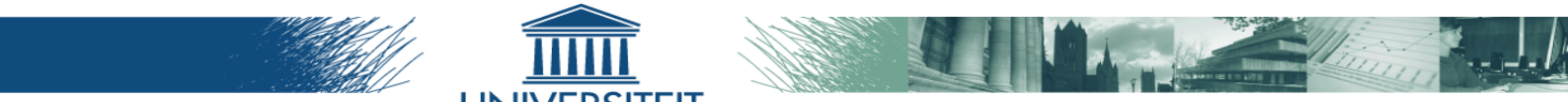

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FACULTEIT ECONOMIE EN BEDRIJFSKUNDE
FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

ACADEMIC YEAR 2016 – 2017

ANALYSIS OF THE CRITICAL SUCCESS FACTORS IN RISK MANAGEMENT

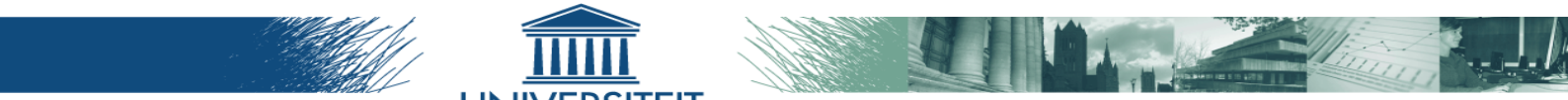
Masterproef voorgedragen tot het bekomen van de graad van
Master's Dissertation submitted to obtain the degree of

Master of Science in Business Engineering

Laurens Sap

Under the guidance of

Prof. Dr. Regine Slagmulder



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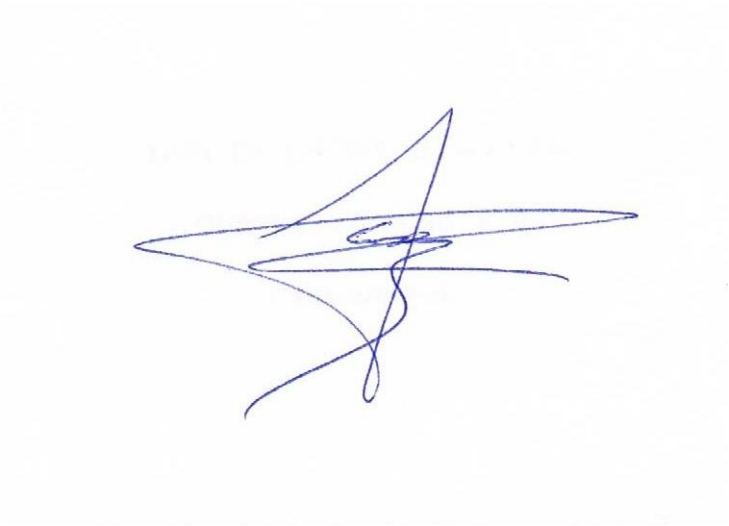

Dutch summary

Deze masterproef bestaat uit 2 delen, namelijk een literatuurstudie en een empirisch onderzoek. Risicomanagement is een vrij nieuwe discipline binnen het bedrijfsleven en krijgt opnieuw veel aandacht sinds de financiële crisis van 2008. Er is al heel wat geschreven qua academische literatuur over dit onderwerp, maar veel onderzoekers wijzen op het belang van extra onderzoek vanwege het nieuwe en zich nog volop ontwikkelende onderwerp enerzijds en de oppervlakkigheid van bestaande literatuur anderzijds. Doorheen deze masterproef ga ik op zoek naar de kritieke succesfactoren voor risicomanagement. Dit wordt in verband gebracht met tal van deelaspecten die ook mede bijdragen aan het succes van zo'n ondernemen. De literatuurstudie start vrij algemeen en brengt de minder ervaren lezer op de hoogte van typische terminologie binnen risicomanagement. Daarna wordt een tijdslijn geschetst van de ontwikkelingen op dit vlak doorheen de jaren gevolgd door de voordelen die men kan verwachten dankzij een risicomanagement programma. Na het beschrijven van de belangrijkste actoren en gebruikte raamwerken, wordt het eigenlijke onderwerp van deze thesis onder de loep genomen. Hierbij werd een grondige zoektocht gevoerd naar reeds eerder verschenen academische literatuur over kritieke succesfactoren. We maakten hiervan een analyse en kwamen zo tot een aantal factoren die meest relevant waren gebaseerd op deze 10 papers. Het eigen empirisch onderzoek is gebaseerd op een vragenlijst waarop 114 respondenten antwoord gaven. Voor de collectie van de antwoorden beroepten we ons op verschillende bronnen zoals: de databanken Belfirst en Orbis, LinkedIn en BELRIM. Hoewel we niet volledig in ons opzet geslaagd zijn om ook een onderscheid te maken tussen verschillende bedrijfssectoren, kunnen er toch verhelderende en belangrijke conclusies genomen worden uit dit onderzoek. Zo ervaren de respondenten meer macroeconomische onzekerheid dan onzekerheid in hun eigen industrie en was het verkrijgen van externe consultancy van ondergeschikt belang. De belangrijkste factoren om te starten met risicomanagement werden onderzocht, dit zijn: het beter anticiperen van risico's, het verbeteren van bedrijfsresultaten en het beschermen van de reputatie van de onderneming. Verder werden niet enkel de succesfactoren in detail besproken, maar ook net die factoren die risicomanagement belemmeren. De voornaamste succesfactoren zijn: toewijding van zowel de Raad van Bestuur alsook het management en het hebben van een risicocultuur binnen de organisatie. Het niet hebben van zo'n cultuur is dan meteen ook een

