creativity and effort; retaining good staff.
C. Business partners as suppliers → provides better access to the best professional service providers; enhances bargaining power in trade channels; better attracts new

business partners; helps to reinforce relationship with suppliers and distributors and other direct stakeholders.

D. Investors → attracts investors; helps to establish relationship with investors; a company with good reputation is perceived to be less risky than companies with equivalent financial performance, but a less well-established reputation.

Besides, from an operational point of view, a good reputation can be viewed as:

- Reputation as a consequence of trust: there are several studies that highlight the relationship between corporate reputation and trust. The company image is considered as an indicator of reliability and a driver for the development of trust: therefore, it is a pool to attract, create and consolidate relationships with stakeholders. This because a good reputation creates trust and this lead to persuade people to believe in a specific company.
- Reputation as a risk evaluating mechanism: this allows customers, suppliers, business partners and all other interested parties to forecast the future behaviour of a company and then it is an important tool in the hands of stakeholders in order to assess the risks that can be concealed behind decisions to purchase, invest, stipulate a contract and so on.
- Reputation as supporting force: reputation can often be perceived as a factor supporting the entire business management. Indeed, it can ensure greater efficiency in sales and advertising, support marketing activities, can help increase capital on the stock market and bring greater stability and can be decisive in communication with the press. Moreover, the value of reputation as a supporting factor increases in times of crisis. A well-established positive reputation mitigates the negative effects of a crisis and grants firms a second chance because individuals are inclined to generalize the information they get. Therefore, a negative information does not immediately create a negative reputation, but it is integrated with the previous one and then generalized (Davies et al., 2003).

1.2.3 Strategic value

Reputation can have a crucial impact on companies' ability to compete in the market. Indeed, a positive image can strengthen the competitive advantage or even be its source. Its strategic value can be seen in its ability to influence company skills, to attract and manage physical, financial and intellectual resources and to build sustainable competitive advantages that are difficult to imitate. Reputation can be considered a valid strategic key in the search for cost or differentiation leadership: it can lead to greater bargaining power, which allows purchases to be made at reduced prices, in line with the search for a cost-based advantage, or it can still be a strategic weapon in competition based on differentiation as an indicator of quality and reliability of a company. A good reputation also facilitates the entry into new markets or the start of new activities on the basis of a real "transfer" of the reputation from one market to another (Šmaižiené, 2008).

The value of the corporate image assumes strategic value when it is used as a real tool in compete with rivals. A good reputation also facilitates entry into new markets or the start of new activities based on a real "transfer" of reputation from one market to another.

Indeed, several studies confirm the expected benefits that derive from good reputation (Fombrun & Shanley, 1990; Podolny, 1993; Landon & Smith, 1997). A good corporate reputation allows firms to:

- Benefit from lower costs and charge higher prices (Podolny, 1993; Deephouse, 2000; Rindova et al., 2005);
- Sustain superior profit outcomes over time (Roberts & Dowling, 2002);
- Be more able to communicate the quality of the company's services (Engert, 2002);
- Be protected by market entrants (Deephouse, 2000);
- Attract better human resources (Turban & Greening, 1997; Morrison & Wilhelm Jr., 2003);
- Have easier access to the capital market (Fleischer, 2004; Smith et al.,2008;);
- Have greater returns relative to actual quality (Roberts & Dowling, 2002) than firms with poor reputations.

Good corporate reputation is essential because of its potential for value creation, but also because its intangible character makes the firm in a competitive position. It is considered as a strategic resource to differentiate between competitors and it can be used to modulate stakeholder's expectations and perceptions. It is an asset that has beneficial effects: products' premium price, low capital and labor costs, better loyalty from employees, better decision-making possibilities and protection in times of crisis.

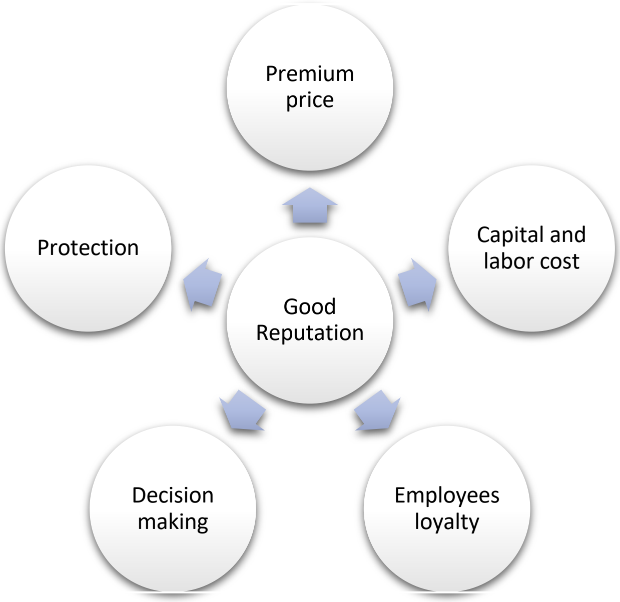

Figure 2: Data processed by the author

1.3 The meaning of Reputational Risk

The reputational risk arises from the assumption that, by representing the corporate reputation as an essential condition for the very survival of the organization, it must be preserved from all unfavorable events that could compromise it. From the firm's internal point of view, the danger is to underestimate the reputational risk associated with certain events focusing the attention only on the failure of the organization to control other risks properly. In this perspective, if you pollute, the damage will be merely economic because you will be expected to pay the inconvenience and compensate the victims. From an external point of view instead, the message conveyed is that if you damage the air you may suffer a reputational attack. The image given to the public is an inestimable value of the company itself. It represents a true strategic asset that requires continuous and adequate investments, whose benefits can only be caught at the end of the investment process.

For this reason, in a good business strategy an internal and self-focused perspective is not sufficient and the company should always take into consideration the perception others have of it.

What should be acquired is the knowledge that reputational risk, whatever it is, can destroy strong and respectable organizations and put an end to leaders' careers.

However, it is difficult to identify reputational risk in the company because of its intangible nature and there is no category of reputational risk as the category of operational and financial risks. Over the years, regulatory institutions, industry groups, consultants and companies have developed guidelines for assessing and managing risks of a different nature linked to commodity prices, control systems, supply chains, political instability and natural disasters. However, there is no common agreement on how to define and measure reputational risk. In the Framework for Enterprise Risk Management (ERM) introduced in 2004 from the Committee of Sponsoring Organizations of the Treadway Commission (COSO) there is a reference to any risk that can happen, but there is no explicit reference to reputational risk: indeed, the reputational risk is mentioned, but it is not considered a separate category of reputational risk.

As regard as Basel 2, the framework "International Accord for Regulating Capital Requirement for Large International Banks" defines reputational risk as "the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events". A definition of reputational risk lacks also here.

Given the lack of specific standards to refer to, even the most sophisticated corporate structures find themselves in trouble to manage reputational risk.

Despite the lack of specific references in the literature, some studies define the reputational risk more clearly. There is an important article of Enterprise Risk Management Academy that defines reputational risk as "current and future impact of a negative/positive public opinion on profits and equity".

This is the ability of organizations to establish new relationships or a continuous care of existing relationships.

This risk can expose the organization to judicial cases, financial losses or a decline in its client basis. The exposition covers the whole organization and includes responsibility for the exercise of many cautions in behavior towards its customers and the community.

In addition, ERM Academy defines reputation risk as the "impact of the pressures and influence of third parties on the environment in which a company operates".

Reputational risk could be therefore linked to:

1. A loss in terms of profits and equity that lead to losses that involves financial risk;
2. A pressure from and on competitive environment that lead to market and country risk;

3. A lack of transparency that is linked to legal risk and to an inability to face potential conflicts in time that is most legal for operational risk.

To understand the reputational risk, it is not sufficient to understand all the corporate risks as the corporate reputation depends on the perception of stakeholders. Therefore, it is essential that there is a good communication with stakeholders to ensure that their perceptions actually reflect the reality. Despite this it is quite difficult to find the actual source that generates the risk because it is equally difficult to measure this type of risk.
Another point of view is given by the Board of Governors of the Federal Reserve System (2004), that consider reputational risk as the potential that negative publicity regarding an institution's business practices, whether true or not, will cause a decline in the customer base, costly litigation, or revenue reductions.
Overall, it could be said that the reputational risk is any risk that may damage the esteem of an organization in third parties' eyes.
Moreover, reputational risk does not act in isolation, but it is linked to many other types of risk and events that may have as a result of their occurrence positive or negative effects on the perception of the organization image. It does not represent an independent risk category but derives from the development of others risks. The difficulty of making it an independent category does not arise out of its minor relevance compared to other types of risk, but from the problems related to its measurement. A reputational damage can, in first analysis, be measured in monetary terms as it can for example lead to a reduction in income due to the loss of customers or it may still impact on the company's market value: it can consist only of a pecuniary sanction deriving from a deviation, intentional or not, from laws and regulations. However, it is difficult to assess the consequences that a damage to the reputation can entail overall, as it may have long-term consequences that cannot be quantified in monetary terms.

1.4 Reputation and the impact on future cash flows

As stated above, the damage produced by corporate reputation is intangible. Nevertheless, in any case there are strong empirical evidences that show the fluctuation of the corporate's market value caused by reputational consequences.

In a simple model, a company's stock price is equal to the present discounted expected value of the cash flows it will generate. Any reputational event that reduces present or future expected cash flows will negatively affect the equity value of the firm.

There are several ways by which reputational risk can induce losses for firm (Perry & De Fontnouvelle, 2005):

- Loss of current or future customers: typically, this involves a reduction in expected future revenues, but it could also involve an increase in costs if, for example, increased advertising expenditures are necessary to limit reputational damage.
- Loss of employees or managers in the organization, an increase in hiring costs, or staff downtime.
- Reduction in current or future business partners
- Increased costs of financial funding via credit or equity markets
- Increased costs due to government regulations, fines, or other penalties.

The most famous reputational problems include (Masiukiewcz, 2009; Docherty and Viort, 2014):

- Bad strategy
- Poor risk management
- Aggressive strategy and problems with corporate culture, leading to market manipulation
- Incompetently applied new products, like an excessive expansion of the "junk bonds" market in the 1980s and securitization transactions before the crisis, particularly on the part of the US investment banks
- Abuse of the market power like Libor manipulation and FX manipulation by large global banks.

Those reputational problems often led to an immediate bankruptcy or long-term loss of customers and business partners, leading to the destruction of the brand and perception of the company.

Therefore, reputational risk damages and decreases firm' expected future cash flows or increases the market's required rate of return.
So, there could be an indirect method to measure a reputational event, that is to estimate the impact of a loss announcement on a firm's equity value and it is made though the measurement of the aggregate impact of all third-parties on the equity value of firms.
Another measure that is sometimes used is the difference between the immediate costs of a crisis versus damage to a firm's market capitalization in the period following a crisis event (ACE, 2015).
Another approach is to analyze reputational risk within an operational risk framework, assuming that operational loss events can lead to significant reputational losses, and to the check the impact of bank reputational problems on bank market capitalization. Reputational loss is there defined as market value loss that exceeds the announced operational loss (Eckert & Gatzer, 2015).
Another frequent approach is to conduct an event study analysis of the impact of operational loss events on the market values of financial institutions by examining a firm's stock price reaction to the announcement of particular operational loss events such as internal frauds, estimating the Reputational Value at Risk at a given confidence level, which represents the economic capital needed to cover reputational losses over a specified period (Micocci et al., 2009).
From a dimensional point of view of the effects of corporate reputation, small events or losses like regulatory fines, can turn into very serious dangers for the company. And all of that goes back to how those are amplified by society, media and legal systems. Unfortunately, these processes are not under the control of companies. In this sense, the reputational risk is vulnerable, that is a critical factor for top management. For those companies exposed to this risk, it is crucial to find tools to manage reputation.
It is also important to clarify that reputational risk involves not only potential losses, but also potential profit opportunities. This is due to the fact that it belongs to the category of speculative risks and not a pure one. Indeed, the latter consider only the negative variation of uncertain events. These, because of their nature, lead to the company only losses: it is not possible to reset these kind of risks, but business management can be obtained to an insurance company in order to transfer them to an insurer. On the other hand, speculative risks can lead to positive or negative aspects.
Reputational risk management can be developed as an opportunity in which higher quality products and better customers can increase market share at the expense of

competitors. Reputation can be improved through the emotional attachment that stakeholders have with society. Companies that tackle global warming, the issue of waste and recycling, support the third world and are socially responsible, generate respect and trust. Many companies have identified and exploited the opportunity to gain a competitive advantage through the development of eco-friendly technologies, thus strengthening their reputation.

1.5 Determinants of reputational risk and its relevance in the last few years

It is also important to analyze the sources that cause a deterioration of the reputation with the aim to take measures for management. As already mentioned, the reputational damage is caused by a first level of risk like strategic, financial and operational risk. However, the deterioration of the reputation can be linked with some events that particularly affect it. Companies do not operate in isolation, but in close relationship with the environment that influences the reputation. Therefore, there are some determinants that can influence reputation (Eccles et al, 2007; Atkins et al, 2006; Haywood & Page, 2002): gap between reputation and reality, behavior and ethics, defective products, ability to change, introduction of new products, financial performance, weak internal coordination and media.

1.5.1 Reputation – reality gap

To be able to manage the reputational risk, it must be acknowledged the subjective scope of reputation. The corporate reputation in general is a function of the opinions of the various stakeholders: investors, consumers, suppliers, workers, regulatory institutions, politicians, non-governmental organizations, the community in which the company operates. It often happens that the business reality is different form its reputation and it could be better or worse. When there is a positive gap between the real state of companies and their brand, this gap creates risky solutions. The wrong reputation can be identified, and this could lead to economic-financial losses. The American society “Beyond Petroleum” seems to have learned long after that it committed a mistake to indulge in a gap between reputation and reality (Casselman and Rusell, 2010): indeed, it tried to create an image of itself of a responsible society that cares about the environment, safety at work and social policy. Over the years, however, there have been some events that have questioned whether this reputation really corresponds to reality and whether the company is so exceptional. In 2005 an explosion caused the death of 15 people while in 2006 losses in the oil field in Alaska caused the closure of the production in August.

Later investigation claimed that the cause of the accident was the lack of control by the company, the reduction in the expenses and the inadequate behavior of the management to prevent the disaster. After the communications between the US media, the reputation of Beyond Petroleum suffered great damages and the gap between reputation and reality was immediately filled.

Often the willingness of managers to increase short-term profits and attract investors leads create a false corporate image and consequently to falsified economic and financial results. This is the case of multinationals like Computer Associates, Enron, Rite Aid, Tyco, WorldCom and Xerox. All these companies suffered great reputational damages because they have promised too much to investors. Indeed, companies must find a balance between reality and reputation and fill the gap by improving the expectations of its stakeholders and reducing expectations by promising less.

1.5.2 Behavior and ethics

The behaviors of a company's employers that work in a company can erode corporate reputation. If an event impacts on reputation, the company's management must take full responsibility and punish those responsible. Corporate image depends more on company actions than on words and promises. To ensure a good reputation, companies must ensure a good level of transparency in communications. Management must be sincere and not hide the facts. Clear decisions make corporate life easier, while hidden decisions are discovered after all with negative consequences for companies.

An example of the importance of corporate communications is the financial scandal of the company Enron and its audit firm Arthur Andersen. Indeed, the latter stands accused of having destroyed some compromising accounting documents of Enron company. Therefore, in few days Arthur Andersen lose some clients like Delta Air Lines and Freddie Mac because its actions and behavior were considered not ethics. In addition, because of the irregularity of its activities the company had to face sentences and fines: however, what led to its crack was the loss of reputation and its customers. The company management must ensure compliance with the ethical codes to avoid dishonest and fraudulent acts. The acts performed must correspond to what the company communicates to the outside.

Despite its history of 100'year experience, Enron's collapse was enough to destroy the image created over the years.

1.5.3 Defective products

Event linked to defective products can be caused by unintentional or intentional acts. In the latter case there is someone who intentionally wants to destroy corporate reputation by tampering with a product. In the first case there are damages caused by external or internal factors. In the event that the company is accused of offering defective products it is important to know how to react to maintaining good relations with media in order to avoid that bad advertising damages the corporate image.

An example could be the multinational Johnson and Johnson that in 1982 suffered damages because of the death of seven people in Chicago blamed for some products of the society (Kaplan, 1998). However, the company was alert to warn people not to use those products until the end of the investigation and it installed telephone lines for costumers to clarify their doubts about the products. So, the company was able to maintain a good corporate image and avoided a reputational damage linked to defective products.

Besides, the company need to pay attention to the customer's perception of the organization's products or services: indeed, a poor quality or over-priced can waste customer confidence and lead to a reduction in sales and profitability.

An example is the company Perrier, French brand on natural mineral water that had to face an accidental contamination of water in which was found benzene. This led to a world-wide product recall, which damaged the company in terms of lost sales about tens of millions of dollars. Perrier was not able to face the incident and it was criticized for that and also for a delay in withdrawing the product from the stores. After that the company had to spend some money on repackaging and advertising before re-launching the product. This incident is retained to be the source of the Perrier's later acquisition by Nestlé.

1.5.4 Changing beliefs and expectations

Another important determinant that determinates corporate reputation is the ability to change stakeholders’ beliefs and expectations. In everyday life there are many changes that often derive also from the companies themselves. In case in which expectations are shifting and the company’s character doesn’t change, the reputation reality gap widens and risk increase. On the other hand, there are companies that reacted faster to change. An example could be General Electric that in 2005 started to work in full compliance with environment. With the introduction of this initiative, stakeholders’ expectations changed, and the company doubled its investments in Research and Development department for the development of green technologies.

1.5.5 Introduction of new products

Sometimes introducing new products could drive companies away from primary goals. Investments in new products may have little success due to the impossibility of competing with more experienced competitors. If stakeholders think that the company has a low competitive capacity because of the inexperience, the reputation suffers damages. Companies that change strategies without a specific plan suffer losses in profits and market value. Managers must take into account all the risks linked to an expansion and evaluate whether this can bring advantages or disadvantages (Black, Wright and Davies, 2001).

An example could be the brand Coca Cola: the company had problems linked to a strategy of reinvention of a product introducing a new version of the drink with a sweeter taste. The market didn’t like the new product because it had a different taste compared to the classic one and the profit was affected.

The main mistake of the company was the lack of attention to the simple concept, that is based on the historical product that creates safety in many of its customers. The main competitor, Pepsi took advantage of the situation saying that Coca Cola implemented a product very similar to Pepsi, believing that its product was the better one. Therefore, Coca Cola had to reintroduce the classic taste of the product assuming that it made a mistake and underestimated the trust given by customers on the product.

1.5.6 Financial performance

If the firm turns out not to be able in delivering adequate returns for the investment community like analysts, fund managers and bankers, the shares prices, the cost of borrowing or raising new equity capital will be affected and may lead to a radical conversion in the organization.
An example is Vivendi-Universal a multinational mass media conglomerate that performs as its principal activities music, television, film, games and telecommunications services. In 2002 the company had to face the enforced change of CEO and the subsequent sell-off of if major business units following a catastrophic acquisition plan.

1.5.7 Weak internal coordination

Reputational risk can arise because of the lack of coordination of the decisions made by various business units and functions. It can happen that if one group decided to reach a goal that another group is not able to achieve, the company's reputation can suffer. An example could be that the marketing department decides to advertise a new product before developers have identified and ironed out all the flaws: so, the company must choose between putting on sale a flawed product or introduce it later than established. However, consumers have created expectations that the company had to meet, and it results in a lower reputation for the company because consumer's expectations were not satisfied. This time spent for divergent decisions can lead the company's reputation at risk, especially in the case in which a stakeholder group reaches a negative conclusion. In 2003 American Airlines had to face this situation when it was trying to avoid bankruptcy. While it was negotiating a huge wages reduction with its trade union, its board of directors established to grant a retention bonuses for senior executives and a big payment to a trust fund intended to protect executive pensions in the event of bankruptcy. However, the unions knew nothing about it because the company didn't tell leading them angry when they found out the negotiation: the unions decided to review the concessions package they had approved. This led to CEO Donald J. Carty resignation.
Weak internal coordination also does not help organization in changing beliefs and expectations. Basically, well-run firms and individual functional groups are not only

focused on the pulses of stakeholders but also try to manage their expectations. Investor Relations try to establish and mitigate the hopes of analysts and investors; Marketing investigates about customers; Advertising works on press that result in expectations; HR monitors employees; Corporate Communications checks the media and reports the company's notices; Corporate Affairs looks for new and imminent laws and regulations. All of these jobs are significant to understand and manage reputational risks. However, sometimes these groups do not a good job of sharing information or coordinating their plans.

A weak internal coordination is often due to the fact that the CEO has not allocated this responsibility to a specific member of the organization. In 2005, a research was conducted by Economist Intelligence Unit (Reputation: Risk of Risk, 2005) asking the executives about who in their firms had more responsibility for managing reputational risk: 84% answered "the CEO". This means that nobody is really checking the coordination process: but the CEO is the person ultimately responsible for reputational risk, because he or she is ultimately responsible for everything. However, the CEO cannot manage coordination of all the activities because of the lack of time: this will affect reputational risk.

This research shows than even in big companies, management is not sufficiently considerable in managing reputational risk.

1.5.8 Media

Finally, the last factor that could affect the status of corporate reputation is linked to the world of media. The communication that reach the final customer through the channels are very important for the corporate image. The market is characterized by many influences from the media. Management must exploit the media to generate benefits and enhance reputation: indeed, companies must communicate closely with media to avoid gaps that can be filled with rumors that are not true and which can affect the corporate image. In fact, companies must also be able to clarify the situations that are modified, amplified and misinterpreted. Investors and customers are often influenced by the media: indeed, according to Fombrun and van Riel (2004) reputation is linked to which kind of information stakeholders become aware about the organization. Indeed, the major information that stakeholders, above all consumers, learn about organizations come from the news media. Extensive media coverage of an event can contribute to increase perception of risk and amplified impacts (Bums et al., 1990). So, media coverage is an important factor of reputation management (Carroll & McCombs, 2003; Carroll, 2004).

The media reputation of a firm is defined as the overall evaluation of a firm presented in the media (Deephouse, 2000). The are some sources from which media gets information (Shoemaker and Reese, 1991). The first one is company press releases and some companies have public relations departments that provide a constant flow of information to the media.

Another two sources are stakeholders and media workers. Some reporters write news and stories tapping from different sources, and also firms are taken into account by editors and columnists. The main theme is based basically on media workers' judgments of importance and deviation from the standard in both negative and positive directions (Shoemaker, 1996; Shoemaker et al., 1992).

In order to reduce information asymmetry, media also disclose information to stakeholders. Indeed, some stakeholders are not in close contact with a firm: they get information by intermediaries like the government, rating agencies and the media, who "Screen, spin, and broker information for us; they help us make sense of companies' complex activities and so affect company reputations" (Fombrun, 1996; McQuail, 1985). So, media communicate the judgment of other information intermediaries and bring a well-established source of information for stakeholders. Therefore, the media is an institution that counteracts in order to decrease stakeholders' uncertainty about a firm's features, filling reputation's signaling role (Akerloff, 1970; Fombrun & Shanley, 1990; Weigelt & Camerer, 1988).

After examining these features of media reputation, it is possible to identify the media reputation in term of four resource properties: valuable, imperfect imitability, non-substitutability and rarity (Deephouse, 2000)

A resource is valuable if it enhances efficiency or effectiveness (Barney, 1991). Reputation promotes value creation by finding potential exchange partners as employees, suppliers, investors and customers (Fombrun & Shanley, 1990). This allows to take advantage of three valuable strategic benefits:

Lower cost for the firm; Firm is price maker; It creates competitive barriers.

As a resource, media reputation should increase firm's value in at least one of these ways. There is an example that proves the power of property and how a media news can grant all three strategic benefits: a journal article that lists Twin Cities' companies that are careful about family situation of employees, like flexible working time and child care (Hage, 1989). The article shows how the company can manage in a high quality the workplace and draws attention to employees about it. This care to the family allows the workers to choose a lower wage in case in which he wants to be close to his relatives: that involves lower costs for the firm. This can lead the company also to attract higher quality employees that can bring more efficiency and less likely to backtrack on commitments, by reducing production costs and control for the behavior of moral hazards. This lead to looking for job within the company described before that results in competitive barriers.

The outcome is that a media story can attribute valuable strategic benefits for the organizations.

The other property of imperfect imitability is linked to the fact that a firm tries to imitate a resource of another firm and it is translated in more claims and costs for the first company (Barney, 1991). The point of journal articles is developed through a complex relationship between individual media workers, their working day, the companies they work for, outside pressures and beliefs (Shoemaker & Reese, 1991). Therefore, media reputation is a very broad concept that is related to organizations, media employees, stakeholders that result as a source of news about companies and the readers of news: it is a long-term social process that involves the company and its stakeholders. It develops in an important feature of reputation generally (Fombrun & Shanley, 1990). In short, it may be hard to imitate media reputation because of the its complex and social nature (Barney, 1991).

Another important feature of the resource is the non-substitutability (Barney, 1991; Dierickx & Cool, 1989). If a resource is substitutable implies that the firm can undertake the same strategies with other resources. Barney (1991) specified that a good reputation corresponds to a psychological contract between company and its stakeholders and it is different from long-term contractual agreement like guarantees or contracts that might replace for a good reputation. However, Barney assumes that they are not close substitutes because firms try to achieve both.

Rarity is the last property: it occurs when other companies cannot have the same resource. Barney (1991) explained that rarity has a very complex measurement. The one main condition for rarity is the presence of variation in the media reputation for companies, that lead to have for some firms a more favorable reputation than others.

In brief, the information of a company with its businesses and valuations of it by stakeholders are recorded by the media. The comprehensive valuation of an organization shown by media, may also modify other stakeholders' judgments and beliefs about a company.
A favorable media reputation may have the resource properties of rarity, value, imperfect imitability and non-substitutability and it lead to increase performance (Deephouse, 2000).
After having described the main determinants of reputational risk, it is important to understand why the study of corporate reputation has significantly increased in the last few years. Indeed, the figure 2, reported by Barnet et al. (2006), presents the number of articles related to corporate reputation for a period from 1980 to 2003. To establish the trend, they looked for peer-reviewed, scholarly articles on corporate reputation that were published in academic journals indexed by ABI Inform.

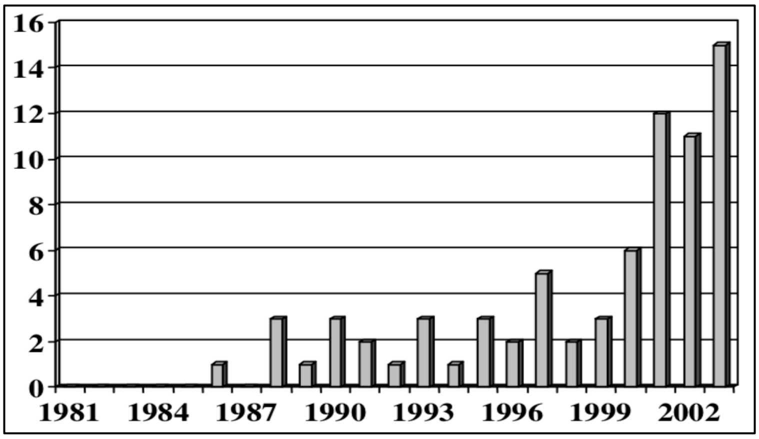

Figure 3: Indexed peer-review articles containing "corporate reputation" in title or abstract (Barnett et al., 2006)

So, the average number of scholarly articles during 2001-2003 has increased fivefold as compared the period 1990-2000 and that is because reputation and reputational risk is becoming a matter of concern for organizations. The most important issues are:

- Stakeholders importance: an organization's reputation is composed by a wide range of interested parties. The mains are customers and investors. Then there are regulators that play an important role, setting and enforcing standards. Employees' commitment contributes to productivity and service quality, and they symbolize the human face of the organization.

From the industrial revolution the main purpose of firms is to create wealth for the main stakeholders, big institutions or richer investors.

In the last twenty years there was an exponential growth in demands, expectations and influences of these groups of stakeholders.

The powerful thing of stakeholders is seen as a threat, but really shall submit a great opportunity if properly exploited in such a way to obtain a competitive advantage and a good positioning in the market.

Good reputation can be built answering to stakeholders' requests and expectations. This condition highlights the issue related to stakeholders' power.

- Globalization: it implies a great number of competing products, employers and business partners (Eckert, 2017). J. Klewes and R. Wreschniok (2009) in their book "Reputation Capital" say that in the global age social reputation has become significantly more important. Figure 3 below shows that articles on corporate social responsibility increased continually from 1965 until 2005.

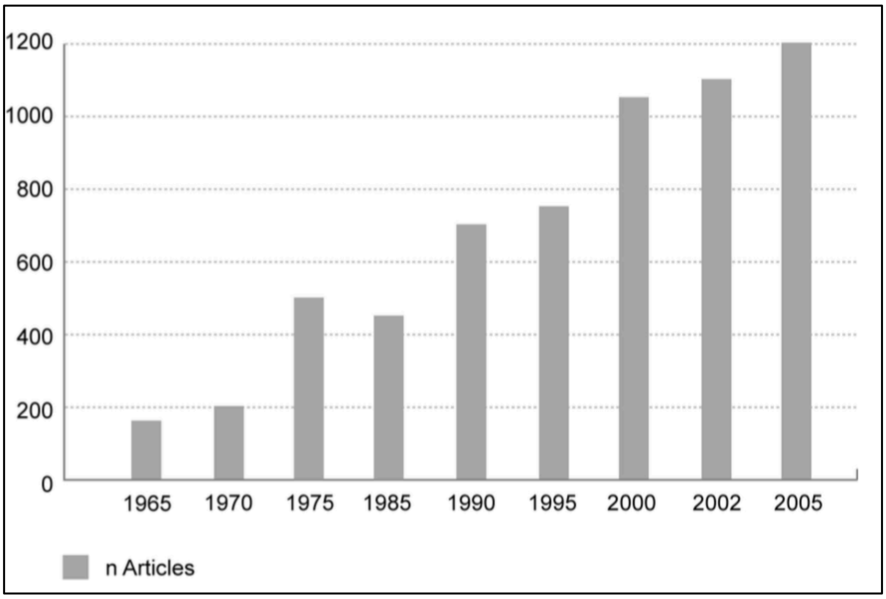

Figure 4: Development of reporting on corporate social responsibility in international news media (J. Klewes and R. Wreschniok,2009)

On the one hand, this increase is due to the fact that ethical questions have become a central news value in the international media field. The modern journalism has to answer the questions about what is "good" and "bad".

Among the positive aspects of globalization there is the possibility of developing the poorest economies: it happens through the influence of multinational companies in the less industrialized countries. As a result, companies are under pressure from many stakeholders and media playing an important role in the economic development.

However, among the negative aspects of globalization there is the risk of environmental damage, for the entire community, and strong growth of competition, for companies.

Firms play an increasingly important role in many aspects. In this case there are also many requests and interests to be taken into account: by not focusing on environmental aspects, for example, a company risks destroying its reputation.

The corporate image can be damaged in a short time only with actions or words of a single employee, partner or employee operating anywhere in the world.

- Internet and media: This is another important factor especially during the Internet period: an environmental damage, a non-compliance with the code of conduct or lack of respect of rules of conduct that can attract the media's attention and in a short time it may be shown on the newspapers in the world. Therefore, the organizations must manage relationships with media and know how to react in case of communications. Besides, not just media, but any presence of the organization on internet is important for reputation management. It is also important to keep your websites up to date and ensure data transparency. The ability to communicate effectively has become a key business skill and a reputation driver.

  The increase in availability of data on Internet lead stakeholders more involved than before (Lee, Hutton, & Shu, 2015; Scott & Walsham, 2005). Indeed, nowadays the bad news spread faster. The rise of Web 2.0 allows consumers to take part, acting and reacting, on what companies are doing without the help of third parties for media-access: anyone with a smartphone or computer can potentially reach a global public (Cormode & Krishnamurthy, 2008; O'Reilly, 2007). In addition to that, consumers have changed their source of information with regard to products and services from offline sources to electronic word-of-mouth sources (eWOM), as social networking and review sites (Gruen, Osmonbekov & Czaplewski, 2006):

consumers are inclined to rely on peer consumer opinions available online and there are no longer based on traditional commercial information, like advertisements and promotion. A global pool among 28,000 internet respondents demonstrated that only about 46% of participants reported believing in traditional advertising, whereas 92% reported trusting word-of-mouth from friends and family and 70% reported trusting online consumer reviews (Nielsen, 2012). Especially, social media platforms, as Facebook and Twitter, contribute to a large part of the available online word-of-mouth. As a result, companies changed their communication channels. Companies increasingly try to involve consumers to take part in online debates by including social networking sites as Facebook and Twitter in their communication strategy: in Fortune Global 100, an annual list of the 100 largest public and privately held companies in the United States, there are 87% of firms that are involved on at least one social media platform, Twitter 82% and Facebook 74% (Burson-Marsteller, 2012). The main motivations for organizations to adopt internet platform are enhancing reliability, corporate behavior, and client loyalty (Van Noort & Willemsen, 2011; Weinberg & Pehlivan, 2011). In sum, the activities involved in these goals are usually linked to online reputation management, which can be defined as "The process of positioning, monitoring, measuring, talking, and listening as the organization engages in a transparent and ethical dialogue with its various on-line stakeholders" (Jones, Temperley, & Lima, 2009). Through online reputation management it is possible to interact with people online, create shareable content, monitor what stakeholders are saying, keep track of their dialogue, address negative content found online, and follow up on ideas that are shared through social media (Dijkmans et at., 2015).

In order to enhance company's reputation, brand loyalty and purchase decisions, it is appropriate to achieve a high level of consumer commitment (Doorn van et al., 2010; Hollebeek, 2011). The consequences of this engagement include commitment, trust, consumers' emotional brand attachment and loyalty (Brodie, Ilic, Juric, & Hollebeek, 2013). It is considered an added value for organizations, in particular for those in highly competitive markets that are characterized overall by price competition, as the tourism and travel industry (So, King, & Sparks, 2012). Therefore, consumers who actively participate in a company's online activities is considered to be highly valuable for a company. Yet, until today there are no empirical studies that have conclusively proven the relation between engagement in a company's social media activities and corporate reputation. Most study on social media focuses on the consequences of online reviews on consumers (e.g., Utz, Kerkhof, & Bos van den, 2012; Vermeulen & Seegers, 2009), and only a few researches focus on the effect of the social media activities of companies. The main themes of the latter researches are not focused on corporate reputation but on linked concepts as consumer trust, emotional appeal and brand attitude, typically producing positive results. Therefore, the influence of social media activities is the result given by the capability to manipulate perceptions of corporate reputation and by the number of people that can be reached with these activities. A likely key factor for consumers to take part in a company's social media activity is consumers' inclination to use social media. In fact, a study made by Leung and Bai (2013) reveals that the heavy use of one social media and the involvement in a company's social media activities are strongly related. Therefore, a positive association between consumers' intensity of social media use and engagement in a company's social media activities (Dijkmans et at., 2015)

- Growth of intangible assets: as reputation is an intangible asset, it is important to highlight the significant increase of the latter one from 1975 to 2010 as shown in a study made by Ocean Tomo (2011): from 1975 to 2010 the average market value of Standard & Poor’s 500 company increased in terms of intangible assets by 17% to 80% and the tangible assets decreased from 83% to 20%.

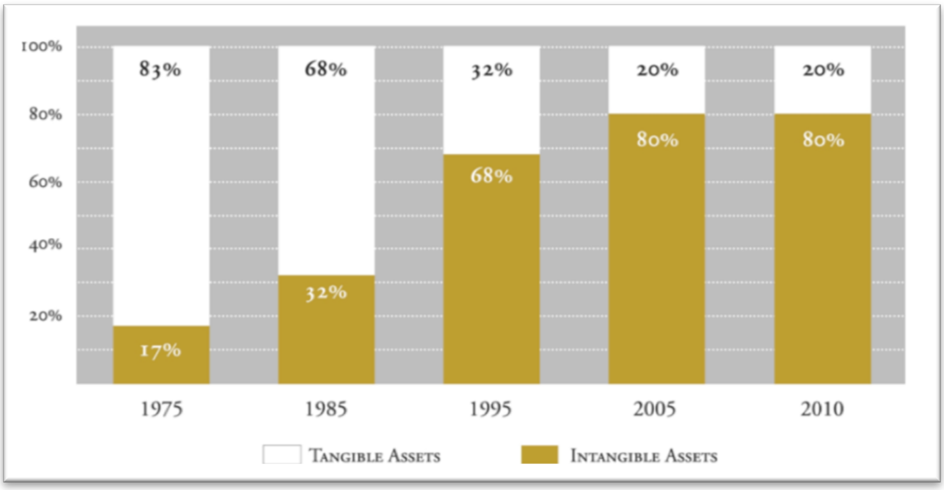

Figure 5: Components of Standard & Poor's 500 company Market Value (Ocean Tomo, 2011)

This happens because of the economy and technology is developing rapidly. To date, the intangible assets represent the comprehensive advantages of the enterprises in the market competition and have become the strategic resource in the developments of enterprises. They have a significant role in production, operation and management.

Over the years, shareholder's demands have been met through financial indicators focused on earnings. EBITDA (Earnings Before Interest Tax Depreciation and Amortization) which was one of the most used indicators, is now considered discredited as a result of the changes. Traditional annual reports provide insufficient information on the company's true health and future prospects. Today are considered very important elements:

corporate reputation, mission and vision, leadership, quality, skills, and employees' motivations, the possibility to exploit knowledge and to innovate and the intellectual property.

These points are unfortunately not captured in the valuation of business capital with financial indicators. Investments in highly intangible assets are often seen as an expense since there is no correlation with future profits.

Many experts are against this logic and believe that the intangible assets such as reputation is a powerful barrier to entry for new competitors and helps to maintain high level of competitiveness.

Some governments such as the UK supports companies to include non-financial information in their annual financial statements to allow investors to assess more accurately the status of the companies. In turn, investors are increasingly interested in intangible assets and consequently in aspects related to corporate reputation.

1.6 Conclusion

The chapter analysed the concept of corporate reputation understood as "the sum total of how stakeholders perceive you". In this sense, it has been highlighted the importance to satisfy the needs and expectations of stakeholders as they represent the engine of the organization which gives impetus to the life of it. A good corporate reputation represents a strategic resource able to create value and, by its intangible nature, to differentiate the company among competitors without being directly captured in its balance sheet. Logically, the other side of the coin is that a bad reputation can cause a real damage for the company; a damage that is not merely economic but even before of the company image.

Therefore, the main issue of this thesis has been introduced: the concept of reputational risk. For these purposes it is hard to define what reputational risk is because of the lack of a clear definition and a stand-alone category of it. In addition to a "qualitative problem", the real concern is trying to find a way to measure it in a quantitative perspective. As mentioned, reputational risk is distinguished by its intangible nature, which makes the measurement issue even more complicated. What is certain is that reputational risk does not act in isolation but derives from the development of other risks. A first negative impact can be grasped in monetary terms as a loss of profit and equity or company's market value that will badly affect the cash flows.

The main determinants of reputational risk have been deeply discussed presenting concrete examples as a testimony.

It has emerged that nowadays medias play a fundamental role in corporate reality acting as a potential cause of reputational risk: they represent the main vehicle through which information is immediately conveyed to the public. Therefore, these tools should be seen as a dangerous threat and controlled making the data accessible to the public and acting reducing information asymmetries.

In addition, firms have to consider the great change in the way the work environment is conceived. People today are more sensitive to topics like workers' right or the respect for the environment. For this reason, organizations will no longer be able to make profit at any cost but will have to act in respect of these new policies in order to safeguard their personal reputation and respectability.

Chapter 2
Measurement and management of reputation and reputational risk

2.1 Introduction

The aim of this chapter is to show the more relevant techniques and tools employed and applied for the estimation of reputation and reputational risk.

The chapter begins with an analysis of the Reputational risk treatment by focusing on the importance for the organization to have a global picture of the practical ways in which its reputation affects success, how damage might impede success and how a better reputation might help it (Fitzsimmons A. and Atkins D., 2017).

In particular Fitzsimmons A. and Atkins D. (2017) propose an extract from a reputational risk report to a financial services board splitting it into two recommendations: the first one is related to recommended actions for board and the second one is about recommended management actions. The section ends with the description of some ex ante and ex post measures by Floreani R. (2012) that should be adopted in order to reduce reputational risk.

Moreover, it is made a deeply analysis of the models proposed by Larkin J. (2003) and Regan L. (2008). Specifically, the first model gives a broad vision of each step that a company management must follow in managing reputational risk. The second one is based on the fact that reputation management must be an integral part of the ERM process which "is a process related to strategic planning whose direct manager are the members of the Board of Directors" (Regan L. 2008).

In the third section are analyzed several qualitative and quantitative methods that can be used as an estimate to give an economic value to corporate reputation. Specifically, for the first category are described the Reputation Quotient, Reputation Index, Fortune's Most Admired Company (AMAC) and RepTrack. For the second category are explained some approaches like the Intellectual Capital Approach, Accounting Approach, Marketing Approach, Financial Method and Balanced-Scorecard.

Finally, last section focuses on reputational risk measurement using here again both qualitative and quantitative approaches. The qualitative method analyzed is known as gap analysis, developed by Honey G. (2009). That method focuses on the relationships between the organization and the relevant stakeholders, trying to understand whether there is a gap between stakeholders' perceptions of corporate reputation and reality. The chapter ends with the mathematical description of the two quantitative approaches concerning an ex-post valuation of reputational event yet occurred in the past. The first one is developed by Perry J. and De Fontnouvelle P. (2005) who focus on the relationship between the size of the operating loss, its nature and the corporate governance structure and measure the reputational loss considering the reaction of the share price to the announcement of this significant operating loss. The second one is proposed by Soprano A. et al. (2009) that like the method mentioned above it is based on the observation of shares prices fluctuations, but it is different from the other one because on the fact that it is only focused on the share price volatility. Its main assumption is that reputational events will directly impact company's market value.

2.2 Reputational risk treatment

It is important that the organization has a global picture of the practical ways in which its reputation affects success, how damage might impede success and how a better reputation might help it.

Fitzsimmons A. and Atkins D. (2017) propose an extract from a reputational risk report addressed to a financial services board. The extract is split into recommendations addressed to the corporate board and recommendations addressed to the corporate management.

In the first case there are some actions that the board is recommended to follow in order to ensure that reputational risks are proactively identified and managed:

A. The Board of Directors (BOD) should carry out an operation that will contribute to identify and establish several sources of behavioral, organizational and reputational risks in relation to the board and allow additional analysis of their potential impacts, in order to develop the best ways to treat with them.
B. Accurate and tailored training of the board on behavioral and organization risks and their relationship with reputational damage.

C. Enhanced reputational risk appetite should be only established by the BOD. This will allow the board to determine endurances for behavioral and organizational risks, which often lead to reputational damage.
D. The board should also regularly detect the behavioral and organizational risks in their midst and in the context in which they work and measure the results of what was found.

In the second case the firm should provide the management a basic framework for assessing and managing reputational risk. This could cover the implementation of the following steps:

A. Instruct the CEO to check and monitor the reputational risk. The chief executive, together with the board, need to infuse and bring the risk culture within the organization and illustrate the right behavior to follow.
B. Engage reputational risk discussion throughout the executive committee (EXCO) and BOD meetings as a standing agenda.
C. Encourage employees to protect corporate reputation. Leading companies are already aware of reputational risk regard their performance management and employees can ensure a valuable contribution as “eyes and ears” of the business.
D. Expand an outside-in perspective on risk (based on the belief that customer value creation, customer direction and customer backgrounds are the keys to success). Implement a “reputational lens” to key traditional risk groups in order to make clear how damage to reputation might arise if they are not readily managed and intervene to fill any gaps.
E. Assess the corporate reputational capital. Although methods of realizing a financial value against reputation are still at the beginning of testing, bringing experts to reassess the effect of various reputational issues and reporting this widely across the firm can undoubtedly help to bring the message home.
F. Learn from other’s mistakes. Many of the greatest corporate reputational accidents of these years provide some models in textbooks and there are many lessons and best practices that can be used from their studies.

The audit activity on reputational risk allows companies to constantly monitor the status of their reputation through instruments which represent appropriate countermeasures to reduce reputational risk from a risk free from any control to a mitigable risk.

The first phase of the reputational risk treatment consists in the identification of potentially harmful events. Prudentially, companies must take ex-ante measures to prevent the favorable conditions for the emergence of the aforementioned risk. These ones can include indices that signal the eventual occurrence of unfavorable events or negotiation practices considered suitable to interrupt a negative trend. The second phase involves ex-post activities mainly focused on supporting the development of reputation mitigation or management solutions and the design of monitoring programs for the latter (Floreani R, 2012).

Ex-ante treatments	Ex-post treatments
• Statistical surveys on complaints and claims received; • Monitoring of the growth rate in complaints and claims; • Evaluation of the growth rate in legal cases brought by customers; • Statistical studies on operational losses; • Analysis of positioning index with respect to competitors; • Considerations on customer satisfaction indices; • Fluctuations on the customer portfolio: the incoming and outgoing; • Public satisfaction rating on advertising campaigns; • Percentages of withdrawals from contracts; • Comparative assessments on the innovative nature of the products and services provided; • Monitoring of company climate among employees; • Surveys on the degree of presence	• Discussion with management and elements of the Board of Directors → allows to precisely identify the values and the basic mission of the company; • Targeted inquires on stakeholders and rating analysis → allows to obtain an adequate information patrimony; • Evaluation of complains and legal cases in progress → allows to identify in a decisive way the aspects that can be linked to the main weaknesses of reputation with institutions and stakeholders; • Individual or group interviews of front-office staff → allows to verify the sharing between the image of the company as outlined by the employees and the vision of the management; • Climate surveys → allow to be aware of the knowledge of the status of the reputation among their employees;

in media; • Stipulation of agreements with consumer associations and or trade unions. The surveys listed above may involve a heterogeneous series of effects. By way of example, the most common are; ▪ Oscillation of profits; ▪ Impact of penalties and/or recalls received from the Supervisory Authority; ▪ Effective number of strategic partnerships/collaborations in existence and number of those envisaged; ▪ Increase in staff turnover rate; ▪ Increase in recruiting costs and staff training.	• Generic reputational analysis → allows to understand which are the factors that positively or negatively affect the reputation, and which are the relationships that bind them; • Media analysis → allows to check the status of the reputation in the main media; • Web analysis → allows to monitor the contents on the web such as banners ads, comments on social networks and forum reviews; • Customer satisfaction surveys: customers are one of the main stakeholders for any organization. The evaluation of the quality of the service provided is one of the starting points for building a solid reputation.

Figure 6: Data processed by the author

Different authors have developed models to treat reputational risk.

Larkin J (2003) model is structured in six steps that a company management must follow in managing reputational risk.

The first one is to establish monitoring systems, the so known reputational risk radar. Companies must establish systems that are able to determine potential problems that may come out of the commercial, political, social, economic or technological areas and that can negatively affect the company's strategy. The figure below shows some factors that influence organizations that must be taken into consideration.