van de redenen voor falen, alsook de weerstand voor veranderingen binnen een bedrijf en andere prioriteiten zoals bepaald door het management.

Preface

I am very grateful for all the support from Professor Dr. Regine Slagmulder, my supervisor during those 2 years of my master thesis. Having a dedicated promotor can definitely make a big difference, not only in terms of motivation, but also in the quality of the output. She was always prepared to help me with the questions I had and to review my work. Special thanks to Ann De Wilde, Assistant to the Board for BELRIM, for sending my survey to more than 120 risk managers. This greatly helped me to collect enough responses. I also want to thank the many respondents from the companies in Belgium, France, The Netherlands, Luxembourg and Germany for their time and willingness to provide me with valid data. Finally, I would like to thank friends, family and my girlfriend in particular for all the support throughout my entire education.

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Abbreviations

AAA – American Accounting Association

AICPA – American Institute of Certified Public Accountants

AS/NZ – Australian and New Zealand Standards

BELRIM – Belgian Risk Management Association

CEO – Chief Executive Officer

CFO – Chief Financial Officer

COO – Chief Operations Officer

COSO - Committee of Sponsoring Organizations of the Treadway Commission

CSF – Critical Success Factor

CRO – Chief Risk Officer

ERM – Enterprise Risk Management

EY – Ernst & Young

FEI - Financial Executives International

FERMA – Federation of European Risk Management Associations

GDP – Gross Domestic Product

IFRIMA - International Federation of Risk and Insurance Managers Associations

IIA - Institute of Internal Auditors

IMA – Institute of Management Accountants

ISO – International Organization for Standardization

KPI – Key Performance Indicator

KPMG - Klynveld Peat Marwick Goerdeler

OCEG – Open Compliance and Ethics Group

PWC - PriceWaterhouseCoopers

RMP – Risk Management Process

ROI – Return On Investment

S&P – Standard & Poor's

TRM – Traditional Risk Management

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Introduction

Even during the earliest human existence, people are trying to deal with risk and uncertainty in an organized and planned way. Darwin's theory has taught us that nature favored those creatures adapted the best to the uncertainty of food and protection. This way, we could say that our ancestors, the Homo sapiens, were the earliest users of some sort of risk management (Kloman, 2010). Every modern company nowadays is confronted with risk. Risk is omnipresent. However, it always has a positive and a negative side. Most people are risk-averse, they tend to focus on the negative side. One must not forget to recognize the opportunities of pursuing risky activities. Risk management aims to limit the consequences of the negative impact of risk and, at the same time, tries to capitalize on the great opportunities that risky activities provide (Rochette, 2009). In recent years, world-wide events have triggered the further development of risk management. The financial crisis starting in 2007 is of course the most famous one. The global marketplace is more competitive than ever and all kinds of risks can erode an organization's business model and brand very fast indeed. The global crisis however does not demonstrate the failure of risk management. It shows the failure of the management of a lot of organizations to successfully cope with the risks they face and to use their risk management program to generate sufficient benefits (Hopkin, 2010). This presents a first opportunity for our study. The aftermath of the recession is still noticeable and searching ways to cope with risk more effectively in the future is very important.