Figure 7: Reputation Risk Radar Screen (Larkin J., 2003)

A system must also be set up to measure the incidence of damaging events and to manage information on stakeholders by measuring their level of interest and influence. Furthermore, organizations must prepare for the turmoil in the sector in which they operate by monitoring the websites of high interest, creating scenarios with external consultants with experience in this field (Argenti P., 2005).

Once the main events influencing company reputation have been determined, it is necessary to order them according to their importance. Larkin's model proposes the following figure which divides menacing factors into three categories:

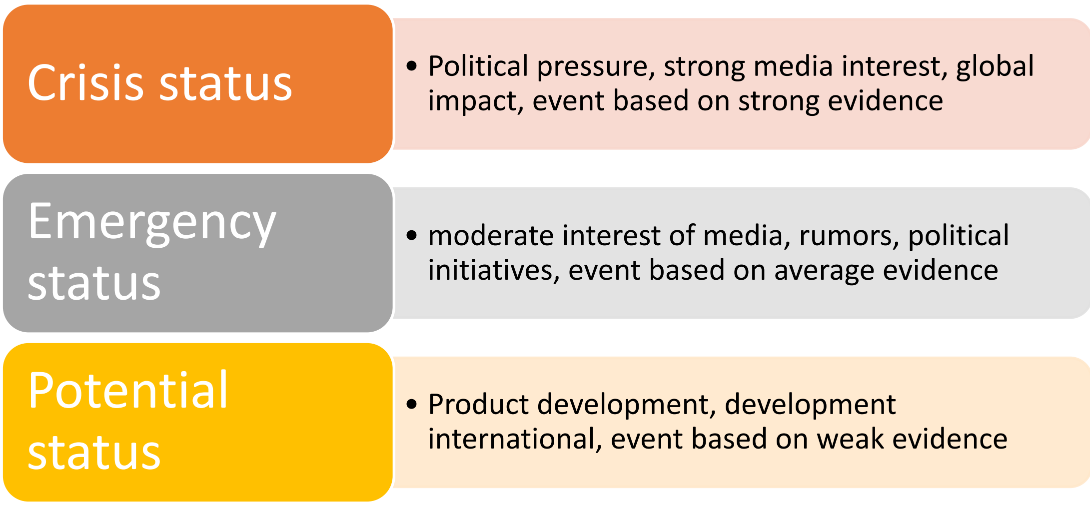

Figure 8: The importance of risky factors (Larkin J., 2003)

The second step provides the development of techniques to manage risky events by creating appropriate short-term and long-term strategies. This improves the understanding of goals, operations, values and behaviors. Company management must identify all events that may impact the company. For each event the cost of the impact and the probability of occurrence of the event must be identified.

Reputational risk must be gradually integrated into internal audit procedures. This would ensure its influence in operational and strategic decisions. Among the procedures to be carried out those recommended are scenario planning, audit and benchmarking, obtaining qualitative and quantitative data for planning.

Cost (impact on performance)	Transfer (try to decrease the impact)	Avoid
	Monitoring the development	Mitigate (try to decrease the impact)
	Probability	

Figure 9: Risk mapping (Larkin J., 2003)

The risk mapping process is the most frequently used to calculate risk exposure. For each event it is necessary to estimate the probability of occurrence and its impact in terms of cost. Once inserted into matrix the risky events must be checked according to their position in the matrix. Risk management involves the use of different strategies based on the kind of risk to be managed. In this sense, if the likelihood of occurrence and the impact are low, it is only necessary to monitor the dynamism of the event. If, vice versa, the variables are high, the risk must be avoided. In cases where only the cost is very high it is possible to reduce the impact by transferring it to third parties, while for events with very high probability there is the need to mitigate and adopt control measures.

The third step of the Larkin model is the assessment of the gap between current performance and stakeholder expectations. Once the gap has been determined, it is necessary to analyze the effectiveness of risk management and whether the needs of the stakeholders are met. It is undoubtedly important to take into account how the organization acts in the market and which stakeholders are actually able to influence reputation and performance. This phase allows the determination of the differences between the corporate perceptions on the objectives, values and priorities and beliefs of the major stakeholders. Unlike other business risks, reputation risk requires a constant relationship with stakeholders. Companies must meet all their needs because any interested party could influence profitability if their need are not met. It is important to remember that the main reason for the bad reputation is the gap between expectations and performance.

The fourth step focuses primarily on determining the responses that the company idealizes for managing reputational risk. The strategies to be used are the consequence of the other steps. According to the risk mapping, the company must take a path in managing its reputation. With regards to strategies to bridge the gap between performance and stakeholder expectations, company management must take discretionary measures.

The fifth step aims at implementing the strategy approved by management in action plans and communicating with the most relevant stakeholders. This ensures it is possible to avoid negative impacts on the company. Both internal and external communication is very important to establish good relations with the stakeholders and for achieving the objectives of risk management.

The last step of the model is only a trick that is used to remind those who make the assessments that the risk management process must be continuous and constant. In general, the risk management is a constant process which requires continuous revaluations because the dynamism lies in the nature of the risks.

Another model is developed by Laureen Regan (2008) who aims to integrate the reputational risk management process into the ERM framework. However, the model is very similar to Larkin's model in structure and evolutions. According to the author, good reputation can be a key for a competitive advantage. This is particularly important in today's environment characterized by intense competition, market globalization and instant information flows. The reputation gives advantages in accessing important markets, attracts capital raising, high quality labor and helps to maintain good relations with suppliers and customers. However, the management of reputational risk is not well established among companies.

There are several reasons for the lack of interest in reputation risk management.

First of all, companies have always been focused on the management of financial and operational risks and compliance with regulations and many firms do not comply with the above principles to switch to reputational risk management. Moreover, reputational risk is much more complicated to manage than financial risk because of the lack of a clear and widely recognized definition of the concept of reputation and reputational risk and a classification and measure of that kind of risk.

Finally, many managers think that corporate reputation is a function of the reputation of all companies in a given sector and therefore spending money and resources to improve it makes no sense.

In fact, the Regan model is based on the fact that reputation management must be an integral part of the ERM process: it is a process related to strategic planning whose direct manager are the members of the Board of Directors. The model to be implemented is composed by five steps that represent the whole process that closely resembles the Enterprise Risk Management process as it is a dynamic and a not stand still model. The process must be periodically reviewed to ensure its operation.

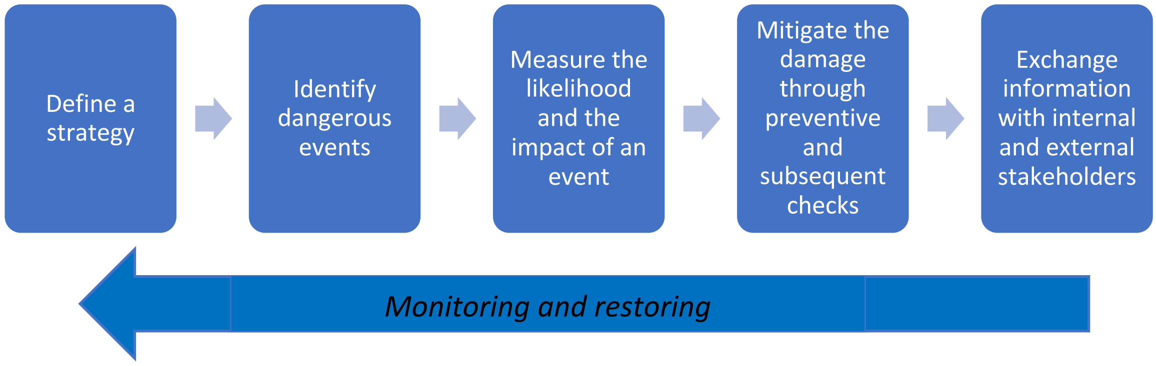

Figure 10: Reputational Risk Management process (Regan L., 2008)

The first element of the reputational risk management process is the definition of the strategy. First of all, the author proposes the conceptualization of the ERM which is "A systematic process that allows the company to identify opportunities and threats for the performance of the entire organization and manages them in a unitary way in order to achieve the objectives of the company".

This step requires a definition of the objectives to be achieved during the whole process. The need is to answer questions like – what the reputation for the organization is and how can be managed and integrated into the ERM process, who is responsible for reputation risk management, who the main stakeholders are and what their expectations are. The most important definition refers to the company internal perspective, a reputation as an intangible asset, and an external perspective that concerns the perception of the stakeholders: the strategy is related directly to the stakeholders' requests and it purses all the company's initiatives, from those related to communication to those more strictly operational. It is essential to know the current reputation of the company. There are different methods to do this. Several companies provide the rankings and measures that can be used. In addition, some journals like Fortune, Wall Street Journal and Financial Times periodically publish rankings on the reputation of the various industrial sectors and on the individual companies. Media and customer inquiries can also be conducted because those can provide a starting point for understanding the company's reputation.

Once the context of reputation risk management is defined, it is necessary to identify the set of dangerous events. Reputational damage is a secondary effect after the occurrence of other events resulting from the primary risks. Within the ERM each event that carries a risk must be evaluated trying to understand the primary risk, direct, bearer of direct losses and the indirect risk that is the loss of reputation.

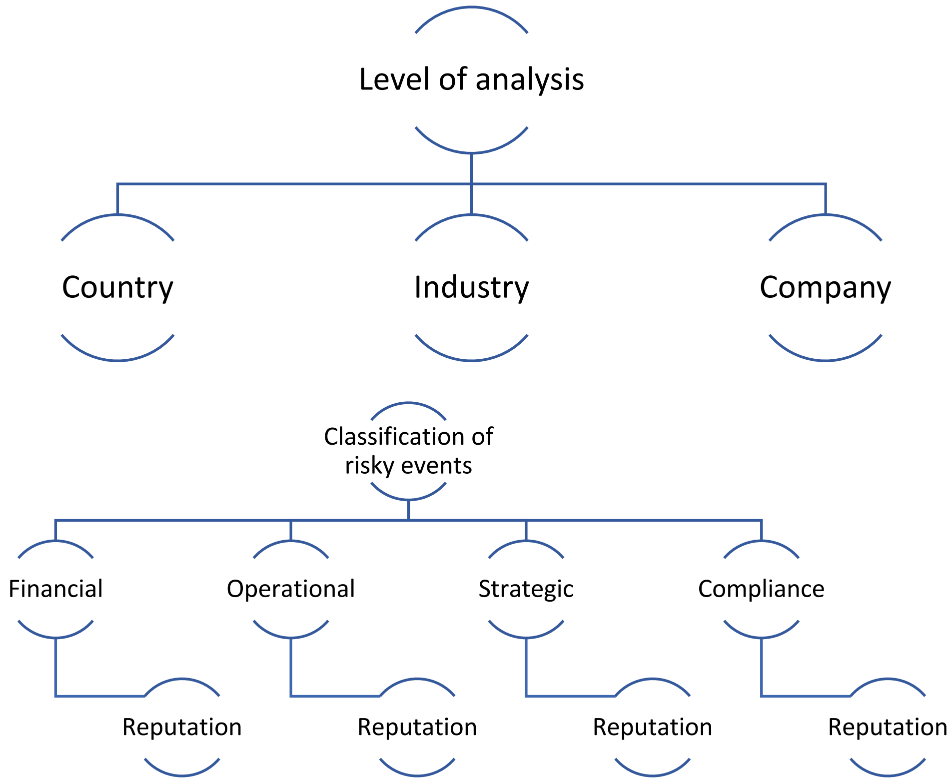

Figure 11: Identification of events that lead to reputational damage (Regan L., 2008)

As shown in the figure above in each company there must be a ranking with risky events that can also be considered reputational events as bringers of secondary losses. A special team must be created with specific knowledge of the company and the industry and composed by members of different hierarchical levels. Senior executives contribute with their strategic knowledge while corporate management with customer and supplier relationships more easily identifies operational events. All functional area must be present in the team. However, the most interesting events are those that carry risks that would compromise corporate reputation.

Reputational risk can be ascribed to business operations, external events and relationships with third parties. The identification process must consider three levels of risk: country, industry and company level. Within companies, damage can derive from events such as breaking relationships with suppliers, internal fraud, violation of ethical standards or from incorrect behavior by business partners.

However, efforts are not always sufficient to maintain a good reputation that often depends on the average present in the reference industry. In other cases, reputation is a function of the country in which the company is present.

Once the list of risky events has been determined, the risks must be divided into categories as shown in the previous figure. Events presenting similar features must be grouped into the same categories. Companies must divide risks by their importance to better allocate resource for their management. The following figure shows the most frequently used method for measuring the impact of risks and their probability of occurrence. The method is the same that is used in the Larkin model.

Severity		High priority
	Low priority	
	Probability	

Figure 12: Measurement of probability and severity of reputational damage (Regan L., 2008)

The figure shows the method that represents a map of reputational risks. A score is given of the expected probability of a damage occurring and of the expected impact of an event. On the x-axis there is the probability while on the y-axis it is represented the gravity of the events. When the probability of occurrence is mapped, it is necessary to look the underlying event and the probability that an additional reputational damage will occur. The severity of the reputational event depends on the cause of the event. For example, if an event is perceived as an event under the control of company management, it is considered a high level of seriousness. If an event is not controlled by the company but depends on external factors, it is considered less serious. Events such as internal fraud or non-compliance with ethical principles result in losses on average higher than other types of events.

According to some researchers (Alt K.S., 2002), there are some factors that can increase the severity of reputational events and must be taken into account in the mapping process. Large listed companies draw too much attention on themselves than small companies. Furthermore, public companies have a greater number of stakeholders whose needs must be met. Reputational damage is less severe when companies are diversified both in terms of geography and in terms of their product lines. Other authors instead argue that there are real reputational levers that are defined as “All those initiatives that contribute to amplify the consequences, positive or negative, that the risk factors can generate on the corporate reputation” (Rebora G., 2004). In assessing the severity of damaging events, these multiplier effects must be taken into account, which are mainly of three types. First of all, there are the relationships with the stakeholders that can determine harmful consequences. A good relationship that goes beyond the economic interest can be crucial in the success of Crisis Management policies. Also important are the messages that a company transmits about the activities that it performs in order to gain consumer confidence. Finally, certification and quality systems based on aspects of continuous improvement and constant attention to stakeholders’ needs can play a role in amplifying reputational effects.

For each risk with high priority that appears in the matrix above, it is necessary to identify why that risk exists. The company must implement strategies to decrease the probability of occurrence of the harmful event or reduce the impact of a given event if this has occurred. Reputational damage occurs because stakeholders’ assessments change in response to events and in response to the company’s ability to handle that event. The evaluations of the interested parties change at the moment in which a certain event attracts the attention of the media. In this sense, managing an event means focusing on communication with the media and the main stakeholders.

If the company can establish strong relationships with the mass media before an event occurs and if it can determine action plans in advance, reputation risk management becomes an easier task. The concerns of each stakeholder must be understood and communicated in appropriate language. For example, investors, customers and regulatory bodies use different languages and have different concerns with companies. The main objective of the organizations is to ensure all stakeholders that their claims are understood and met. The following figure shows the considerations for an effective process of mitigation of reputational losses.

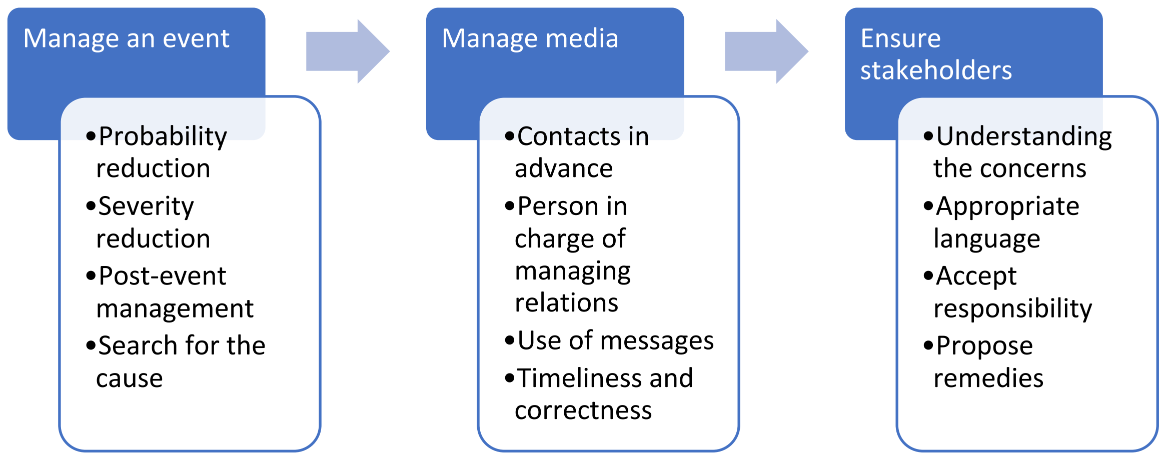

Figure 13: Mitigate the reputational damage (Regan L. 2008)

The company must appoint a spokesperson to communicate with media and the main stakeholders. The spokesperson must be informed about the company, the industry in which it operates to ensure the credibility of the messages transmitted. Internal control and communication protocols should ensure that all requests are forwarded to the spokesperson and that there is only one channel of communication with media. otherwise there is a risk of communicating conflicting and incorrect messages. The spokesman must be a subject accustomed to media actions and must know what to expect at any time. The messages transmitted must be honest because it is shown that efforts to hide the truth are very fragile techniques and the repercussions for organizations are very serious. The spokesman plays an important role: in fact, media use his words to make judgments about the corporate reputation. If the spokesman does not know what to say about a given event, it could worsen the reputation. In this case it is better to explain that there is currently a no precise answer and as soon as possible the company will provide a comment about the event concerned. In fact, communication with the outside must be timely: when you realize that a given event has been caused by the company itself it is important to accept responsibility, to apologize and to communicate how you will proceed. This type of communication will guarantee corporate integrity and the satisfaction of stakeholders' interests.

The Enterprise Risk Management process for reputational risks ends with communication and monitoring. Company employees must be informed about their company's performance to ensure that each corporate entity protects and improves corporate reputation. As all types of risks, reputational risk is characterized by dynamisms. Even if the company management develops a good ERM system, the risks and events must be periodically revalued to ensure the consolidation of the reputation over time. Reputational capital has great value for companies. Reputational risks are hardly measurable and calculable with respect to financial risk. However, their impact on companies is equally threatening. In this sense, the integration into the ERM model of reputation risk management is important for maintaining a good reputation and meeting the needs of stakeholders.

2.3 Measuring Corporate Reputation

As stated in the introduction, to assess reputation there are both qualitative and quantitative methodologies. In particular, the first method has the aim is to attribute a numeric outcome to the level of corporate reputation, while the second method shall aim to assess the economic value of the whole reputation value or just some of its aspects. Among the evaluation criteria four qualitative methods based on questionnaires are relevant and four quantitative models: the intellectual capital method, the accounting approach according to international standards, brand measurement and market models.

2.3.1 Qualitative methods

The best known qualitative method for establishing the level of reputation is given by reputation indexes. Over recent years, many qualitative-index methodologies to assess reputation have been proposed and implemented. The main characteristic of these methods is related to the fact that those are survey-based methods: indeed, a survey is done asking to some respondents to give their view on a firm in reference to a specific parameter of reputational dimensions and then implement these opinions into an overall score.

There are some techniques like Reputation Quotient, RepTrack, Reputation Index and Fortune's Most Admired Company (AMAC). These ratings are differentiated by the different classifications of the determinants of reputation.

Reputation Quotient (Fombrun C. et al., 2001) is a tool proposed for the first time by Charles Fombrun and subsequently developed by the Reputation Institute and the Harris

Interactive company. The result of the collaboration is the creation of a standardized tool that could be used to measure the perception of companies. Market surveys have been carried out to find out what consumers think about companies that they considered having a good and bad reputation. According to the results of the research there are six dimensions with twenty attributes that are the parameter of the stakeholders in their assessment of corporate reputation:

a. Emotional appeal: it is linked to the emotional sphere of consumers who evaluate companies. It is a function of the degree of respect, admiration and connection of the customers with society in question.
b. Products and services: it depends on the perception on the quality of the products and the reliability of the company.
c. Work environment: it constitutes a set of perceptions about how a company is managed, the safety on the work and the quality of the employees.
d. Financial performance: consumers also take into account economic and financial performance in their assessment of corporate reputation. Among the variables in this category there are levels of profitability, prospects and riskiness of corporate investments.
e. Vision and leadership: the fifth driver of the Reputation Quotient is vision and leadership. The underlying variables are qualitative and are linked to the company's ability to present itself with a clear and explicit vision and with a managerial body with leadership skills.
f. Social responsibility: every company has relations with society and citizens. Consumers are very sensitive to the dynamics concerning these relationships. In fact, in their assessments of reputation they include the relationships between the companies and external environment.

Once the twenty main attributes categorized into six groups have been determined following the interviews conducted by Reputation Institute researchers, investigations are made on the importance of these elements. Each person is asked to identify the best and worst companies based on their reputation and then assign a value from zero to seven for each Reputation Quotient driver. This driver is then transformed into a percentage from which derives the classification of companies. The rankings are published annually by the company Harris Interactive and can be a useful yardstick of corporate reputation. Some authors argue that the publication of the report, Reputation

Quotient, strongly influences the fluctuation of corporates equities securities (Abraham S. et al., 2008).

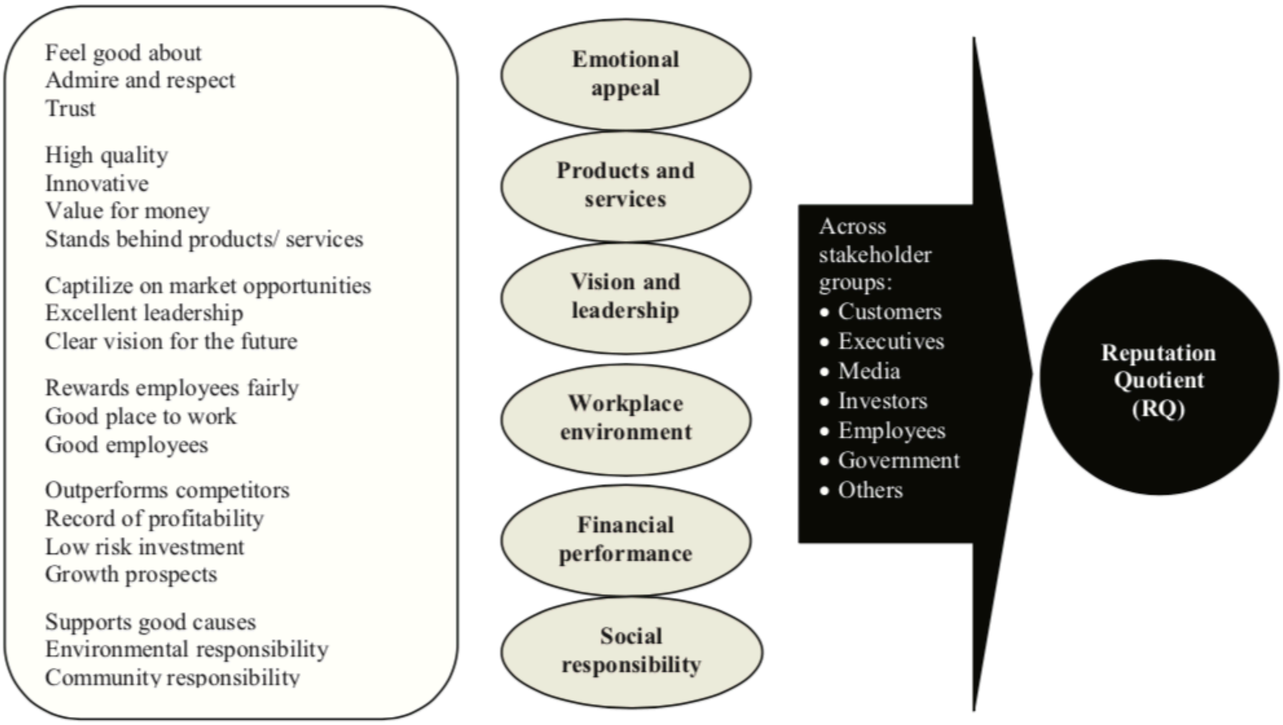

Figure 14: Indicators of Reputation Quotient (C.B.M. van Riel, C.J. Fombrum 2008)

In 2006 Reputation Quotient is subsequently replaced by a method called RepTrak which is created by Reputation Institute and that in recent years has become the most recognized and widely used method of measuring and comparing corporate reputation. C.B.M. van Riel and C.J. Fombrun (2008) indicate that RepTrak method is the first standardized and complex approach of corporate reputation measurement that is implemented at the international level for judgment of various stakeholder groups: indeed, it is created in order to provide organizations with standardized framework for the identification of indicators based on with corporate reputation is formed and managed (Reputation Institute, 2009). RepTrak, strong point from the Reputation Institute, of which Charles Fombrun is founder and president, is a model developed by Cees Van Riel, who, once established the reputational level of the company and the steps necessary to raise it, identifies the economic improvement that can be obtained.
Bearing witness to this, RepTrak was in this years adopted by the magazine "Forbes" for the annual rankings of the world's most known companies (D. Vivader-Cohen,

2007). The RepTrak method, compared to the Reputation Quotient, has removed the international research limits, has integrated the list of indicators and some indicators have been renamed (van Riel, Fombrun, 2008). RepTrak tracks 23 indicatores grouped into seven dimensions considered significant. The model is used in close collaboration with the client, with the aim of defining its reputational level in terms of business (Reputation Institute, 2009; Reputation Institute, 2010a). C.J. Fombrun (2006) states that a different number of indicators could be used to measure corporate reputation: this is due to the type of organization assessed or the group of stakeholders.