It is true that a lot has already been written about risk management up until today. Bromiley, McShane, Nair, & Rustambekov (2014) argue that the previous research in finance and accounting was often only suited to risk with well-defined characteristics and offered tools that were mathematically complex and intangible for most managers. There is a need for good information about the actual management of risk and ERM programs. They also state that the research up until this date has insufficiently addressed the inter-firm differences. According to Fraser, Schoening-Thiessen, & Simkins (2010), virtually all literature is silent on how to deal with all kinds of differences between organizations. These differences can be: cultural, historical, logistical etc. In addition, Gordon, Loeb, & Tseng (2009) state that the

relation between ERM and firm performance will, for a great deal, be dependent upon how will the ERM program matches the firm-specific factors.

It is clear that our study, searching for the critical success factors (CSF's) in risk management, will be very relevant when we also consider firm-specific and sector-specific differences between these firms. We will focus on European companies, in Belgium in particular.

We will also make the distinction between traditional risk management and Enterprise Risk Management (ERM). In the past couple of years, there has been an emerging consensus that ERM is the way forward. In the traditional risk management approach, risks are viewed and assessed separately from each other (silo-approach), while in ERM, risks can be seen as a portfolio. ERM will also have more strategic value and does not look at risk as something to mitigate, but rather sees it as an opportunity to create competitive advantages (Bromiley, McShane, Anir, & Rustambekov, 2014). Enterprise risk management (ERM) is a continuous process still in transition today. For most companies, the ERM practices are still in an early stage and in need of further development. However, the interest in ERM has significantly increased. Consulting firms have established ERM units, rating agencies take ERM into account when calculating a rating and universities are teaching courses focused on risk management in general or ERM in particular.

The study is composed out of 2 major parts, a Literature Review and an Empirical Research. The Literature Review will provide us with the necessary knowledge for the in-depth research conducted in the Empirical Research. In this first part we will first formulate the most relevant definitions of risk, risk management and critical success factors. Secondly, we will investigate the different methods and practices in use today.

Chapter 1: Literature Review

In the beginning, it is important to highlight some important terminology and definitions in order to have a good understanding of some key words throughout the paper. The history of ERM development, the value creating aspects, responsibilities and theoretical guidance frameworks are also covered. Finally, we will look at a number of academic studies in order to look at their findings concerning the critical success factors in risk management.

1. General Terminology and Knowledge

1.1. Risk

Risk can be defined as the effect of uncertainty on the objectives of the company. An effect is a positive (opportunities) or negative (threats) deviation from what is expected. (ISO 31000: Guide 73, 2009). There are a lot of possible definitions about risk and there is little consensus. A lot of definitions however only focus on the negative aspects of risk, while the positive aspects are at least as important. This is exactly where value comes in. Value is a function of risk and return. An enterprise will not try to eliminate all risk but realizes that with the right amount of risk-taking, they can get to their strategic goals. One of the most general beliefs about risk is that higher risk-taking leads to higher returns. The risk-return trade-off is in that case a straight line through the origin (Curtis&Carey, 2012).

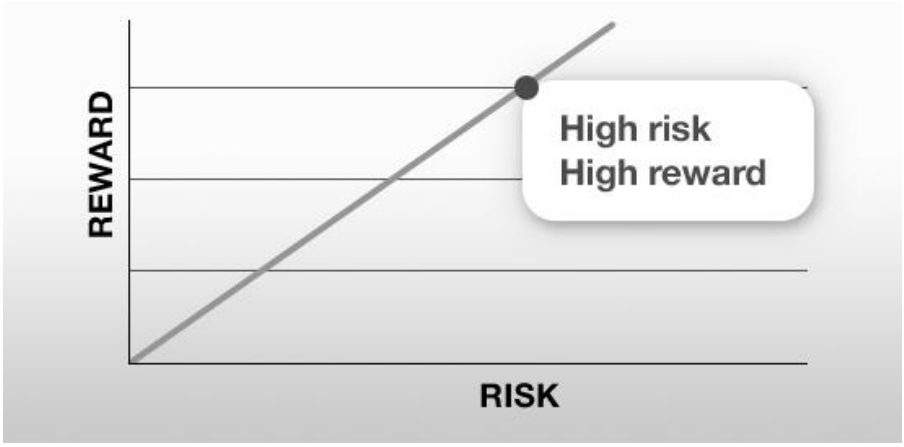

Figure 1: Risk-return trade-off (dallasfed.org)

A better way to look at the risk-return trade-off is by means of the risk-adjusted return. This leads to the typical bell-graph (Curtis&Carey, 2012).

Figure 2: The sweet spot in risk-taking (Deloitte & Touche 2012)

In the first zone, the company is not taking enough risks. The capital is being underutilized and higher returns could be earned. In the last zone, the company is taking excessive risk. This means that the risk absorption capacity in terms of capital, liquidity and/or risk management capabilities is insufficient for this amount of risk. The middle zone is clearly the so-called 'sweet spot'. In order to get to this point however, one must be able to estimate its own risk-exposure (Lam, 2014).