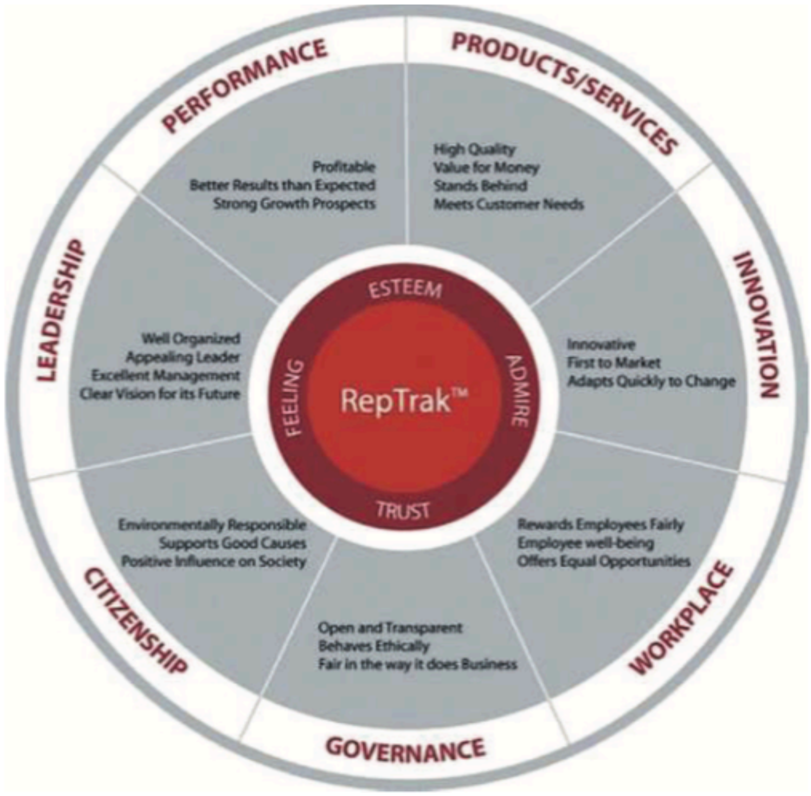

Figure 15: Indicators of RepTrak method (C.B.M. van Riel, C.J. Fombrum, 2008)

RepTrak is therefore mainly the model through which the Reputation Institute reaches the evaluation of the reputational level of a company in close collaboration with it. The RepTrak steps are as follows:

- Audit: Each company has a wealth of information on its stakeholders and their relationships with their business. The first step is to collect them to use them as a starting point for the following ones.

- Architect: The output of the previous step is integrated with the inputs of the management and experts of external relations and the reputational image of the company is created, an analytical framework that maps all the activities carried out and all the opportunities.
- Analyze: All company stakeholders are analyzed to measure their perceptions and expectations. Through a sophisticated approach and rigorous analysis, the reputational image of the company is "made alive", defining a dynamic model that establishes how reputation affects the business.
- Act: The analysis is integrated with the strategies to predict the results of planned activities and investments. Going beyond the normal customer-based models, we are able to meet the different expectations of the stakeholders and the numerous factors of influence to generate a decision engine that measures the potential reputational effects.
- Assess: If the base line is established with Analyze, assess says how much progress can be made by applying the recommendations defined in the Act and therefore which ROI can be expected.

Great care in the RepTrak approach is given to “RepTrak Pulse” measurement method that assesses corporate reputation between customers. The latter one has 4 main benchmarks: esteem, admire, trust and feeling that customers feel to the organization (Reputation Institute, 2009; Reputation Institute, 2010a). Corporate reputation is also assessed on the base of indicators that form the 7 corporate reputation factors. Figure 12 presents a comprehensive view of RepTrak method towards measurement of corporate reputation.

The main advantage of that method relies on the fact that corporate reputation measurement factors and indicators described above statistically don’t depend on each other. Besides, all corporate reputation measurements are comparable between operating fields, countries and in time (Reputation Institute, 2009).

One restriction is the close correlation with organizational revenue. Indeed, RepTrak measures corporate reputation of firms that are wealthy and have highest revenue in each country. Also, that organizations must have a number of customers and must be well-known in the society. They are assessed only in their hometown. (Reputation Institute, 2009). It is set that RepTrak method might be also limited due to the fact that all factors and indicators of corporate reputation have the same weight.

Another useful tool for measuring reputation risk is Reputation index that is developed by Cravens, Goad and Ramamoorti (2003). In order to form the index, interviews are carried out as in the case of the Reputation Quotient but this time it is made by subjects within the company. 650 delegates participate in the surveys responded to a set of questions. According to the results, 72% of the participants classified the quality of the products and services and the reliability of the company as the most determining factor. Among the other answers, the most frequent were the quality of management, the added value for customers, social responsibility and innovation in the sector. All the answers of the CEO were then grouped into different categories like products, employees, external relations, innovation and the creation of value, financial solidity, strategy, corporate culture and intangible liabilities. For each element is associated a score ranging from one to nine. Once these components have been determined, the index develops through queries from the main company stakeholders to assess their opinion. The most important group is undoubtedly the customer, but it is not sufficient to adequately assess the reputation. Other stakeholders such as suppliers, employees, partners and competitors must also be questioned. By including all the interested parties in the analysis, a more sophisticated tool is formed that better expresses the company's reputation with respect to the Reputation Quotient. The following points represent the elements that were detected for the index measurement.

a. Products and services: the products offered in the company are the most important value for a consumer and are crucial for the creation of a stable brand. This is one of the main drivers of reputation as the contact of consumers with the company is established further the products and serves offered. There is the need to measure the attributes of the products offered such as quality, reliability, ease of use.
b. External relations: company relationships with suppliers, partners, investors and competitors must be assessed. The quality of relationships is also a function of good corporate reputation.
c. Solidity of assets and productivity: economic and financial reports are a communication tool for legal purposes but also to maintain a good relationship with stakeholders. Some authors consider company officials report a tool that can improve company reputation and restore it when harmful events occur.

d. Intangible debt: this component of the Reputation Index refers to the liabilities present in the financial statements deriving from intangible assets such as reputation.
e. Employees: they are a real example for the outside. When they are not loyal to the company in which they work and do not feel involved, customers often also act in the same way: consequently, the reputational losses are considerable.
f. Innovation and value creation: both elements are important to differentiate themselves in the market in which a company operates. Evaluating these two elements means focusing on indicators such as the number of new products of the year taken as a reference compared to the past years.
g. Strategy: all business decisions have a hidden risk that can affect reputation. In situations where there is a lack of a good planning and control process, loss of value and consequential loss of reputational capital can occur.

To turn the qualitative measurement described above in a more appropriated form to developing a reputation index, the authors proposes a nine-point scale to identify the magnitude of the measure. The scale values for that measures are classified with 9 as an ideal or benchmark and 1 as the lowest, or least desirable measure on the scale. The replies to the scales for the individual actions should be averaged for each unrelated component of corporate reputation. Once the overall measure (value of 1–9) for each component is done, a comprehensive measure can be made by implementing weights to each of the elements and summing the values. The authors proceed with a range for the weights of the components in the index. In particular they consider the impact of the product or service provided to be of primary importance. The weight of this component might vary from 30 to 60 per cent. Employees, external relationships, innovation, and value creation can each reach a maximum of 20 per cent as it is possible to see in Table 13. All of these elements are important, yet the related impact on corporate reputation relies on the strategic function and operational efforts of the firm at a designated point in the corporate life cycle. Thus, these elements may differ significantly in importance depending on specific organization features and priorities. Although the least value for these components swings from zero to one, value creation has a minimum weight value of 5 per cent. This component is so essential in terms of corporate reputation that there is a higher minimum value. The annual report, strategy, culture, and intangible liabilities components have a maximum weight of 10 per cent as some of the elements of these components are implicitly considered in other areas.

Index Component	Range of weights (sum to 100%)
Products or services	30–60%
Employees/suppliers	1–20%
External relationships/alliances	1–0%
Innovation	0–20%
Value creation	5–20%
Financial strength and viability	0–10%
Strategy	1–10%
Culture	1–0%
Intangible liabilities	0–0%

Table 16: Relative Weights for Index Components in Developing an Aggregate Measure of Corporate Reputation (Cravens, Goad and Ramamoorti, 2003)

Finally, the last step in developing a corporate reputation index is to convert the overall single scale measure (range of 1–9) to a classification ranking. The authors use nine classification categories for the index that are associated with descriptions of various standards of corporate reputation. This ranking is comparable to ratings for bonds as set up by Moody's. Table 14 presents the classification rankings and provides general descriptions for the range of overall scale measures.

Since the descriptions indicated with the scale value of 9 for measures in Table 13 are optimal, the authors do not predict that many companies would achieve a score of 9 for many of the measures of corporate reputation. Thus, it is unlikely that many companies would be classified according to the highest rating of A1 on the scale in Table 14. Few companies should also fall into the lowest range of the scale, C1–C3, because that companies with very poor corporate reputation must adjust this or perhaps it would cease to work. In this scale, the majority of companies should fall within the B categories or in the A2 or A3 categories.

Index Value	Overall Scale Range	Description
A1	9	An ideal level of corporate reputation – rarely achievable
A2	8–8.9	A more practical goal for corporate reputation
A3	7–7.9	A high level of corporate reputation
B1	6–6.9	
B2	5–5.9	
B3	4–4.9	
C1	3–3.9	Corporate reputation has minimal value
C2	2–2.9	Corporate reputation has marginal value
C3	1–1.9	Corporate reputation has little or negative value

Table 17: Classification Rankings and Descriptions for a Corporate Reputation Index (Cravens, Goad and Ramamoorti, 2003)

The qualitative techniques analyzed are very similar and, all of them, have large limits that make them less usable in practice for risk measurement. In fact, they are based on very subjective calculations and this makes the process unreliable. In particular, as far as the Reputation Quotient is concerned, the greatest limitation is given by the fact that the determination of the risk exposure is calculated on the basis of interviews that refer to overly subjective spheres. The Reputation Index, on the other hand, is based on managerial experience and this may not contain sufficient knowledge to measure the reputation of companies.

Another qualitative method for estimating risk exposure is the Fortune ranking published annually. This tool is very similar to the previous ones as it is based on surveys consisting of 57 questions involving various executives, financial analysts, directors. Participants are asked to nominate the 10 companies with the best reputation based on the following factors social responsibility, innovation, long-term investment value, use of company activities, talent of human resources, financial balance, quality of products and services, quality of management.

Bromley D. (2002) states that the methods described before are marked by a biased nature: in fact, in most rankings misses a representative choice of stakeholders as participants: the attention is made only on the visions of managers and business advisors, or only on the perception of respondents. The author therefore suggests some different methods that should lead to more successful results.

The first one is to determine corporate reputation with benchmarking method. The concept of a reputational benchmark means creating a standard reputation against which other reputations are matched. A benchmarking method would include a representative sample of comparable organizations in a specific business sector. Knowledgeable

respondents would assess those firms on a range of operationally established scores. The scores would have to be normalized, that is, made to adapt to a normal distribution.
The second one is to create a table of reputation based on a standard rating scale would be to adopt a free description method. This allows respondents to enumerate different opinions, based on their personal beliefs and experiences. Respondents would be chosen from selected stakeholders, according to the purpose of the survey. The more frequently outlined attributions could then be employed to create a ranking of merit adopting a methodology comparable to that linked to Fortune surveys. Differences in the intervals of arising of allocations in a free-description exercise could state their relative relevance, or at least their trust or importance at the time.
The case comparison method (Bromley, 2002) tries to evaluate which mix of qualitative aspects establishes how companies can be classified into typologies, and which combination of features determines a specific result, such as the success or failure of a business enterprise, a considerable shift in corporate reputation, or a relatively high or low grade of public estimation. The method is made stricter by applying Boolean process. The case comparison method enables to consider the difference between the average score and the score profile. Two or more firms may reach the same average score even if they vary, possibly considerably, on some or all of the characteristics. Therefore, they would have rather not the same reputations. The mean results do not disclose differences in the score profiles, which may be relevant in rating situations or in determining causal processes. The mean can arise from a profile, but not the other way around.

2.3.2 Quantitative methods

Gabbi G. and Patarnello A. (2010) outlines four different methods to assess the value of reputation: the organizational approach, the accounting approach, the marketing approach and financial approach.
The first method is the organizational approach. Reputation is an immaterial asset, closely linked therefore to the most important of all intangible assets that is the intellectual capital. This proves the increasing attempts aimed at its measurement. The intellectual capital has some internal and external components that compose its value. The first one covers human and structural or organizational capital, while the second

one includes relational capital. A good assessment of intellectual capital needs a full understanding of a company's value creation mechanisms. The latter are affected by the organization's industry, market, business model, corporate culture and strategic objectives. Once value creation mechanisms have been figured out, it is necessary to identify the variables explaining their effectiveness and efficiency in order to select appropriate measures of intellectual capital, which can be ranked into three classes: growth, efficiency and stability.

One of the main problems in assessing intellectual capital is due to the partial and subjective nature of its assessment procedure. This is particularly true in comparison to the strict methods used for the drafting of a company's balance sheet. The increasing of intellectual capital assessment reports has been especially prevented by problems linked to the hard measurement of intangible assets, the determination of a standard proxy and calculation methodology, their consistency and comparison, the measurement of the economic return and the dubious link between theory and practical implementation.

The second method is the accounting approach that measures reputation as the difference between the shares market value and the full amount of tangible assets including those already valued as intangible assets (Gaultier-Gaillard and Louisot, 2006). These are a large part of a company's equity. It is very important to define and measure them so that they are properly published in the financial statements. Intangible assets are defined by IAS 38 as "non-monetary, identifiable, non-physical assets". A resource can be classified as an immaterial asset if the following conditions are met:

- its use will generate future economic benefits, that is higher revenues or lower costs;
- the company controls it: this implies that the company can benefit from a resource and prevent others from taking advantage from it as personnel skills cannot be considered as immaterial assets;
- it can be clearly distinguished from goodwill: this happens when, based on existing legal rights or contractual agreements, the resource can be sold, transferred, licensed, rented or swapped; among clearly distinguishable resources are for instance brands, patents, non-competition agreements, licenses, copyrights.

IAS/IFRS international accounting standards do not give a full representation of a company's net worth immaterial components. As a matter of facts, they exclude intangible resources like personnel loyalty, motivation and in general human capital, image and client relationships. For all these categories of resources only acquired goodwill can be posted in the accounts, while internally generated one cannot be quantified. In this sense, it is important to understand that the effect of reputational damage does not fall within profits or losses. It is necessary to create a reporting system including a global view of a corporate reputational value and taking into account the difference between its book value and market value.

The third method is marketing approach. This approach is based on a careful vision of reputation: in fact, it is mainly focused on measuring the value of the brand, which is directly linked to a specific level of reputation. Assessing the investments made by a company to increase its intangible assets can give value to the brand itself. In this sense, one of the most interesting methods is that of royalty rates for the assessment of the value of the brand. It is based on the assumption that the benefits a company gets from its intangible assets cannot be lower than the price the company should pay to obtain the right to use them. There are some limits and lines of development: in particular reputation is something more than brand and there is a confusion between measurement and strategic risk management solutions through the diversification of brands. According to Larkin J. (2003) "...one estimate of the value of a company's reputation is the present value of all expected royalty payments over a given period". Alternatively, can be applied a DCF model to the cash-flows expected from the future exploitation of the immaterial asset. Real problems linked to the use of this approach cover the identification of important and homogeneous royalty rates in the reference markets. That method is also affected by the floating of brand value when based on market criteria and on the fact that the notion of reputation goes far beyond the concept of brand, as the former is shaped by the opinion and visions of all the investors related to the characteristics and degree of a corporate activity.

The last method is the financial method that is based on the valuation of equity securities. The fluctuations of corporate actions are often determined by events related to the company. Some actors argue that the oscillation is due to two main factors that can be classified as primary and secondary. The primary one is linked to a primary risk, such as operational, financial, compliance or strategic risk. The secondary impact is instead due to the loss of reputation.

Kaplan R. and Norton D. (1996) developed another method, the Balanced-Scorecard that has the aim to measure business performance. The method focuses on the analysis of four dimensions considered crucial for companies: financial, consumers, internal processes, development and growth. The tool provides for the analysis of financial and non-financial data. The separate use of performance indicators provides an image of the past performance by companies. The Balanced-Scorecard instead translates the strategic objectives, the vision and the mission, in performance indicators. Calculating these performances helps to measure risks as it is a future-oriented calculation. The following figure shows the generic framework of the Balanced-Scorecard.

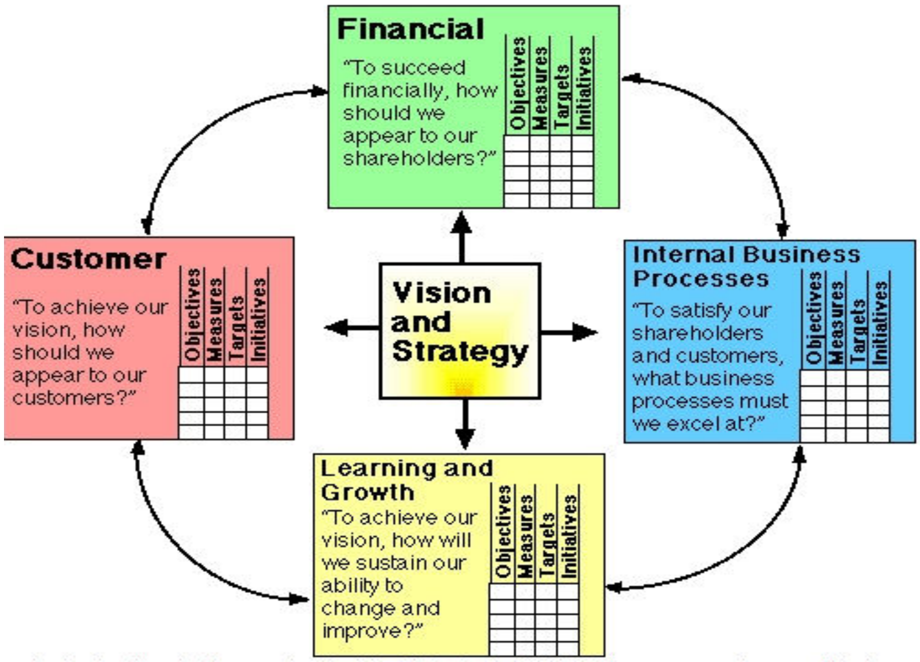

Figure 18: Balanced-Scorecard Framework (Kaplan R. and Norton D., 1996)

The four dimensions of the Balanced-Scorecard make it possible to draw up a comparison between short-term and long-term objectives. Starting from the definition of the company strategy, it translates into specific objectives through performance indicators on four dimensions. The main purpose of the tool is to improve company performance and not to make managers of past data aware. It also improves positioning compared to competitors and reputation accordingly. The perspective linked to consumers is the one that most expresses the corporate reputation. The company meets the requirements of its customers by offering products and services that best meet the need of the market. Performance factors that can be used to analyze the value created for customers are product attributes, customer relationships, image and reputation. Through reputation is measured the value created for consumers: therefore, for a good functioning of the Balanced-Scorecard must be used estimates on reputational risk.

It is important to note and write down the value, both qualitative and quantitative, of the corporate reputation on the first page of the risk register. This important action is done because the reputation is likely to be one of organization's most valuable features, making risks to it some of the most relevant risk to deal with. This memorandum in the risk register will partially be a financial amount: but it is advisable to record a description of benefits enjoyed that may be lost if the reputation is damaged. This lead to an essential aspect, that is that reputation has unquantifiable aspects (Fitzsimmons A. and Atkins D., 2017).

2.4 Reputational Risk Measurement

This section presents some qualitative and quantitative methods aim to measure and assess reputational risk. In particular for the first category it is used the Gap Analysis methodology. A study made by Honey G. (2009) recalls that reputational risk lies in the interval between the performance, indicated as attitudes and actions of the people in the organization and expectations related to what stakeholders expect from the past or defined policies. For its identification it is therefore a matter of doing a gap analysis exercise.

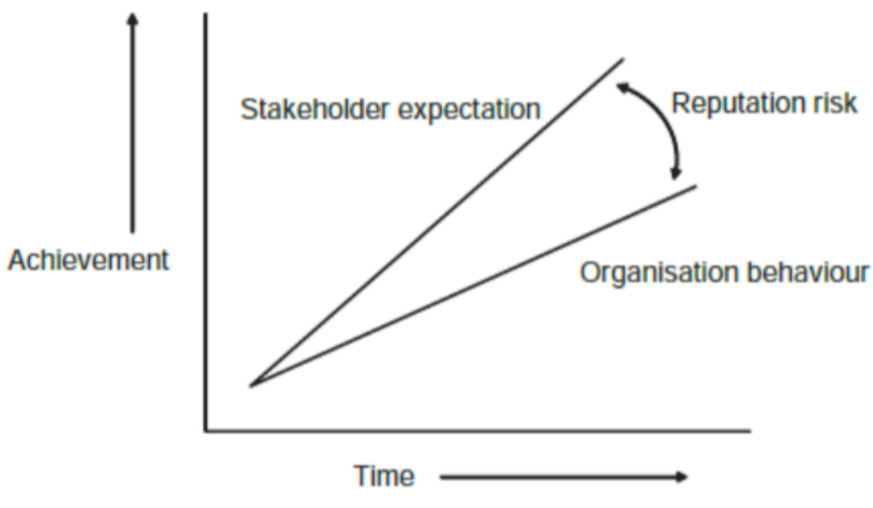

Figure 19: Reputation gap (Honey G., 2009)

Honey (2009) believes that reputational risk cannot be measured through the four traditional risk quadrants, identified by the "severity of damage" and "probability of occurrence" axes, but that there are seven drivers that affect the four most important stakeholders for the enterprise. These drivers are showed in the figure 17 below:

The 7 key drivers of reputation	Investors	Customers	Suppliers	Employees
Financial Performance	⊘			
Delivery of Products and Services		⊘	⊘	
Vision and Leadership	⊘			◎
Corporate Responsibility	◎			
Workplace Environment				⊘
Knowledge and Skills	◎	◎		
Emotional Appeal				◎

Figure 20: The seven drivers and the four main stakeholders (Honey G., 2009)

In Figure 17 the darker signs are placed at critical intersections (must have), while the shaded ones indicate useful intersections, but not critical (nice to have). Honey G. (2009) believes that it is not enough to measure reputational risk according to the categories in Figure 17, also by making use of the services of an agency external to the company, but that forms of stakeholder involvement are necessary to reduce the risk and eliminate bad surprises. In the ideal enterprise, each stakeholder manager should have a method to regularly monitor attitudes and expectations as an essential part of managing relationships.