1.2. Different types of risk

To classify the different types of risk in business, a general framework is used (Kaplan&Mikes, 2012). This framework, consisting of 3 broad categories, allows us to classify all the risks since every type of risk can be attributed to 1 of the categories. These 3 categories are:

- Preventable risks: Preventable risks are internal risks that should be controlled or avoided. For example: unethical behavior by managers or employees or performing certain tasks not according to the guidelines. These risks should be avoided at all cost since they do not present an opportunity or a profit potential for the company. A typical way to manage this type of risk is through values and norms.

- Strategy risks: This is the most important category in risk management. It presents the risk the company takes in line with its strategy and in order to generate superior returns. The company has to consider a trade-off between high risk and possible high returns or lower risk and lower returns. This trade-off is determined by the risk culture and risk appetite. Eliminating these risks is not possible. Instead one has to rely on risk management practices to estimate the probability of certain gains and losses and to manage the problems as a result of risky activities. Building out an effective risk management system will make it possible to engage in more risky activities and thus open up the way to higher returns.

- External risks: Risks beyond the control of the organization due to external events. These events can for example be: macroeconomic changes, political/regulatory factors, natural disasters etc. Since the company cannot prevent these events from taking place, it is important to identify them in an early stage and to mitigate the effects.

The actual four types of risk are: (1) strategic risks, (2) operational risks, (3) financial risks, (4) compliance risks. (Deloitte: A global survey, 2013) These four types of risk are agreed upon by a big number of consulting firms and are also the types occurring the most in literature on this topic.

- Strategic risks: strategic risks are the consequence of an unsuccessful business plan and poor decision making. These risks are related to customers, competitors and investors. For example: shifts in customer preferences or major innovations of competitors can make your product obsolete very quickly.
- Operational risks: these risks stem from the processes, systems and people in a business. It is thus an internal failure in the organization and happens on a day-by-day basis. Unlike with strategic or financial risk taking, there is no opportunity for return resulting from operational risks.
- Financial risks: stem from the volatility of markets and other internal financial policies. Some examples are the evolution of prices of substitute products, the amount of credit and creditworthiness of customers, your own debt load.

- Compliance risks: risks associated with the need to concede to several rules and regulations. These risks typically originate from corporate governance rules and national and international politics. Some examples are the need to satisfy to environmental concerns and customer protection laws.

1.3. Enterprise Risk management (ERM)

A possible definition of Enterprise Risk Management (ERM) is given by ISO 31000 (International Organization for Standardization): “Risk management refers to a coordinated set of activities and methods that are used to direct an organization and to control the many risks that can affect its ability to achieve objectives.” Another definition is given by COSO (Committee of Sponsoring Organizations of the Treadway Commission): “Enterprise risk management is a process, affected by an entity’s board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within the risk appetite, to provide reasonable assurance regarding the achievement of entity objectives” ERM is aimed at the oversight, control and discipline to drive continuous improvement of the risk management capabilities of a firm in an ever changing competitive environment. So implementing ERM is not a project in itself, but a journey due to this continuous improvement aspect.

The term “Enterprise Risk Management” first appeared around 2001 in academic papers by Dickinson and D’Arcy & Brogan. ERM differs from the so called ‘Traditional’ Risk Management (TRM) in a way that ERM has an enterprise-wide view on risk. This is the basic idea of ERM. Firms should address their risks comprehensively and coherently (Bromiley et al., 2014). Since a lot of the risks faced by a company are highly interdependent, it makes sense to switch from a ‘silo’ or ‘stovepipe’ approach, where risks are managed in isolation from each other, to this new holistic approach where risks are considered as a portfolio (Beasley et al., 2006).

Looking back at the COSO definition of ERM, it appears that not only integration on the level of risks is useful, but also on the level of strategy. ERM should be a part of the strategic

planning of a firm. This practice is often called Strategic Risk Management. The ultimate objective is increasing the likelihood of realizing the strategic objectives of the firm. This way, ERM can be a value driver for the stakeholders of the firm (Beasley&Frigo, 2010).

1.4. ERM terminology

In order to better understand the different aspects of an effective risk management approach and the vocabulary used in this work, it is necessary to explain some of the more common terms. We will give a brief overview.

- Risk Awareness: A good level of risk awareness will help the company to proactively identify risks, assess the severity of the level of risk and assure good risk communication. This proactive attitude makes sure that risks are addressed before becoming bigger problems (Lam, 2014).