It is therefore significant to highlight that taking into account this definition of reputational risk there are only two ways to decrease it. The first one is to increase the organization’s performances in the business areas with the greatest gaps. Alternatively, the relationship owners will have to kindly manage the stakeholders’ expectations downward.

From a quantitative view, a method proposed by Perry J. and De Fontnouvelle P. (2005) evaluate the correlation between loss of market value and reputational loss. The authors in their abstract clearly indicate what they mean by reputational loss in economic terms: "If the firm's market value declines by more than the announced loss amount, this is interpreted as a reputational loss". Indeed, they focus on the relationship between the size of the operating loss, its nature and the corporate governance structure and measure the reputational loss considering the reaction of the share price to the announcement of a significant operating loss. Already Cummins et al. (2004) had dealt with the relationship between operating loss and share price, without however examining the important reputational consequences of operating losses. The work of Perry J. and De Fontnouvelle P. (2005) presents a model for the ex post evaluation of the loss in market value of listed companies starting from share prices, which can be successfully used for any product sector; in the same document there is the application of the 115-accident model in the finance area of the world between 1974 and 2004, from which it is possible to draw conclusions valid only for banking and para-banking companies. It results as a consequence that when the cause of the economic damage is of external origin there is normally a one-to-one relationship between operating loss and decrease in stock market capitalization, while the latter is more than double in cases where the origin of the damage economic is internal in nature. However, if shareholders' rights are weak the capitalization decrease is closer to the case of external origin; not so for companies where shareholder rights are strong and the market reaction to internal losses is much more robust, up to six times the amount of operational loss. For the determination of the strength of shareholders Perry J. and De Fontnouvelle P. (2005) use the Corporate Governance Index, as calculated by Gompers et al. (2003), defined as a proxy for the level of shareholder rights, and clarify that all that has been said so far does not apply to widely announced or minor operational losses. Gompers et al. (2003) also proceeded to calculate it for 1,500 US companies; the research was supported by the Finance Dept of the Wharton School of the University of Pennsylvania, in whose site there are however no information on the index, nor are the companies taken into consideration with the corresponding values listed. The procedure followed by Perry J. and De Fontnouvelle P. (2005) has the aim to measure a firm's stock price reaction to operational loss announcements. It is hypothesized that in the absence of reputational effects, a firm's market value will decline one-for-one with the announced loss. Using an event study analysis (MacKinlay A.C., 1997), the authors interpret reputational losses as any losses that exceed the announced loss amount. An event study estimates the impact of the news, positive or negative, regarding the company, on the corporate reputation as it measures the effect of an event that has already occurred. In order to perform the calculations, it is necessary to identify the reputational elements that influence the performance and separate them from the other elements that influence them. An event study consists of three moments: the estimation window (or control period), the event window and the post-event window.

The following figure shows the timeline of the event study.

Figure 21: Time line for an event study (MacKinlay A.C., 1997)

The time line shows the time sequence of an event: the estimation window from τ0 to τ1; the event occurrence at time 0 in the event window from τ1+ 1 to τ2 and the post-event window from τ2 to τ3. An event is defined as a point in time in which a company makes an announcement or a significant market event occurs, in that case of a reputational type. The usual length of the estimation window is 252 market days, while the event window often begins a couple of market days before the day of the event and its length, centered around the ad, is normally three, five or ten days.

2.5 Conclusion

The chapter analyzed the different models and methods aimed at managing and assessing reputation and reputational risk.

Firstly, it is made an aside concerning the reputational risk treatment which consists in guidelines and recommendations addressed to the members of the organizations.

Moreover, some qualitative and quantitative methods for the measurement of corporate reputation and reputational risk have been described. In the first category, the methods proposed are very similar each other and, all of them, have large limits that make them less usable in practice especially for risk measurement. In fact, they are based on very subjective calculations and this makes the process unreliable. Bromley (2002) states that the methods described before are marked by a biased nature: in most rankings misses a representative choice of stakeholders as participants; the attention is made only on the visions of managers and business advisors, or only on the perception of respondents. In the second category, some quantitative models try to estimate the reputational damage, just by looking at the corporate share prices movement around reputation-damaging events. A living presence of reputational risk is demonstrated in an ex-post assessment by those methods. The two methods adopted to measure the reputational loss are explained firstly by Perry J. and De Fountnouvelle P. (2005) and secondly by Soprano A. et al. (2009). They assess that a reputational loss is measured by the reactions of the markets following the communication of operational losses: indeed, according to the authors if the market value of a company decreases more than the announced loss then there is a reputational loss.

Chapter 3
Data analysis and empirical results

3.1 Introduction

Perry and De Fontnouvelle (2005) conducted an empirical study that evaluates ex post the correlation between loss of market value and reputational loss on 115 finance companies around the world: they measured the market reaction to loss announcements assuming that operational loss announcements with more severe negative market reactions are a consequence of reputational effects.
The aim of this third and last chapter is to introduce the study made by those authors and conduct an analysis of several practical events of operational loss through the application of the Event Study method, which determinates if and how much an event has a lasting reputational impact on the stock prices of the companies analyzed. Using that methodology, a reputational loss is interpreted as any losses that exceed the announced loss amount.
In the second section are described the data and the sample adopted. In particular have been identified 37 events related to international companies linked to an operational loss announcement that has affected the latter. The events analyzed were identified through a press review.
In the third section it is presented the methodology of the Event Study, as applied by Perry and De Fontnouvelle (2005), adopted in order to identify which is the market reaction to that event. In particular, the analysis is divided into two steps: the first one uses as a benchmark the Market Indices and the second one the MSCI World indices: for both are considered three different time windows. This is made in order to enhance the robustness of the sample.
In the fourth and last section are described the aggregate results. Finally, are made some comments relatively to the outliers and the most statistically relevant cases.

3.2 Data and Sample

In order to achieve a statistical sample with a certain significance, the stock returns and the relative market indices of 37 companies operating in the international field were taken into account. The events analyzed were identified through a press review of the main events to the most famous listed companies over the past twenty years. Events or groups of events selected have had a strong resonance at international and national level and some of that become "school" cases and have strengthened or weakened the companies affected. The sources of information regarding dates and events refer to newspapers, periodicals, news agencies and information sites available in the Factiva database. Only transactions carried out by listed parent companies have been selected, for which the date of the announcement of the transaction is known with certainty. These conditions are essential to be able to estimate, through the technique of the event study, the anomalous returns of the securities of the companies involved. For each transaction, the historical series of returns of the parent company was extracted from the Yahoo Finance and Bloomberg databases. As regards the benchmark, the value of the reference market index was used at first using the adjusted closing price. Subsequently, to increase the robustness of the analysis made, the sectoral benchmark indices of the markets on which the companies under analysis are listed are taken into consideration: this allows to obtain evidence that is not specific for a single market of bag. The chosen benchmarks are always related to the appropriate closing price. For each index chosen, the daily yield was calculated as the logarithm of the ratio between the price per day t and the one per day t - 1; this yield is used together with the daily variation of the security object of the news for the estimation of the angular coefficient and of the intercept in the linear regression. In order to enhance the robustness of the sample in question another index is taken into account. It is the MSCI World Index that captures large and mid-cap representation across 23 Developed Markets countries. With 1,642 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country. That index is split in ten sectors each of which the companies belong to. In particular in that sample are considered the following MSCI World Industrial indexes: Consumer Staples, Automobiles, Aerospace, Industrial, Energy, Infrastructure, Consumer Services, Software and Licenses, Consumer

Discretionary, Information Technology, Financials, Health Care, Transportation, Commercial and Professional Services.

All these companies suffered operational loss on a specific date that mainly regards data breach, internal fraud, market manipulation, defective products and employees' mistakes. The events have been classified in base to the indications furnished especially in the other chapters.

The following criteria for loss announcements have to be met in order to be included in that analysis (Perry and De Fontnouvelle, 2005):

- The parent company is publicly traded, and price and market capitalization data were available at the time of the loss announcement.
- The loss was operational and must have been known to be so at the time of the announcement.
- There had been no prior announcement of the loss, either through rumor or miscellaneous charge-offs.
- A precise loss amount or exposure was announced on the day of the first announcement, or shortly thereafter.
- There were no obvious confounding events.

It is important to notice that, instead of single events, it would be more correct to speak of groups of events: the reputational crises analyzed are constituted by a multiplicity of events, each of which it is valued both singly in comparison to its contribution to the stock's trend of the company in crisis.

The companies and events are summarized in the following table (Table 19)

Date	Companies	Market Index	MSCI index
27/03/1989	Exxon Mobil Corporation (XOM)	INDU	-
12/12/1994	Intel Corporation (INTC)	OEX	-
21/06/1999	Coca Cola Company (CO)	INDU	Consumer Staples
12/08/2000	Ford Motor Company (F)	SPX	Automobiles
13/06/2006	Airbus SE (AIR.PA)	CAC	Aerospace
02/08/2007	Mattel Inc. (MAT)	SPX	Consumer Staples
01/07/2008	Thyssenkrupp AG (TKA.DE)	DAX	Industrial
02/03/2009	Nestlé S.A. (NESN.VX)	SMI	-
26/01/2010	Toyota Motor Corporation (7203.T)	NKY	Automobiles
20/04/2010	BP p.l.c. (BP)	FTSE 100	Energy
10/06/2010	AT&T Inc. (T)	SPX	Infrastructure
24/06/2010	Apple Inc. (AAPL)	SPX	IT
15/09/2011	UBS Group AG (UBS)	SMI	Financials
13/01/2012	Carnival Corporation (CCL)	SPX	Consumer services
03/07/2012	Barclays PLC (BCS)	UKX	Bank
29/10/2013	Adobe Systems Incorporated (ADBE)	NDX	Software and Licenses
29/11/2013	Target Corporation (TGT)	OEX	Consumer Discretionary
21/05/2014	Ebay Inc. (EBAY)	NDX	IT
02/09/2014	The Home Depot, Inc. (HD)	INDU	Consumer Discretionary
19/09/2014	Tesco PLC (Tesco L.)	FTSE 100	Consumer Staples
03/10/2014	JPMorgan Chase & Co. (JPM)	INDU	Financials
27/01/2015	Anthem, Inc. (ANTM)	SPX	Health care
24/03/2015	Deutsche Lufthansa AG (LHA.F)	DAX	Transportation
23/04/2015	Deutsche Bank Aktiengesellschaft	DAX	Bank
18/09/2015	Volkswagen Aktiengesellschaft (VOW3.DE)	DAX	Automobiles
01/10/2015	Experian plc (EXPN.L)	UKX	Commercial & Professional services
23/10/2015	TalkTalk Telecom Group PLC (TALK.L)	MCX	Telecommunication
01/12/2015	Vtech Holdings Limited (0303.HK)	HSI	IT
10/10/2016	Samsung Electronics Co., Ltd. (SSU.SG)	KOSPI	IT
14/12/2016	Yahoo Japan Corporation (4689.T):	TRP	IT
07/09/2017	Equifax Inc. (EFX)	SPX	Financials
19/03/2018	Facebook, Inc. (FB):	NDX	IT
30/03/2018	Tesla, Inc. (TSLA)	NDX	Automobiles
30/03/2018	Under Armour, Inc. (UAA)	SPX	Consumer Discretionary
28/06/2018	Adidas AG (ADS.MI)	DAX	Consumer Discretionary
31/07/2018	Dixons Carphone plc (CWB.F)	MCX	IT
05/08/2018	Unicredit S.p.A. (UCG.MI)	FTSEMIB	Bank

Table 22: Data processed by the author

The purpose of that analysis is to determine if and how much the event has an impact on the reputation of a company, understood as a significant variation of stock returns with respect to its normal trend. Indeed, stock prices are an expression of investor confidence and therefore of the economic situation in which the company operates: they are therefore an excellent parameter for assessing the credibility and reputation that the company has built up over time.

3.3 Analysis and methodology

The quantitative analysis methodology considered is the Event Study method (MacKinlay A.C., 1997). An event study is an attempt to determine whether a particular event in the market or in the history of a company has influenced the performance of the company's shares (Benninga S., 2010).

For an event, whose impact is to be measured, it is necessary to know the date of occurrence, or the date on which it was made public, so as to highlight the moment in which it is possible that this event had an impact on share returns.

That methodology has the following timeline:

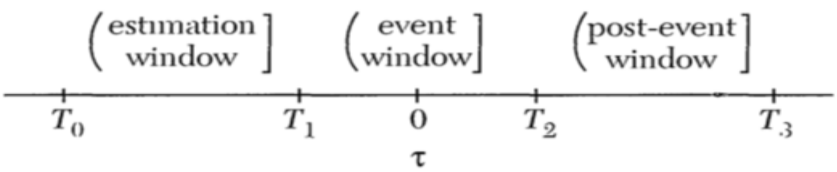

Figure 23: Time line for an event study (MacKinlay A.C., 1997)

The data analysis conducted with the methodology of the Event Study described before represents a timeline illustrating the days taken into consideration: the estimation window, the window used to determine the normal behavior of an action with respect to market factors, is 264 days from the eleventh day before the event (-264; -11); the event window includes 10 days before the event (day 0) and 20 days post-event (-10; +20), used to determine if the event was anticipated by a leak of news and / or the effect following the announcement.

In order to enhance the robustness of the analysis it is considered another timeline that starts 50 and 100 days after the other one. Therefore, in the first case the estimation window goes from day -214 until -11 and in the second case from day -164 until -11.

The first step of an Event Study concerns the definition of the market model. Given a company, it is considered the historical series of daily prices P_t of the shares with t that varies in a period sufficiently long, about a year, and it is calculated the logarithmic returns:

$$R_t = \ln\left(\frac{Pt}{Pt-1}\right)$$

representing the logarithmic variation of prices on two consecutive days. In that case are used logarithmic returns because make it possible the calculation of the cumulative yield over several days simply by adding consecutive logarithmic returns.

The predictive importance of the model is defined by its R^2 because greater the R, which can vary between 0 and 1, the better the ability of the market parameter to explain the performance of the stock. Likewise, it is considered the logarithmic returns r_{mkt}, of the two benchmarks considered.

Market model means the following relationship between company returns and the benchmark:

$$E(r_{it}) = \alpha_i + \beta_i r_{mkt} + \varepsilon_{it}$$

$$E[\varepsilon t] = 0, \qquad Var\ (\varepsilon t) = \sigma_\varepsilon^2$$

where εt represents the error of the model, the residual, that is the part of the company's performance variable that the market yield cannot explain, r_{it} is the firm's logarithmic return, r_{mkt} is the return on an appropriate equity index, α_i and β_i are parameters estimated through an ordinary least squares' regression referring to the estimation window. To each coefficient estimated by the model is associated a t-statistic that measures the level of significance and shows how much the independent variable, the performance of the market parameter, can explain the dependent variable that is the yield of the stock.

In the pre-event window, the parameters α and β of the model are determined by means of linear regression and the method of ordinary least squares. The model will serve to obtain forecasts of the normal performance of the stocks in the event window. In formulas:

$$\hat{r}_{it} = \hat{\alpha}_i + \hat{\beta}_i r_{mkt}$$

represents the linear model estimated on the basis of the data in the pre-event window. This model makes it possible to calculate the forecasts, on the yields of the company's stock, in the event window, considering the values of the regressor, or the market index:

$$\hat{r}^*_{it} = \hat{\alpha}_i + \hat{\beta}_i r^*_{mkt}$$

where the symbol * indicates that the data are being considered in the event window, the time frame in which the analysis of the impact of the event is developed. Therefore, the method foresees the estimation of the model parameters using only the data of the pre-event window, a long period of time in which it is thought that no particularly relevant facts have occurred that heavily affect the relationship between the returns of the company's stock and market performance.
Once the values predicted by the model relating to the yields of the stock in the event window are determined, it is necessary to calculate the differences with the real values of the returns: these differences are called Abnormal Returns, the name indicates the possibility that the event caused anomalous changes in the trend of returns, anomalous compared to a past trend studied for a long period of time.
Therefore, for each period t in the event window interval $[\tau_0,\tau_1]$, it is estimated abnormal returns for each event *i* as

$$AR_{it} = r_{it} - (\hat{\alpha}_i + \hat{\beta}_i r_{mkt})$$

where α_i and β_i are the OLS estimates of α_i and β_i from the above formula. Typically, τ1 is chosen to be large enough to allow the market to completely react to the announcement information. Throughout the analysis the authors will compute abnormal returns over a wide variety of event windows as a robustness check.
In order to quantify the complete impact of an announcement over the event window, it is important to aggregate abnormal returns in some fashion. It is constructed a cumulative abnormal return (CAR) over the interval [τ0,τ1] for each event *i* using the abnormal returns estimated in Equation above:

$$CAR_{i[\tau 0,\tau 1]} = \sum_{t=\tau 0}^{\tau 1} AR_{it}$$

Finally, it is calculated the Average CAR that represents the total average effect of the event on the overall sample of companies considered.
A confidence level of 95% was established, corresponding to level 1.96 in the standard normal distribution: that number is multiplicated for the standard deviation and the days or events with a standardized CAR greater than 1.96 are considered "significant", meaning that the events are unplanned, and the reputational effect represents a shock for the market. The standardized CARs, taken in absolute value, give the measure of the impact on the share price of the event.
The last step concerns the analysis of the robustness of the results obtained. It is possible to state that, if the $\overline{CAR}$ is close to zero this would represent evidence of the absence of impact of the event examined on the share price of the security; vice versa, where the $\overline{CAR}$ differs substantially from zero. Operationally, we introduce a hypothesis, called "null hypothesis", according to which the CAR results equal to zero and undergoes tests to verify if it must be accepted or rejected. If the null hypothesis is rejected, it is possible to conclude that the CAR differs statistically significantly from zero and that the event has had a clear effect on the price of the security examined. You will therefore have:

$$H0: \overline{CAR} = 0$$
$$H1: \overline{CAR} \neq 0$$

The hypothesis ($H0$) assumes that the $\overline{CAR}$ of a title, calculated on the event window, is zero and therefore that the event had no impact on it. The alternative hypothesis ($H1$), instead, collects the contrary instance, when the event has produced significant effects on the price evolution of the security in question

3.4 Aggregate result and robustness test

After having described the sample, the methodology, the procedures and the main formulas adopted in the analysis, it is possible to outline the aggregate result of the sample in question. Indeed, once each event's CAR is found, we reach an aggregate result that gives an important outcome that derives from six different valuations adopting the same methodology: this is done in order to enhance the robustness of the analysis.

First of all, it is presented the aggregate $\overline{CAR}$ adopting as a benchmark the index return of the companies involved. Are outlined three estimation windows as mentioned in the previous section. Later the analysis takes into account the MSCI World index with the three estimation windows in order to make some comparison. In this section the $\overline{CAR}$ of each scenario is presented only graphically, the numerical results are outlined in some tables in the Appendix A.

The sensitivity analysis, started 264 days from the event, is statistically significant in all days of the event window that goes from 10 days before the operational loss announcement and terminates 20 days before.

The total number of days analyzed in the Event Window is 1174, of which, after the announcement, 145 are significant based on the above-mentioned parameters. In the graph below, it is shown the Aggregate $\overline{CAR}$, its variance the lower and upper bands in the event window.

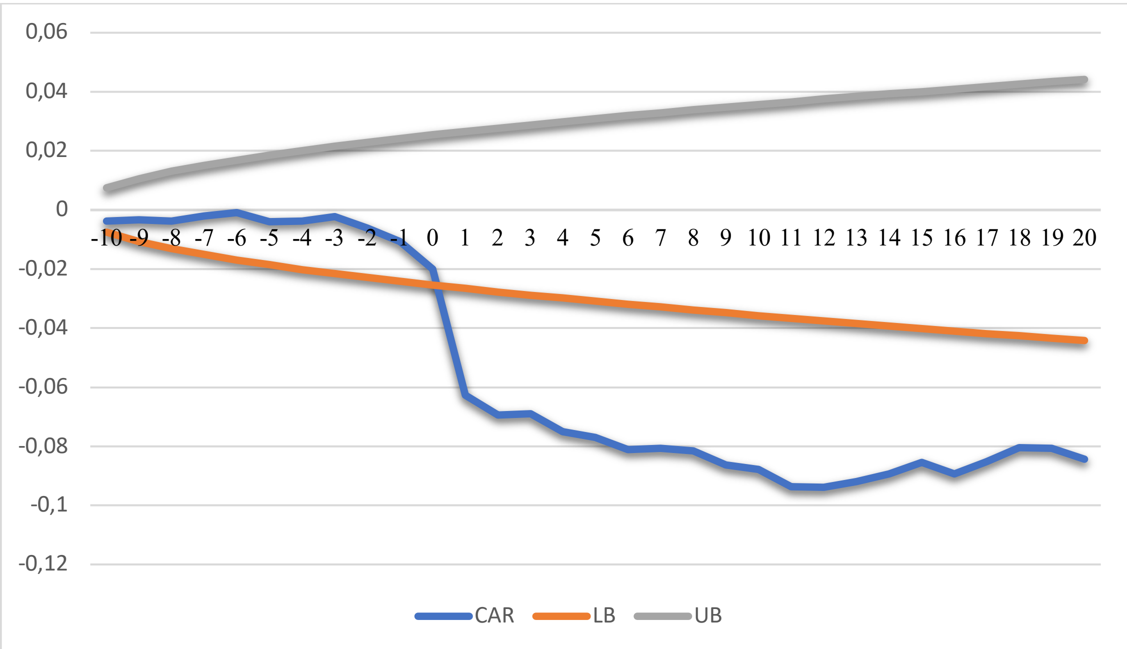

Figure 24: data processed by the author

From the graph above it is possible to notice that the $\overline{CAR}$ starts to go down two days before the announcement because the latter was evidently anticipated by a leak of news and was negatively accepted by the market. In order to check if that results are reliable it is changed the estimation window: in the first case it starts 50 days later the previous one: the total number of days analyzed in the Event Window is 1174, of which, after the announcement, 138 are significant based on the above-mentioned parameters.

In the second case 100 days later the previous one: the total number of days analyzed in the Event Window is 1174, of which, after the announcement, 133 are significant based on the above-mentioned parameters.

The aggregate $\overline{CAR}$ value in the second case is here presented:

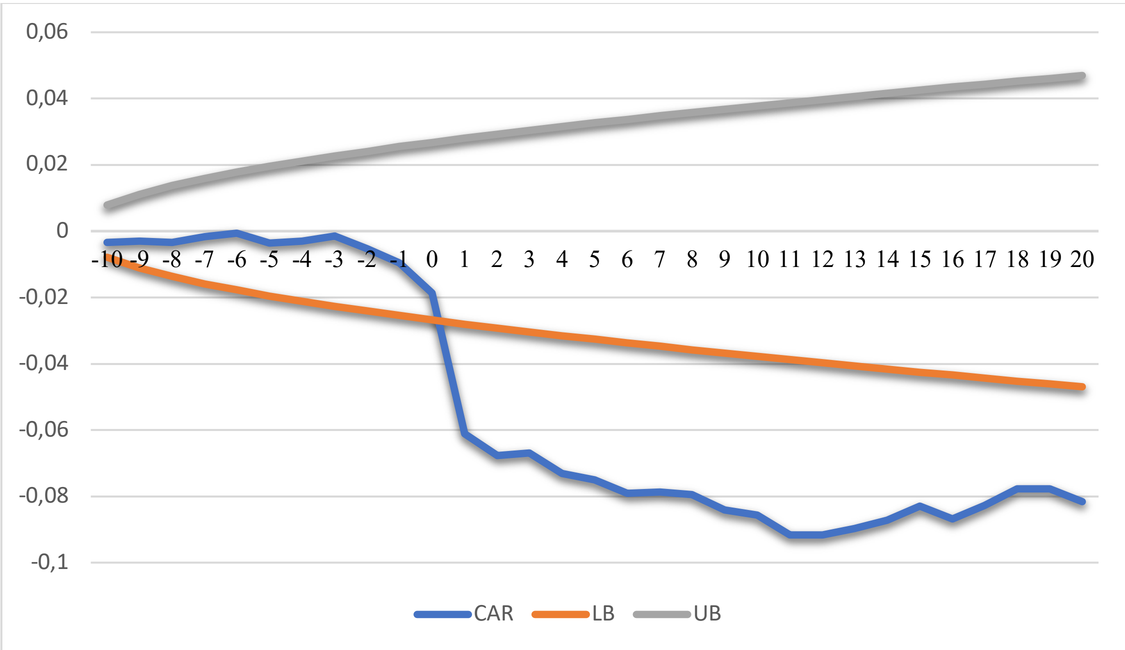

Figure 25: data processed by the author

Also, in that case the trend is very similar to the above one described before.

Let's proceed now with the third case in which the analysis is made starting 100 days after the previous one.

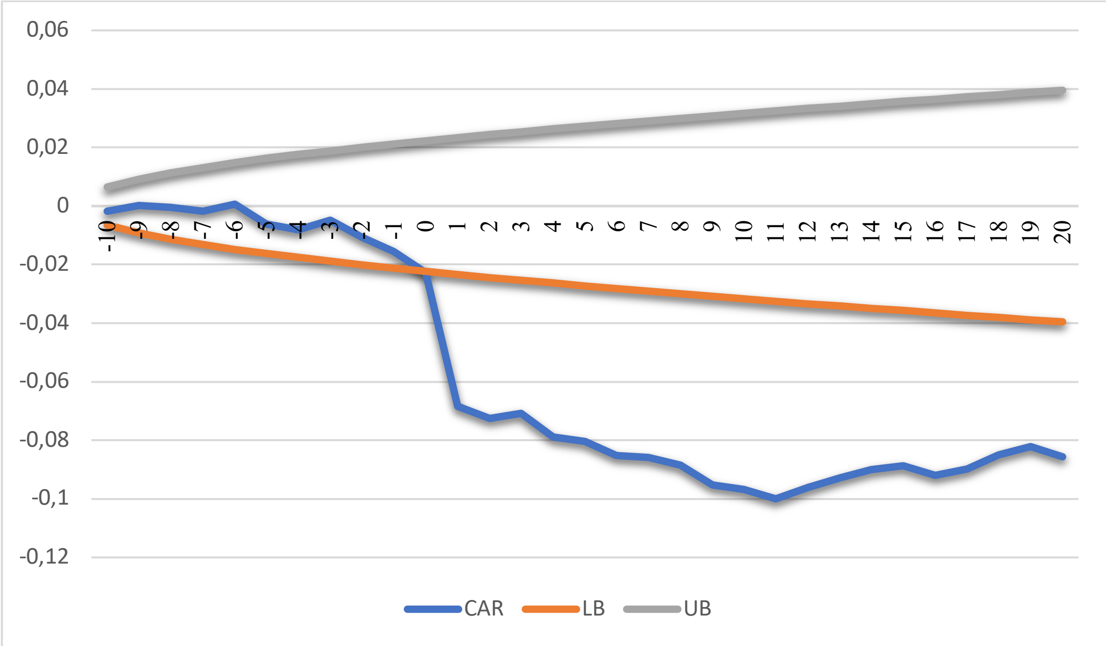

Figure 26: data processed by the author

This third case confirms the results of the other two made before. Indeed, from the day of the announcement the $\overline{CAR}$ is statistically relevant in all the days post announcement with a negative trend. Also, in that case it starts to decrease several days before the news, because the latter one may have been released within the market before the time of official disclosure where reputational losses then started to decline before the announcement day.

From the eleventh day it has an increase, due to the fact that the announcement has a huge impact in the days immediately after the occurrence.

Let's now take into account as a benchmark the MSCI World index in order to make a comparison with the market indices and enhance the robustness of the result. In that analysis are considered 34 companies instead of 37 because the MSCI data are not available in the dates of the event. Also, in this case are considered three estimation windows:

the first one started 264 days before the announcement and ends 11 days before the event. The total number of days analyzed in the Event Window is 1054, of which 173 are significant based on the above-mentioned parameters. In the graph below, it is described the Aggregate $\overline{CAR}$ in the event window.

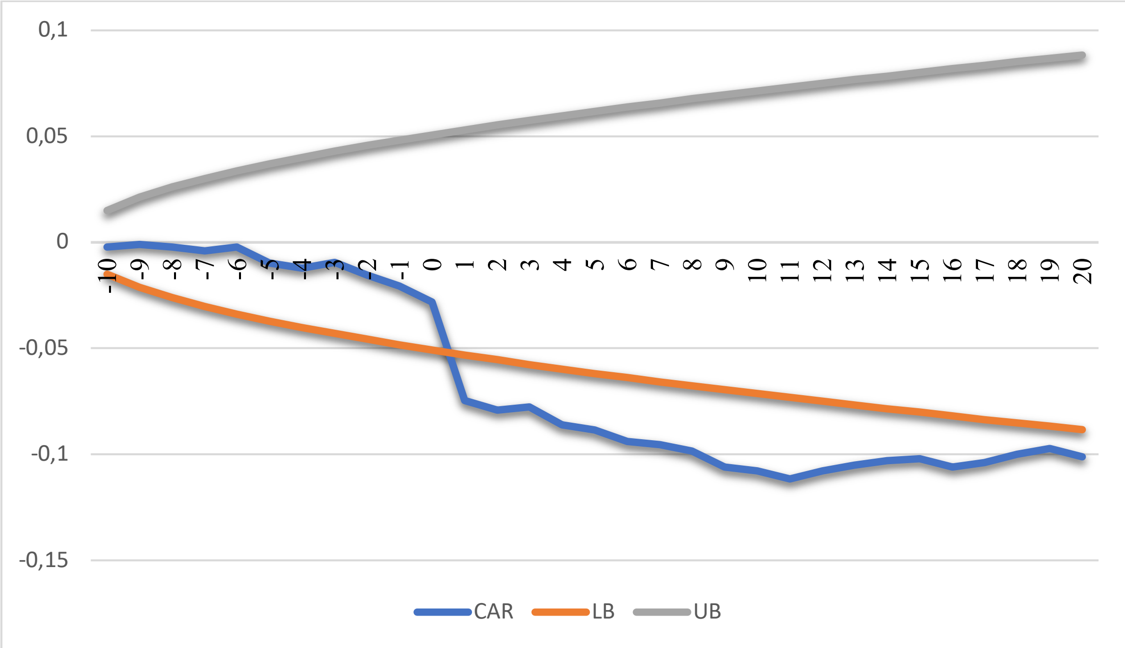

Figure 27: data processed by the author

As it is shown in the table and graph above, the Aggregate $\overline{CAR}$ has a trend very similar to the other one that considers the market indices.

Let's proceed now with the second estimation window in which the analysis is made starting 50 after the previous one.

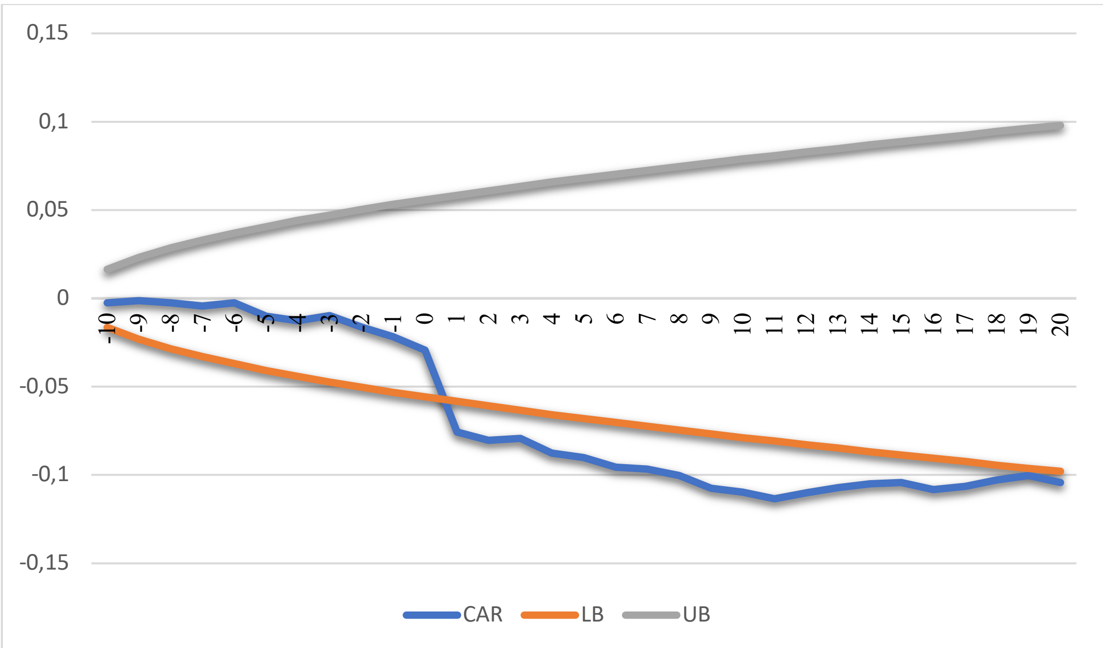

Figure 28: data processed by the author

Also, in that case the trend reflects the other cases described above.

The total number of days analyzed in the Event Window is 1054, of which 169 are significant based on the above-mentioned parameters. In the graph below, it is described the Aggregate $\overline{CAR}$ in the event window.

Finally, it is outlined the last scenario in which the analysis is made starting 50 after the previous one. The total number of days analyzed in the Event Window is 1054, of which 161 are significant based on the above-mentioned parameters. In the graph below, it is described the Aggregate $\overline{CAR}$ in the event window.

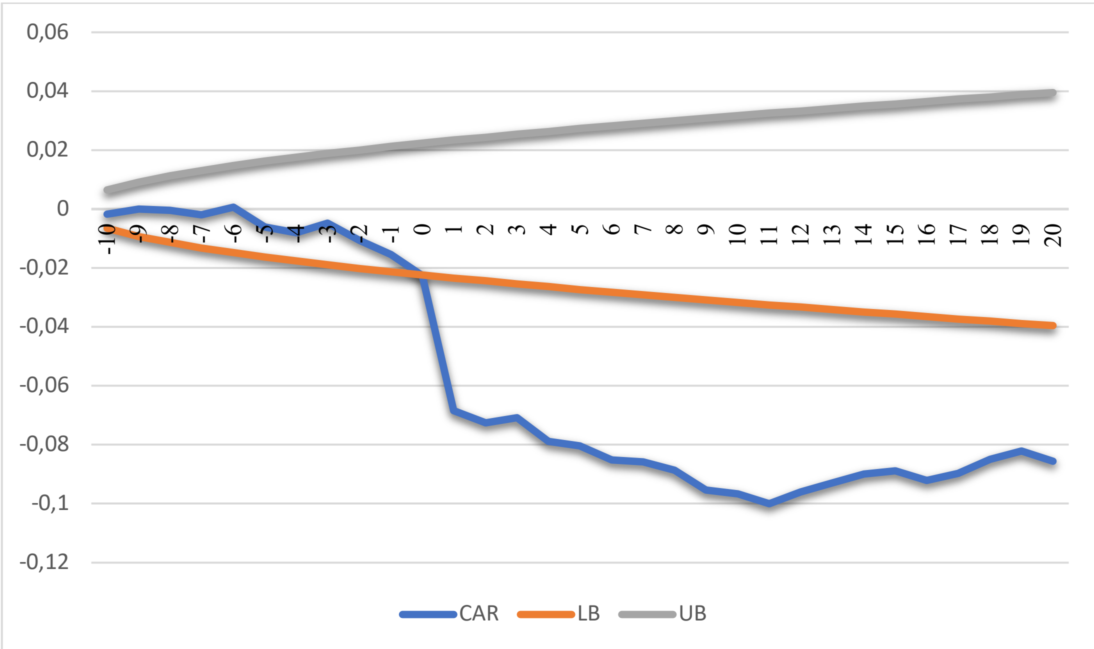

Figure 29: data processed by the author

That aggregate results lead to the conclusion that an operational loss announcement provokes a shock in the company life that is not forecasted by the market. This explains why the Aggregate $\overline{CAR}$ is outside the confidence bands in all cases presented above. Indeed, the outcome is confirmed also by the analysis made with the MSCI World index that is representative of the industry in which the company operates. However, looking at the single CARs in the event window you realize that in the days following the operational loss announcement those are statistically not relevant.

This can be explained by the fact that aggregate result is an outcome of few events meaning that in that cases an operational loss announcement has a huge impact on the companies in which the CAR is statistically relevant.

Having said that, it could be relevant to briefly highlight those outliers in order to better understand which are the main factors that conditioned so much the aggregate result of the sample. In particular a threshold equal to 90% of the days post event has been set, in which the CAR is statistically significant. The analysis shows that only three events are statistically relevant based on that assumption. For need of synthesis are shown graphs linked to market indices and MSCI World indices with an estimation window starting 264 days and ending 11 days before the announcement. Those are outlined below.

Date	**Companies**	**Market Index**	**MSCI index**
23/10/2015	TalkTalk Telecom Group PLC (TALK.L)	MCX	Telecommunication

TalkTalk Telecom Group plc is a company which provides pay television, telecommunications, Internet access, and mobile network services to businesses and consumers in the United Kingdom. It is listed on the London Stock Exchange and is a constituent of the FTSE 250 Index. On October 2015 the company was affected by a significant and sustained data breach that involved 4% of customers whose financial data is compromised. On 23 October, when the cyber-attack was revealed by the company, the latter said it did not know how many customers were affected, raising concerns that hundreds of thousands of customers could be at risk. The company was criticized for its lack of information and for failing to take precautions after being hacked twice before this year. In the wake of the news, the company's share price dropped by 10% in the first few hours after the London stock exchange opened at 08:00 BST.

In the following graph, it is possible to observe that in the following days the CAR is statistically significant based on the assumption made before. On the day of the revelation of the attack and the previous 2 days there were two significant negative Cumulative Abnormal Returns: the attack was evidently anticipated by a leak of news and was negatively accepted by the market; in the following days a descending CAR is produced which shows that the impact of the announcement has not been reabsorbed.

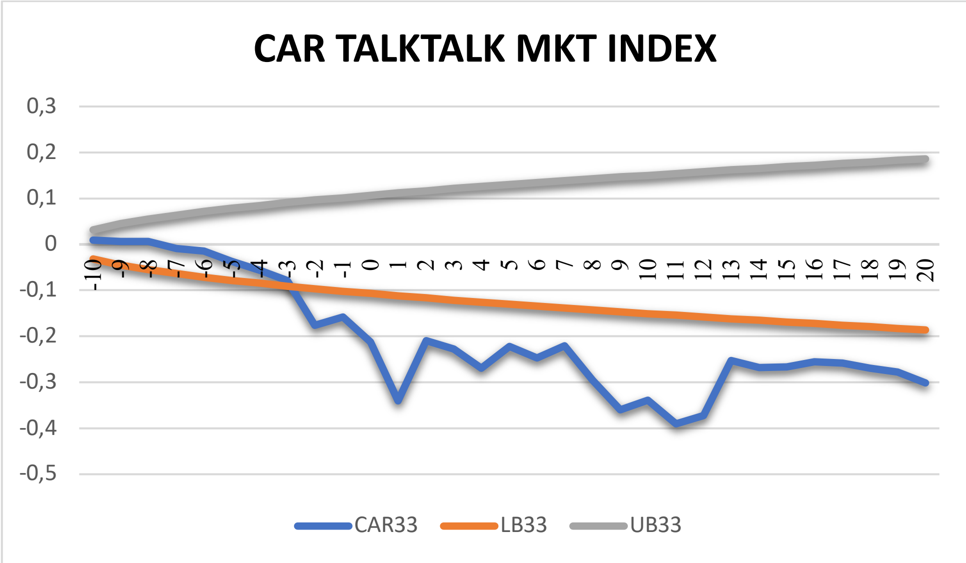

Figure 30: Data processed by the author

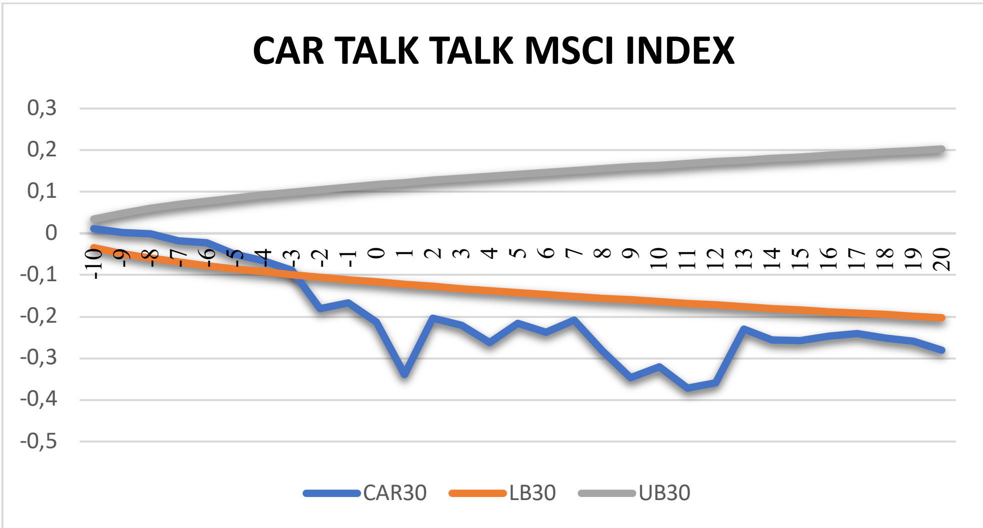

Figure 31: Data processed by the author

Date	Companies	Index	MSCI Index
07/09/2017	Equifax Inc. (EFX)	SPX	Financials

Equifax Inc. is a consumer credit reporting agency. Equifax collects and aggregates information on over 800 million individual consumers and more than 88 million businesses worldwide. Founded in 1899 and based in Atlanta, Georgia, it is one of the three largest credit agencies along with Experian and TransUnion (known as the "Big

Three"). Equifax has US$3.1 billion in annual revenue and 9,000+ employees in 14 countries. It is listed on the NYSE as EFX and is a constituent of the S&P 500 index. On 7 September 2017 it reveals that a data breach affects 143 million U.S. customers from mid-May through July 2017. After that day there is a significant decrease in the share price, that shows how large the impact was. However, on September 15 Equifax issued a press release with bullet-point details of the intrusion, its potential consequences for consumers, and the company's response. The statement further commented on issues related to criticism regarding its initial response to the incident. The company also announced the immediate departures and replacements of its Chief Information Officer and Chief Security Officer. This enhances the shareholders' trust that allows a slow increasing in the share price. In the later days the company set up a website that helped consumers check whether their data was part of the breach.

In the following graph, it is possible to notice that the days following the announcement the CAR is statistically significant based on the assumption made before. It starts to decrease and reaches the lowest value on the seventeenth day of the even window when the ex CEO testifies in front of the House Digital Commerce and Consumer Protection subcommittee. Amidst strong criticism, he admits "mistakes were made."

The company says it has removed spyware from its breach response site. In that days Equifax stock has been recovering since its low point and is now down 22.6% from just before the announcement of the breach. While the company has taken a beating, it appears that it will survive and move on.

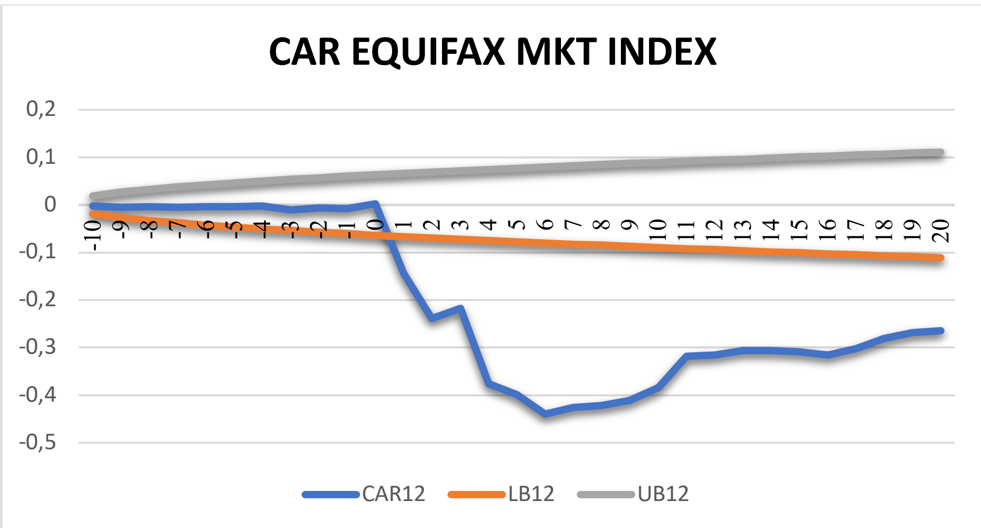

Figure 32: Data processed by the author

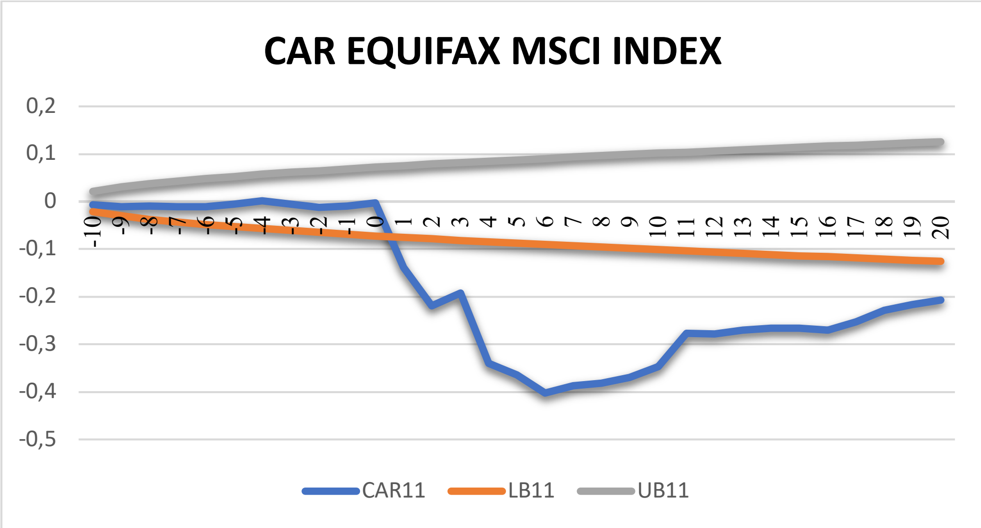

Figure 33: Data processed by the author

Date	Companies	Index	MSCI Index
18/09/2015	Volkswagen Aktiengesellschaft (VOW3.DE)	DAX	Automobiles

Volkswagen Aktiengesellschaft registered in Wolfsburg (Germany), is one of the world's leading car manufacturing companies. Holder of many brands, its car collection ranges from "family", sporting, luxury cars, to trucks, buses. It is listed on the Frankfurt Stock Exchange as VOW3 and is a constituent of the DAX index.

On Friday 18 September 2015 the EPA (United States Environmental Protection Agency) announced that the company has illegally installed manipulation software designed to circumvent environmental regulations on NOx emissions and diesel pollution: according to the statement the software would take over the moment in which the cars are subjected to emission tests in order to reduce their performance and emissions, allowing them to fully pass the tests. On 22 September 2015, the Group admits to having installed a hidden software (defeat device) able to reduce the amount of emissions produced for the duration of the laboratory test.

On 23 September 2015, the CEO Martin Winterkorn resigns and will be removed from the supervisory board's presidium two days later.

On 25 September 2015, Matthias Müller (number one of Porche) happens in Winterkorn. It leads to a sensible increase in CAR but in the following days the latter continues to decrease because of the huge scale of the event: indeed, on 26 September

Switzerland bans sales of VW diesel cars and on 30 September it is discovered that almost 1.2 million VW diesel vehicles in the UK are affected by the scandal, more than one in 10 diesel cars on Britain's roads.

Within two days from the announcement, the group had lost 25 billion € of market capitalization. The CAR is always statistically significant as in the figure below.

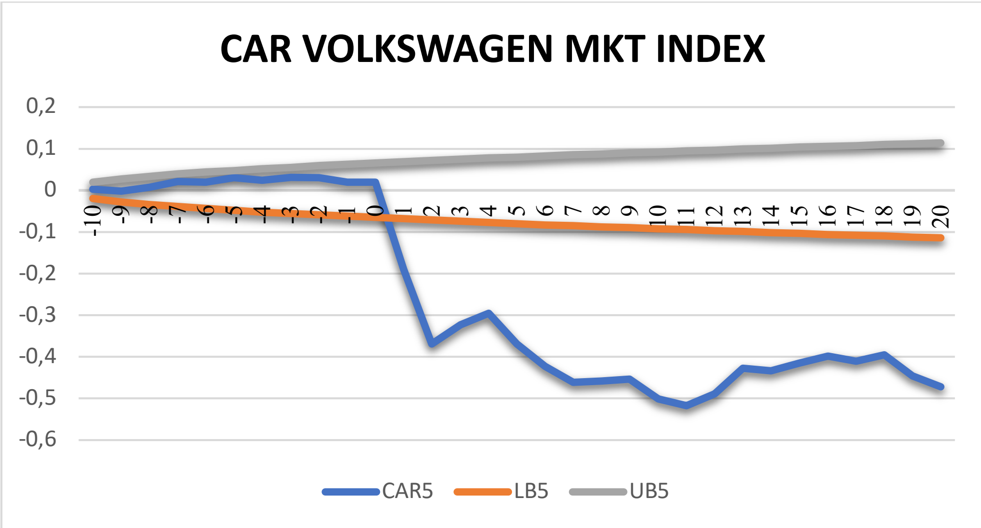

Figure 34: Data processed by the author

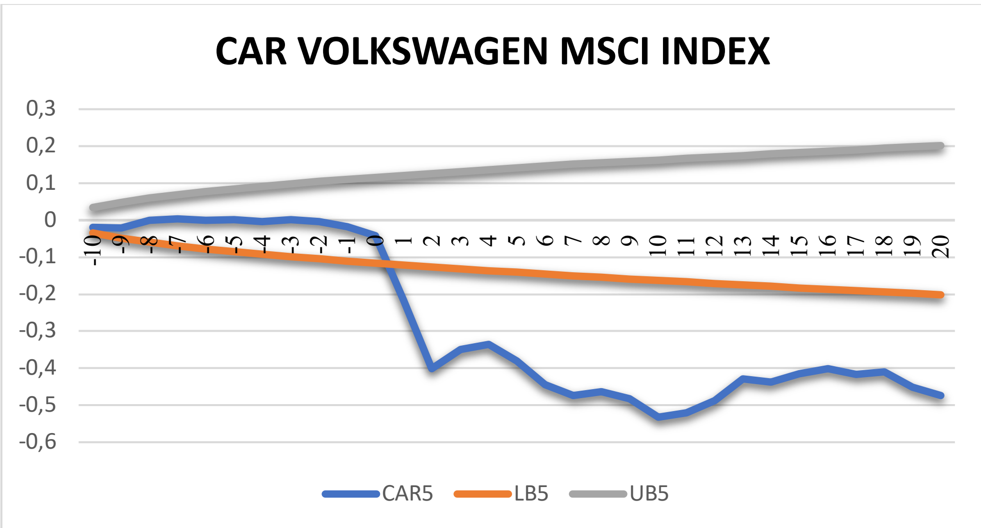

Figure 35: Data processed by the author

The risk of reputation for Volkswagen, in this case, was not only a risk, a random option, but a possibility almost concrete if the authorities had discovered the “trick”, as it happened. With this attitude, Volkswagen has ditched its reputation as a corporate careful to environmental sustainability and to consumers. The first who concern about that situation were the stakeholders, who on the day of the announcement led to collapse of the stock with the CAR that begins a descent that will not stop even after a month, certainly powered by the subsequent calls of cars of the company, as it is possible to see in the graph above.

3.5 Conclusion

The chapter reviewed the results of a study conducted on a sample of 37 financial firms worldwide between 1989 and 2018 in an operational loss announcement. Comparing the study carried out by Perry and De Fontnouvelle (2005) with the results obtained from the analysis shown in the previous section, it is clear that when an announcement of operational loss occurs, even if in few situations, it has a huge impact on the aggregate result. Indeed, the average CAR in the post event window is always statistically relevant for both the benchmarks considered, in all the time windows presented.

This comparison is done to enhance the robustness of the analysis in order to come to a clear conclusion. The outliers are described above, giving a particular relevance to the news happened in the days pre and post event window that leads to understand the stakeholders’ reactions to that announcement and the consequent trend of the CAR in the long term (about 20 days after the announcement).

As a result, it is possible to conclude that stock price is an important signal for the company: it represents the trust of the market, the stakeholder side, therefore the economic framework on which the company's survival is based. However, it would be a serious mistake for the risk management functions to evaluate exclusively the relationships with the stakeholders: the fall in yields is only the expression, immediately visible, of a decline in reputation among all the stakeholders, who will judge the ability of company and its management to be able to deal with all types of risk without making false steps.

Conclusion

The analyzed sample, together with the theoretical indications of the previous chapters, provides the elements to draw some conclusions on reputation and reputational risk with its impact on the company: this is the main purpose of the thesis.

In recent years a constant and increasing need to find easy and trusted methods to assess reputation and reputational risk rose between managers and scholars. However, the still existing lack of a globally recognized meaning of reputation does not help the implementation of that methodologies.

Firstly, it has been discussed about the importance of maintaining a good corporate reputation, because of its strategic importance and its intangible nature that lead the company to differentiate among competitors. Nowadays, in a digital world, this is a central topic that involves some organizations placing them in the spotlight when they are affected by bad news. In the last years the study of corporate reputation has significantly increased since there was an exponential growth in demands, expectations and influences by stakeholders who are the main subjects of a company upon whom reputation depends: indeed, a good reputation can be built answering to stakeholders' requests and expectations. When those aspects are not respected or do not meet the initial expectations there may be an operational loss event. As regard, in the second chapter are analyzed several ways and recommendations provided by some scholars in order to best manage and treat reputation and reputational risk from two different points of view: qualitative and quantitative. The main characteristic of the first one is related to the fact that those methods are survey-based: indeed, a survey consists in asking to some respondents to give their view on a firm in reference to a specific parameter of reputational dimensions and then implement these opinions into an overall score; however, those ones are biased and do not allow to compare the effects of reputational risk with the effects of other risks. The second category is based on an ex-post valuation after an operational loss event looking at the volatility of companies' stock prices. In recent years there have been numerous examples of how large companies with a strong reputation have suffered enormous damages due to negative events that have involved them. On this basis a sample of 37 companies is taken into account in the last chapter. In particular, the chosen companies have suffered on a very specific day from an operational loss event measured through the firm's stock price: if the firm's market value declines by more than the announced loss amount, this is interpreted as a reputational loss. However, it is difficult to quantify the overall impact of an event on the company, since the elements to be taken into consideration are innumerable and difficult to measure, but the analysis of stock prices during important events provides a precise and not casual idea of the loss or the creation of value which this event gives to the organization.

The methodology used and described in the third chapter allowed to reach important conclusions. After having considered two different benchmarks, market indices and MSCI World indices, and three time windows, starting respectively 264, 214 and 164 days before the event, the aggregate result confirms that an operational loss announcement has an immediate and significant impact upon a firm's stock value that is not forecasted by the market. When it happens, the outcome, found by the Cumulative Abnormal Return (CAR), decreases a lot to the point of hitting significantly the Average Aggregate CAR: the latter, which takes into account the whole test sample, is statistically significant in every day studied in the event window. Finally, looking at the single CAR for each event is discovered that the aggregate trend is significantly influenced by few outliers: this means that when an announcement of operational loss occurs, even if in few situations, it has a huge impact on the aggregate result.

In conclusion, although the methods to protect oneself from other kind of risks are many, those linked to reputational risk show several weaknesses. This analysis is conducted ex-post and allowed to estimate the impact of reputational risk on stock prices, but it is necessary to recognize that there are no methodologies for an ex-ante analysis that allow to protect the company safely without facing unforeseen events: this is because, as already mentioned above, reputation is an intangible and very hard measurable asset. It is lasting, unpredictable and extremely volatile in times of crisis and can only be protected by avoiding mistakes during the normal life of the company, building a solid image with words and actions, aware that the market will waste no time to recognize and punish levity and inconsistency.

Appendix

Obs	$\overline{CAR}$ (-264; +20)	$\overline{CAR}$ (-214; +20)	$\overline{CAR}$ (-164; +20)
-10	-0,36816	-0,00334	-0,00279
-9	-0,00336	-0,00293	-0,00205
-8	-0,00376	-0,00339	-0,00244
-7	-0,00210	-0,00174	-0,00075
-6	-0,00088	-0,00062	0,00055
-5	-0,00406	-0,00362	-0,00231
-4	-0,00372	-0,00307	-0,00135
-3	-0,00227	-0,00149	0,00039
-2	-0,00622	-0,00541	-0,00317
-1	-0,01062	-0,00955	-0,00682
0	-0,02009	-0,01866	-0,01533
1	-0,06269	-0,06106	-0,05753
2	-0,06931	-0,06763	-0,06382
3	-0,06901	-0,06733	-0,06288
4	-0,07502	-0,07307	-0,06876
5	-0,07699	-0,07505	-0,07064
6	-0,08101	-0,07907	-0,07443
7	-0,08071	-0,07869	-0,07406
8	-0,08146	-0,07943	-0,07456
9	-0,08625	-0,08411	-0,07901
10	-0,08774	-0,08569	-0,08048
11	-0,09374	-0,09159	-0,08359
12	-0,09387	-0,09165	-0,08573
13	-0,09191	-0,08963	-0,08381
14	-0,08935	-0,08712	-0,08145
15	-0,08536	-0,08305	-0,07718
16	-0,08932	-0,08682	-0,08053
17	-0,08522	-0,08272	-0,07627
18	-0,08050	-0,07778	-0,07096
19	-0,08075	-0,07784	-0,07055
20	-0,08444	-0,08158	-0,07415

Appendix A: $\overline{CAR}$ Market Index

Obs	$\overline{CAR}$ (-264; +20)	$\overline{CAR}$ (-214; +20)	$\overline{CAR}$ (-164; +20)
-10	-0,00224	-0,00245	-0,00166
-9	-0,00098	-0,00129	0,00010
-8	-0,00222	-0,00249	-0,00052
-7	-0,00402	-0,00434	-0,00187
-6	-0,00214	-0,00238	0,00069
-5	-0,00966	-0,00996	-0,00605
-4	-0,01223	-0,01253	-0,00804
-3	-0,00948	-0,00998	-0,00487
-2	-0,01554	-0,01629	-0,01068
-1	-0,02063	-0,02156	-0,01549
0	-0,02816	-0,0293	-0,02265
1	-0,07454	-0,07573	-0,06839
2	-0,07904	-0,08038	-0,07249
3	-0,07756	-0,07913	-0,07087
4	-0,08615	-0,08769	-0,07876
5	-0,08854	-0,09003	-0,08035
6	-0,09403	-0,09568	-0,08519
7	-0,09528	-0,09681	-0,08575
8	-0,09847	-0,10012	-0,08852
9	-0,10586	-0,10755	-0,09535
10	-0,10793	-0,10962	-0,09675
11	-0,11159	-0,11346	-0,09999
12	-0,10789	-0,10996	-0,09604
13	-0,10502	-0,10719	-0,09287
14	-0,10285	-0,10506	-0,08996
15	-0,10219	-0,10444	-0,08873
16	-0,10591	-0,10828	-0,09277
17	-0,10394	-0,10661	-0,08974
18	-0,09991	-0,10264	-0,08495
19	-0,09725	-0,10017	-0,08204
20	-0,10107	-0,10416	-0,08559

Appendix B: $\overline{CAR}$ MSCI Index

Obs	$\overline{CAR}$ MKT Index (-264; +20)	$\overline{CAR}$ MSCI Index (-264; +20)
-10	0,00929	0,01131
-9	0,00639	0,00204
-8	0,00644	-0,00037
-7	-0,00915	-0,01831
-6	-0,01493	-0,02187
-5	-0,03717	-0,04956
-4	-0,05559	-0,06622
-3	-0,07862	-0,08934
-2	-0,17625	-0,18005
-1	-0,15739	-0,16655
0	-0,21266	-0,21375
1	-0,34052	-0,33821
2	-0,20947	-0,20359
3	-0,22725	-0,21994
4	-0,26893	-0,26161
5	-0,22243	-0,21598
6	-0,24695	-0,23787
7	-0,22011	-0,20862
8	-0,29588	-0,28171
9	-0,35923	-0,34638
10	-0,33884	-0,32062
11	-0,39035	-0,37171
12	-0,37238	-0,35919
13	-0,25192	-0,23063
14	-0,26734	-0,25599
15	-0,26672	-0,25809
16	-0,25532	-0,24653
17	-0,25825	-0,24029
18	-0,26863	-0,25068
19	-0,27785	-0,25988
20	-0,30109	-0,27997

Appendix C: TalkTalk $\overline{CAR}$ MARKET and MSCI Indices

Obs	$\overline{CAR}$ MKT Index (-264; +20)	$\overline{CAR}$ MSCI Index (-264; +20)
-10	-0,00243	-0,00642
-9	-0,00450	-0,01061
-8	-0,00379	-0,00921
-7	-0,00474	-0,01128
-6	-0,00420	-0,01058
-5	-0,00432	-0,00608
-4	-0,00254	0,00153
-3	-0,01061	-0,00562
-2	-0,00637	-0,01157
-1	-0,00734	-0,01013
0	0,002307	-0,00239
1	-0,14292	-0,13862
2	-0,23924	-0,21913
3	-0,21770	-0,19292
4	-0,37658	-0,33979
5	-0,39919	-0,36422
6	-0,43975	-0,40249
7	-0,42615	-0,38699
8	-0,42198	-0,38143
9	-0,41067	-0,36946
10	-0,38433	-0,34643
11	-0,31805	-0,27736
12	-0,31523	-0,27827
13	-0,30610	-0,27049
14	-0,30642	-0,26568
15	-0,30817	-0,26649
16	-0,31536	-0,26993
17	-0,30210	-0,25286
18	-0,27997	-0,22852
19	-0,26780	-0,21615
20	-0,26410	-0,20678

Appendix D: Equifax $\overline{CAR}$ MARKET and MSCI Indices

Obs	$\overline{CAR}$ MKT Index(-264; +20)	$\overline{CAR}$ MSCI Index (-264; +20)
-10	0,00197	-0,01964
-9	-0,00166	-0,02036
-8	0,00736	0,00047
-7	0,02111	0,00360
-6	0,02034	-0,00068
-5	0,02971	0,00089
-4	0,02415	-0,00416
-3	0,03116	0,00129
-2	0,03015	-0,00395
-1	0,01931	-0,01682
0	0,01976	-0,04152
1	-0,18905	-0,21708
2	-0,36876	-0,40087
3	-0,32242	-0,34872
4	-0,29576	-0,33606
5	-0,36837	-0,38012
6	-0,42295	-0,44365
7	-0,46106	-0,47456
8	-0,45742	-0,46264
9	-0,45330	-0,48244
10	-0,50162	-0,53233
11	-0,51726	-0,52116
12	-0,48884	-0,48827
13	-0,42688	-0,42946
14	-0,43373	-0,43671
15	-0,41471	-0,41567
16	-0,39863	-0,40078
17	-0,41011	-0,41651
18	-0,39457	-0,40922
19	-0,44621	-0,45069
20	-0,47162	-0,47386

Appendix E: Volkswagen $\overline{CAR}$ MARKET and MSCI Indices

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Summary

This first chapter begins with the analysis of some basic definitions of reputation given by important authors that clarify the most relevant aspects of it. The Oxford English Dictionary (1993) provides a general explanation of the notion as perceived in everyday language: “Reputation is the general opinion or estimate of a person’s character or behavior etc.; the relative esteem in which a person or thing is held.” Despite this definition raises a right intuition in the reader, in an economic context a more technical statement is desirable. Indeed, it is necessary to take into account the concept of a Corporate Reputation that is “The sum total of how stakeholders perceive you” (Fitzsimmons & Atkins, 2017). Indeed, reputation reflects the stakeholders’ opinions on the actions and communication that a company performs with respect to the competing companies.

According to this distinction between internal and external perceptions it is possible to manage one’s reputation through the adoption of a behavior to be adopted. It is important to be able to satisfy the needs and expectation of its shareholders. Therefore, reputation is considered as a result of a set of impressions on socially shared companies. An organization’s reputation allows to find out the not observable quality, that lead an organization with a high reputation to obtain more benefits than low reputation organizations of the same quality (Rhee & Haunschild, 2006).

Corporate reputation is thought as a long-term evaluation, identification, or value judgment of companies by relevant stakeholders (Balmer, 1998; Fombrun, 1996; Fombrun and Shanley, 1990). Therefore, the role of perceivers is more active, although not all stakeholders spend time on the same corporate issues when they estimate a firm. Besides, Chun (2005) classified three schools of thought in the reputation model based on which stakeholders are taken as the focal point: In the ‘‘Evaluative school’’ shareholder evaluated reputation; in the ‘‘Impressional school’’ internal stakeholders as employees and customers assessed for reputation; while in the ‘‘Relational school’’ reputation is based on the point of view of both internal and external stakeholders. Because corporate reputation is a collective assessment built on a long-term basis about a firm, it follows the company’s identity that is what a firm really is and how it presents itself and develops as the company tries to build a favorable image through a short-term and immediate impression of the firm (Barnett et al., 2006; Christensen and Askegaard, 2001; Dhalla, 2007; Fombrun, 1996; Fombrun and Shanley, 1990). Therefore, corporate

reputation is related on what the company is, its character, and how the company appears itself to a public picture. Thus, image and identity are the main components of reputation. Fombrun (1996) contribute to determine a consistent and widely adopted framework that explicates relationships between reputation, identity and image. He proposes that identity may be represented through names and self-presentations and proposed through customers, community and employee's images, into corporate reputation. Identity is a way of differentiation according to culture, history and operations, including management: it grows with the company, based on its organization's culture and consists of current practices, history, values and behaviour (Melewar et al., 2005). An organization's culture is the code by which its members behave: "The way we do things around here", as the UK's Health and Safety Executive said. Whetten & Mackey (2002) contribute also to provide the most common definition of organizational identity: they identify it as "that which is most central, enduring, and distinctive about an organization". Identity has been usually viewed as the 'core' or 'basic character' (Barnett et al., 2006) of the firm from the employees' perspective. Fombrun believes that corporate image sometimes accurately reflecting a company's identity. Image develops inside the mentality of external stakeholders; it is related to their belief of the organization that varies over time by direct or indirect experiences: in other words, it reflects how they perceive the organization's identity at a given point in time (Balmer & Greyser, 2002; Melewar et al., 2005). Organizational image reflected in corporate communications, can be described as 'the various outbound communications channels deployed by organizations to communicate with customers and other constituencies' (Balmer & Greyser, 2006). Therefore, corporate reputation is a result of image, relationships and corporate performance. However, the image can change as the company tries to divert its customers through publicity and other channels of presentation, or as rumors develop from misunderstood statements of employees to peers, analysts, and reporters (Frangos, 2009). Fombrun (1996) assesses that if there is a right correlation between image and the underpinning corporate identity, it will have enduring value. After that, there is the explanation of the three main values that arise from reputation: financial, operational and strategic values.

As regard the first category, Fombrun and Van Riel (2004) identified three reasons that explain the relationship and connection between corporate reputation and its performance.

First, they explain that reputation can improve a company's operating performance by lowering the cost of key inputs and allowing the organization to apply a premium price for its products.

Secondly, in a situation like the one described above, a positive perception is helped by the market: indeed, the latter encourage the demand of company's shares and consequently the increase of their value. Finally, an excellent and consolidated reputation will protect companies from unexpected threats, acting as a "stock of good shares". Therefore, as Fombrun and Van Riel suggest in their studies, companies with a good reputation obtain better results over the medium term than those that have a bad one. Reputation must be considered a real investment aimed at improving performance rather than a cost for the company.

The operational value of corporate reputation can be deducted from the analysis of the benefits that a positive image could bring to a company (Šmaižiené, 2008). The benefits vary according to the group of stakeholders that is taken into account. Indeed, it is possible to divided them into four macro-categories with their related benefits:

E. Customers → greater attractiveness of new customers; reduction of doubts and uncertainties regarding the quality of the products; decrease in the perceived risk in buying a product or service; encourages greater loyalty from consumers; adds extra psychological value to the product and service; help to choose between products and service that are perceived by customers as functionally similar.
F. Employees → entice top recruits to apply positions; attracts better applicants for its workforce; reduces uncertainty of recent and future employees with regard to employer characteristics; encourages greater loyalty from employees; increase employee satisfaction; raises employee creativity and effort; retaining good staff.
G. Business partners as suppliers → provides better access to the best professional service providers; enhances bargaining power in trade channels; better attracts new business partners; helps to reinforce relationship with suppliers and distributors and other direct stakeholders.
H. Investors → attracts investors; helps to establish relationship with investors; a company with good reputation is perceived to be less risky than companies with equivalent financial performance, but a less well-established reputation.

Besides, from an operational point of view, a good reputation can be viewed as:

- Reputation as a consequence of trust: there are several studies that highlight the relationship between corporate reputation and trust. The company image is considered as an indicator of reliability and a driver for the development of trust: therefore, it is a pool to attract, create and consolidate relationships with stakeholders. This because a good reputation creates trust and this lead to persuade people to believe in a specific company.

- Reputation as a risk evaluating mechanism: this allows customers, suppliers, business partners and all other interested parties to forecast the future behaviour of a company and then it is an important tool in the hands of stakeholders in order to assess the risks that can be concealed behind decisions to purchase, invest, stipulate a contract and so on.
- Reputation as supporting force: reputation can often be perceived as a factor supporting the entire business management. Indeed, it can ensure greater efficiency in sales and advertising, support marketing activities, can help increase capital on the stock market and bring greater stability and can be decisive in communication with the press. Moreover, the value of reputation as a supporting factor increases in times of crisis. A well-established positive reputation mitigates the negative effects of a crisis and grants firms a second chance because individuals are inclined to generalize the information they get. Therefore, a negative information does not immediately create a negative reputation, but it is integrated with the previous one and then generalized (Davies et al., 2003).

Reputation can have a crucial impact on companies' ability to compete in the market. Indeed, a positive image can strengthen the competitive advantage or even be its source. Its strategic value can be seen in its ability to influence company skills, to attract and manage physical, financial and intellectual resources and to build sustainable competitive advantages that are difficult to imitate. Reputation can be considered a valid strategic key in the search for cost or differentiation leadership: it can lead to greater bargaining power, which allows purchases to be made at reduced prices, in line with the search for a cost-based advantage, or it can still be a strategic weapon in competition based on differentiation as an indicator of quality and reliability of a company. A good reputation also facilitates the entry into new markets or the start of new activities on the basis of a real "transfer" of the reputation from one market to another (Šmaižienė, 2008).

The value of the corporate image assumes strategic value when it is used as a real tool in compete with rivals. A good reputation also facilitates entry into new markets or the start of new activities based on a real “transfer” of reputation from one market to another.

Indeed, several studies confirm the expected benefits that derive from good reputation (Fombrun & Shanley, 1990; Podolny, 1993; Landon & Smith, 1997). A good corporate reputation allows firms to:

- Benefit from lower costs and charge higher prices (Podolny, 1993; Deephouse, 2000; Rindova et al., 2005);
- Sustain superior profit outcomes over time (Roberts & Dowling, 2002);
- Be more able to communicate the quality of the company’s services (Engert, 2002);
- Be protected by market entrants (Deephouse, 2000);
- Attract better human resources (Turban & Greening, 1997; Morrison & Wilhelm Jr., 2003);
- Have easier access to the capital market (Fleischer, 2004; Smith et al.,2008;);
- Have greater returns relative to actual quality (Roberts & Dowling, 2002) than firms with poor reputations.

Good corporate reputation is essential because of its potential for value creation, but also because its intangible character makes the firm in a competitive position. It is considered as a strategic resource to differentiate between competitors and it can be used to modulate stakeholder’s expectations and perceptions. It is an asset that has beneficial effects: products’ premium price, low capital and labor costs, better loyalty from employees, better decision-making possibilities and protection in times of crisis.

In the third and fourth sections has been introduced the concept of reputational risk according to the Enterprise Risk Management Academy. It is discussed the measurement issue because of the lack of a clear definition and a stand-alone category of reputational risk and the negative effects that derive from the latter, in particular the bad impact it has on corporate cash flows. There are several ways by which reputational risk can induce losses for firm (Perry & De Fontnouvelle, 2005):

- Loss of current or future customers: typically, this involves a reduction in expected future revenues, but it could also involve an increase in costs if, for example, increased advertising expenditures are necessary to limit reputational damage.
- Loss of employees or managers in the organization, an increase in hiring costs, or staff downtime.

- Reduction in current or future business partners
- Increased costs of financial funding via credit or equity markets
- Increased costs due to government regulations, fines, or other penalties.

To understand the reputational risk, it is not sufficient to understand all the corporate risks as the corporate reputation depends on the perception of stakeholders. Therefore, it is essential that there is a good communication with stakeholders to ensure that their perceptions actually reflect the reality. Despite this it is quite difficult to find the actual source that generates the risk because it is equally difficult to measure this type of risk.

Another point of view is given by the Board of Governors of the Federal Reserve System (2004), that consider reputational risk as the potential that negative publicity regarding an institution's business practices, whether true or not, will cause a decline in the customer base, costly litigation, or revenue reductions.

Overall, it could be said that the reputational risk is any risk that may damage the esteem of an organization in third parties' eyes.

Finally, in the last section are analysed the main determinants of reputational risk that should be taken into consideration to be able to manage it and it is made an aside about why reputation and reputational risk are important nowadays. Those are Reputation – reality gap, behavior and ethics, defective products, changing beliefs and expectations, introduction of new products, financial performance, weak internal coordination and media. In particular, the media reputation of a firm is defined as the overall evaluation of a firm presented in the media (Deephouse, 2000). The are some sources from which media gets information (Shoemaker and Reese, 1991). The first one is company press releases and some companies have public relations departments that provide a constant flow of information to the media.

Another two sources are stakeholders and media workers. Some reporters write news and stories tapping from different sources, and also firms are taken into account by editors and columnists. The main theme is based basically on media workers' judgments of importance and deviation from the standard in both negative and positive directions (Shoemaker, 1996; Shoemaker et al., 1992). After examining these features of media reputation, it is possible to identify the media reputation in term of four resource properties: valuable, imperfect imitability, non-substitutability and rarity (Deephouse, 2000). After having described the main determinants of reputational risk, it is important to understand why the study of corporate reputation has significantly increased in the last few years. To establish the trend, they looked for peer-reviewed, scholarly articles on corporate reputation that were published in academic journals indexed by ABI Inform. The average number of scholarly articles during 2001-2003 has increased fivefold as compared the period 1990-2000 and that is because reputation and reputational risk is becoming a matter of concern for organizations. The most important issues are: stakeholders importance, globalization, internet and media, growth of intangible assets.

The second chapter begins with an analysis of the Reputational risk treatment by focusing on the importance for the organization to have a global picture of the practical ways in which its reputation affects success, how damage might impede success and how a better reputation might help it (Fitzsimmons A. and Atkins D., 2017).
In particular Fitzsimmons A. and Atkins D. (2017) propose an extract from a reputational risk report to a financial services board splitting it into two recommendations: the first one is related to recommended actions for board and the second one is about recommended management actions. The section ends with the description of some ex ante and ex post measures by Floreani R. (2012) that should be adopted in order to reduce reputational risk. In The first phase of the reputational risk treatment consists in the identification of potentially harmful events. Prudentially, companies must take ex-ante measures to prevent the favorable conditions for the emergence of the aforementioned risk. These ones can include indices that signal the eventual occurrence of unfavorable events or negotiation practices considered suitable to interrupt a negative trend. The second phase involves ex-post activities mainly focused on supporting the development of reputation mitigation or management solutions and the design of monitoring programs for the latter.
Moreover, it is made a deeply analysis of the models proposed by Larkin J. (2003) and Regan L. (2008). Specifically, the first model gives a broad vision of each step that a company management must follow in managing reputational risk. Its model is structured in six steps that a company management must follow in managing reputational risk.
The first step is to establish monitoring systems, the so known reputational risk radar. Companies must establish systems that are able to determine potential problems that may come out of the commercial, political, social, economic or technological areas and that can negatively affect the company’s strategy. The second step provides the development of techniques to manage risky events by creating appropriate short-term

and long-term strategies. This improves the understanding of goals, operations, values and behaviors. Company management must identify all events that may impact the company. For each event the cost of the impact and the probability of occurrence of the event must be identified. The third step of the Larkin model is the assessment of the gap between current performance and stakeholder expectations. Once the gap has been determined, it is necessary to analyze the effectiveness of risk management and whether the needs of the stakeholders are met. It is undoubtedly important to take into account how the organization acts in the market and which stakeholders are actually able to influence reputation and performance. The fourth step focuses primarily on determining the responses that the company idealizes for managing reputational risk. The strategies to be used are the consequence of the other steps. The fifth step aims at implementing the strategy approved by management in action plans and communicating with the most relevant stakeholders. The last step of the model is only a trick that is used to remind those who make the assessments that the risk management process must be continuous and constant.

Another model is developed by Laureen Regan (2008) who aims to integrate the reputational risk management process into the ERM framework. However, the model is very similar to Larkin's model in structure and evolutions. According to the author, good reputation can be a key for a competitive advantage. This is particularly important in today's environment characterized by intense competition, market globalization and instant information flows. The reputation gives advantages in accessing important markets, attracts capital raising, high quality labor and helps to maintain good relations with suppliers and customers. However, the management of reputational risk is not well established among companies. There are several reasons for the lack of interest in reputation risk management. First of all, companies have always been focused on the management of financial and operational risks and compliance with regulations and many firms do not comply with the above principles to switch to reputational risk management. Moreover, reputational risk is much more complicated to manage than financial risk because of the lack of a clear and widely recognized definition of the concept of reputation and reputational risk and a classification and measure of that kind of risk. Finally, many managers think that corporate reputation is a function of the reputation of all companies in a given sector and therefore spending money and resources to improve it makes no sense. In fact, the Regan model is based on the fact that reputation management must be an integral part of the ERM process: it is a process related to strategic planning whose direct manager are the members of the Board of Directors. The model to be implemented is composed by five steps that represent the whole process that closely resembles the Enterprise Risk Management process as it is a dynamic and a not stand still model. The process must be periodically reviewed to ensure its operation.

In the third section are analyzed several qualitative and quantitative methods that can be used as an estimate to give an economic value to corporate reputation. Specifically, for the first category are described the Reputation Quotient, Reputation Index, Fortune's Most Admired Company (AMAC) and RepTrack. Reputation Quotient (Fombrun C. et al., 2001) is a tool proposed for the first time by Charles Fombrun and subsequently developed by the Reputation Institute and the Harris Interactive company. The result of the collaboration is the creation of a standardized tool that could be used to measure the perception of companies. Market surveys have been carried out to find out what consumers think about companies that they considered having a good and bad reputation. According to the results of the research there are six dimensions with twenty attributes that are the parameter of the stakeholders in their assessment of corporate reputation: Emotional appeal, Products and services, Work environment, Financial performance, Vision and leadership and Social responsibility. In 2006 Reputation Quotient is subsequently replaced by a method called RepTrak which is created by Reputation Institute and that in recent years has become the most recognized and widely used method of measuring and comparing corporate reputation. C.B.M. van Riel and C.J. Fombrun (2008) indicate that RepTrak method is the first standardized and complex approach of corporate reputation measurement that is implemented at the international level for judgment of various stakeholder groups: indeed, it is created in order to provide organizations with standardized framework for the identification of indicators based on with corporate reputation is formed and managed (Reputation Institute, 2009). Bearing witness to this, RepTrak was in this years adopted by the magazine "Forbes" for the annual rankings of the world's most known companies (D. Vivader-Cohen, 2007). The RepTrak method, compared to the Reputation Quotient, has removed the international research limits, has integrated the list of indicators and some indicators have been renamed (van Riel, Fombrun, 2008). RepTrak tracks 23 indicatores grouped into seven dimensions considered significant. The model is used in close collaboration with the client, with the aim of defining its reputational level in terms of business (Reputation Institute, 2009; Reputation Institute, 2010a). C.J. Fombrun (2006) states that a different number of indicators could be used to measure corporate reputation: this is due to the type of organization assessed or the group of stakeholders. Great care in the RepTrak approach is given to “RepTrak Pulse” measurement method that assesses corporate reputation between customers. The latter one has 4 main benchmarks: esteem, admire, trust and feeling that customers feel to the organization (Reputation Institute, 2009; Reputation Institute, 2010a). Corporate reputation is also assessed on the base of indicators that form the 7 corporate reputation factors. Figure 12 presents a comprehensive view of RepTrak method towards measurement of corporate reputation. The main advantage of that method relies on the fact that corporate reputation measurement factors and indicators described above statistically don’t depend on each other. Besides, all corporate reputation measurements are comparable between operating fields, countries and in time (Reputation Institute, 2009). Another useful tool for measuring reputation risk is Reputation index that is developed by Cravens, Goad and Ramamoorti (2003). In order to form the index, interviews are carried out as in the case of the Reputation Quotient but this time it is made by subjects within the company. The following points represent the elements that were detected for the index measurement: products and services, external relations, solidity of assets and productivity, intangible debt, employees, innovation and value creation, strategy. To turn the qualitative measurement described above in a more appropriated form to developing a reputation index, the authors proposes a nine-point scale to identify the magnitude of the measure. The qualitative techniques analyzed are very similar and, all of them, have large limits that make them less usable in practice for risk measurement. In fact, they are based on very subjective calculations and this makes the process unreliable. In particular, as far as the Reputation Quotient is concerned, the greatest limitation is given by the fact that the determination of the risk exposure is calculated on the basis of interviews that refer to overly subjective spheres. The Reputation Index, on the other hand, is based on managerial experience and this may not contain sufficient knowledge to measure the reputation of companies.

From a quantitative view Gabbi G. and Patarnello A. (2010) outlines four different methods to assess the value of reputation: the organizational approach, the accounting approach, the marketing approach and financial approach.

The first method is the organizational approach. Reputation is an immaterial asset, closely linked therefore to the most important of all intangible assets that is the intellectual capital. This proves the increasing attempts aimed at its measurement. The intellectual capital has some internal and external components that compose its value. The first one covers human and structural or organizational capital, while the second one includes relational capital. A good assessment of intellectual capital needs a full understanding of a company’s value creation mechanisms. The latter are affected by the organization’s industry, market, business model, corporate culture and strategic objectives. Once value creation mechanisms have been figured out, it is necessary to identify the variables explaining their effectiveness and efficiency in order to select appropriate measures of intellectual capital, which can be ranked into three classes: growth, efficiency and stability. The second method is the accounting approach that measures reputation as the difference between the shares market value and the full amount of tangible assets including those already valued as intangible assets (Gaultier-Gaillard and Louisot, 2006). These are a large part of a company's equity. It is very important to define and measure them so that they are properly published in the financial statements. Intangible assets are defined by IAS 38 as "non-monetary, identifiable, non-physical assets". The third method is marketing approach. This approach is based on a careful vision of reputation: in fact, it is mainly focused on measuring the value of the brand, which is directly linked to a specific level of reputation. Assessing the investments made by a company to increase its intangible assets can give value to the brand itself. In this sense, one of the most interesting methods is that of royalty rates for the assessment of the value of the brand. It is based on the assumption that the benefits a company gets from its intangible assets cannot be lower than the price the company should pay to obtain the right to use them. The last method is the financial method that is based on the valuation of equity securities. The fluctuations of corporate actions are often determined by events related to the company. Some actors argue that the oscillation is due to two main factors that can be classified as primary and secondary. The primary one is linked to a primary risk, such as operational, financial, compliance or strategic risk. The secondary impact is instead due to the loss of reputation. Kaplan R. and Norton D. (1996) developed another method, the Balanced-Scorecard that has the aim to measure business performance. The method focuses on the analysis of four dimensions considered crucial for companies: financial, consumers, internal processes, development and growth.

Finally, last section focuses on reputational risk measurement using here again both qualitative and quantitative approaches. The qualitative method analyzed is known as gap analysis, developed by Honey G. (2009). That method focuses on the relationships between the organization and the relevant stakeholders, trying to understand whether there is a gap between stakeholders' perceptions of corporate reputation and reality. The chapter ends with the mathematical description of the two quantitative approaches concerning an ex-post valuation of reputational event yet occurred in the past. The first one is developed by Perry J. and De Fontnouvelle P. (2005) who focus on the relationship between the size of the operating loss, its nature and the corporate governance structure and measure the reputational loss considering the reaction of the share price to the announcement of this significant operating loss. The second one is proposed by Soprano A. et al. (2009) that like the method mentioned above it is based on the observation of shares prices fluctuations, but it is different from the other one because on the fact that it is only focused on the share price volatility. Its main assumption is that reputational events will directly impact company's market value.

The third and last chapter introduces the study made by Perry J. and De Fontnouvelle P. (2005) and conduct an analysis of several practical events of operational loss through the application of the Event Study method, which determinates if and how much an event has a lasting reputational impact on the stock prices of the companies analyzed. Using that methodology, a reputational loss is interpreted as any losses that exceed the announced loss amount.
In the second section are described the data and the sample adopted. In order to achieve a statistical sample with a certain significance, the stock returns and the relative market indices of 37 companies operating in the international field were taken into account. The events analyzed were identified through a press review of the main events to the most famous listed companies over the past twenty years. Events or groups of events selected have had a strong resonance at international and national level and some of that become "school" cases and have strengthened or weakened the companies affected. The sources of information regarding dates and events refer to newspapers, periodicals, news agencies and information sites available in the Factiva database. Only transactions carried out by listed parent companies have been selected, for which the date of the announcement of the transaction is known with certainty. These conditions are essential to be able to estimate, through the technique of the event study, the anomalous returns of the securities of the companies involved. For each transaction, the historical series of returns of the parent company was extracted from the Yahoo Finance and Bloomberg databases. As regards the benchmark, the value of the reference market index was used

at first using the adjusted closing price. Subsequently, to increase the robustness of the analysis made, the sectoral benchmark indices of the markets on which the companies under analysis are listed are taken into consideration: this allows to obtain evidence that is not specific for a single market of bag. The chosen benchmarks are always related to the appropriate closing price. For each index chosen, the daily yield was calculated as the logarithm of the ratio between the price per day t and the one per day t - 1; this yield is used together with the daily variation of the security object of the news for the estimation of the angular coefficient and of the intercept in the linear regression. In order to enhance the robustness of the sample in question another index is taken into account. It is the MSCI World Index that captures large and mid-cap representation across 23 Developed Markets countries. With 1,642 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country. That index is split in ten sectors each of which the companies belong to. In particular in that sample are considered the following MSCI World Industrial indexes: Consumer Staples, Automobiles, Aerospace, Industrial, Energy, Infrastructure, Consumer Services, Software and Licenses, Consumer Discretionary, Information Technology, Financials, Health Care, Transportation, Commercial and Professional Services.

All these companies suffered operational loss on a specific date that mainly regards data breach, internal fraud, market manipulation, defective products and employees' mistakes. The events have been classified in base to the indications furnished especially in the other chapters.

The following criteria for loss announcements have to be met in order to be included in that analysis (Perry and De Fontnouvelle, 2005):

- The parent company is publicly traded, and price and market capitalization data were available at the time of the loss announcement.
- The loss was operational and must have been known to be so at the time of the announcement.
- There had been no prior announcement of the loss, either through rumor or miscellaneous charge-offs.
- A precise loss amount or exposure was announced on the day of the first announcement, or shortly thereafter.
- There were no obvious confounding events.

It is important to notice that, instead of single events, it would be more correct to speak of groups of events: the reputational crises analyzed are constituted by a multiplicity of events, each of which it is valued both singly in comparison to its contribution to the stock's trend of the company in crisis.

The purpose of that analysis is to determine if and how much the event has an impact on the reputation of a company, understood as a significant variation of stock returns with respect to its normal trend. Indeed, stock prices are an expression of investor confidence and therefore of the economic situation in which the company operates: they are therefore an excellent parameter for assessing the credibility and reputation that the company has built up over time.

In the third section it is presented the methodology of the Event Study, as applied by Perry and De Fontnouvelle (2005), adopted in order to identify which is the market reaction to that event. In particular, the analysis is divided into two steps: the first one uses as a benchmark the Market Indices and the second one the MSCI World indices: for both are considered three different time windows. This is made in order to enhance the robustness of the sample. The data analysis conducted with the methodology of the Event Study described before represents a timeline illustrating the days taken into consideration: the estimation window, the window used to determine the normal behavior of an action with respect to market factors, is 264 days from the eleventh day before the event (-264; -11); the event window includes 10 days before the event (day 0) and 20 days post-event (-10; +20), used to determine if the event was anticipated by a leak of news and / or the effect following the announcement.

In order to enhance the robustness of the analysis it is considered another timeline that starts 50 and 100 days after the other one. Therefore, in the first case the estimation window goes from day -214 until -11 and in the second case from day -164 until -11.

The first step of an Event Study concerns the definition of the market model. Given a company, it is considered the historical series of daily prices P_t of the shares with t that varies in a period sufficiently long, about a year, and it is calculated the logarithmic returns. $R_t = \ln\left(\frac{Pt}{Pt-1}\right)$

Market model means the following relationship between company returns and the benchmark:

$E(r_{it}) = \alpha_i + \beta_i r_{mkt} + \varepsilon_{it}$

where ε_t represents the error of the model, the residual, that is the part of the company's performance variable that the market yield cannot explain, r_{it} is the firm's logarithmic return, r_{mkt} is the return on an appropriate equity index, α_i and β_i are parameters estimated through an ordinary least squares' regression referring to the estimation window. In the pre-event window, the parameters α and β of the model are determined by means of linear regression and the method of ordinary least squares. The model will serve to obtain forecasts of the normal performance of the stocks in the event window. In formulas: $\hat{r}_{it} = \hat{\alpha}_i + \hat{\beta}_i r_{mkt}$

represents the linear model estimated on the basis of the data in the pre-event window. This model makes it possible to calculate the forecasts, on the yields of the company's stock, in the event window, considering the values of the regressor, or the market index:

$\hat{r}^*_{it} = \hat{\alpha}_i + \hat{\beta}_i r^*_{mkt}$

where the symbol * indicates that the data are being considered in the event window, the time frame in which the analysis of the impact of the event is developed. Once the values predicted by the model relating to the yields of the stock in the event window are determined, it is necessary to calculate the differences with the real values of the returns: these differences are called Abnormal Returns, the name indicates the possibility that the event caused anomalous changes in the trend of returns, anomalous compared to a past trend studied for a long period of time.

Therefore, for each period t in the event window interval $[\tau_0, \tau_1]$, it is estimated abnormal returns for each event *i* as $AR_{it} = r_{it} - (\hat{\alpha}_i + \hat{\beta}_i r_{mkt})$

where α_i and β_i are the OLS estimates of α_i and β_i from the above formula. Typically, τ1 is chosen to be large enough to allow the market to completely react to the announcement information. Throughout the analysis the authors will compute abnormal returns over a wide variety of event windows as a robustness check.

In order to quantify the complete impact of an announcement over the event window, it is important to aggregate abnormal returns in some fashion. It is constructed a cumulative abnormal return (CAR) over the interval [τ0,τ1] for each event *i* using the abnormal returns estimated in Equation above:

$$CAR_{i[\tau 0, \tau 1]} = \sum_{t=\tau 0}^{\tau 1} AR_{it}$$

Finally, it is calculated the Average CAR that represents the total average effect of the event on the overall sample of companies considered.

A confidence level of 95% was established, corresponding to level 1.96 in the standard normal distribution: that number is multiplicated for the standard deviation and the days or events with a standardized CAR greater than 1.96 are considered "significant", meaning that the events are unplanned, and the reputational effect represents a shock for

the market. The standardized CARs, taken in absolute value, give the measure of the impact on the share price of the event.
In the fourth and last section are described the aggregate results. Comparing the study carried out by Perry and De Fontnouvelle (2005) with the results obtained from the analysis shown in the previous section, it is clear that when an announcement of operational loss occurs, even if in few situations, it has a huge impact on the aggregate result. Indeed, the average CAR in the post event window is always statistically relevant for both the benchmarks considered, in all the time windows presented.
This comparison is done to enhance the robustness of the analysis in order to come to a clear conclusion. The outliers are described above, giving a particular relevance to the news happened in the days pre and post event window that leads to understand the stakeholders’ reactions to that announcement and the consequent trend of the CAR in the long term (about 20 days after the announcement).
Finally, it could be relevant to briefly highlight those outliers in order to better understand which are the main factors that conditioned so much the aggregate result of the sample. In particular a threshold equal to 90% of the days post event has been set, in which the CAR is statistically significant. The analysis shows that only three events are statistically relevant based on that assumption. For need of synthesis are shown graphs linked to market indices and MSCI World indices with an estimation window starting 264 days and ending 11 days before the announcement.
As a result, it is possible to conclude that stock price is an important signal for the company: it represents the trust of the market, the stakeholder side, therefore the economic framework on which the company's survival is based. However, it would be a serious mistake for the risk management functions to evaluate exclusively the relationships with the stakeholders: the fall in yields is only the expression, immediately visible, of a decline in reputation among all the stakeholders, who will judge the ability of company and its management to be able to deal with all types of risk without making false steps.