- Risk Culture: According to Moody's, "Enhancing risk culture is one of the most credit-positive actions management can take, but is also one of the hardest things to implement and to observe." (Nerby, 2013). The risk culture determines the values, norms and attitudes of the organization's management and employees towards risk and risk taking. How the people of an organization react to and deal with risk is determined by the risk culture (Adams et al., 2012). Risk culture is more than being risk aware. Increasing risk awareness amongst employees can increase risk adversity. Having a culture means that employees can make risk-informed decisions responsibly (Shinkman&Herd, 2014). It is the task of the Board of Directors and of senior management to communicate, and if necessary, to drive change in the risk culture. Driving change in risk culture will prove a journey rather than an instant solution (Adams et al., 2012).

- Risk Appetite and Attitude: Risk appetite is the amount of risk an organization is willing to accept. The organization chooses to face or not to face certain types and degrees of risks according to its specific risk appetite. Risk attitude on the other hand reflects to the individual. Ideally some alignment should exist between the risk

attitudes of the employees and the risk appetite of the organization (Pritchard, 2015).

- Risk Tolerance: Risk tolerance is the maximum amount of risk someone is able to cope with. In practice, this is not easy to determine (Grable, 2000). A company can decide to take on high risks because of the potentially profitable outcome or because it lays in the nature of that company. The risk tolerance of a company can increase when they install control measures and the necessary resources to take on those risks (Hopkin, 2010).

- Risk Governance: Risk governance, and in broader terms, corporate governance are the systems, processes and rules an organization uses to protect the interests of the stakeholders. Ideally, these are not only the shareholders, but include other stakeholders such as: employees, customers, lenders, the community in general,… Maintaining good governance signals the willingness of the organization to establish itself in the long run and with great benefit for all of its stakeholders. ERM is becoming a very important aspect in corporate governance (Bowling&Rieger, 2005).

2. History of ERM development

Over time, there have been quite some changes to the practices of risk management. One of the most recent events that has revamped the adoption and research of ERM is of course the global financial crisis in 2007/8. Before that, there were a whole range of other corporate disasters, regulatory changes and requirements, industry initiatives, stakeholder pressure and intellectual studies that have transformed the most basic practices of risk management to the state of the art ERM techniques known today. As already mentioned in the introduction, the roots of risk management began during the earliest human existence. People tried to reduce the uncertainty of food, warmth and safety. The Renaissance and Enlightenment made it possible to think intelligently about the future, without the intervention of divine creatures. (Kloman, 2014) Together with these historical changes came major improvements in mathematical techniques. We could now calculate alternative futures. The last 100 years have brought the most significant changes to risk management,

especially after World War 2. The origin of modern risk management can be dated back to 1955-1964 according to several authors (Crockford, 1982; Harrington&Niehaus, 2003).

The following table gives the 5 most important recent drivers for the development of ERM and some examples (Lam, 2011):

1. Financial and corporate disasters:	2001: Bankruptcy of Enron. A well-known example of fraud and corruption. Led to the SOX-law. 2007/8: Global financial crisis. This led to a reexamination of a lot of ERM processes.
2. Regulatory requirements	1988: Basel I. 2002: Sarbanes-Oxley law (SOX): An increased emphasis on corporate governance (Bowling&Rieger, 2005). 2004: Basel II. 2004: NYSE corporate governance rules. 2009: Solvency II. 2010: Basel III.
3. Industry initiatives	1952: The Journal of Finance publishes Markowitz's portfolio selection theory.
4. Rating agencies and investors	2008: Standard and Poor's (S&P) incorporates ERM initiatives into its ratings. Following this trend by S&P, the other rating agencies are also increasingly putting more focus on ERM practices.
5. Corporate programs	1987: First risk management department in a bank (Merril Lynch) 2004: COSO publishes the ERM: Integrated Framework. 2009: International Organization for Standardization publishes ISO 31000:2009 framework.

Table 1: Most important recent drivers for the development of ERM

3. The benefits and value of ERM

3.1. Benefits according to COSO

As already mentioned, Enterprise Risk Management should be broader than just focusing on regulatory compliance or loss minimization. Firms should also actively use ERM to achieve their business objectives and enhance the value of the company. (Lam, 2011) However, implementing ERM programs in a company, education of personnel and creating the right mind-set or risk culture takes time and effort. Thus, in order to get people to implement ERM, there should be some return on investment (ROI) (Shenkir&Walker, 2007). To reap the benefits of an effective ERM system, this system has to be proportionate to the level of risk faced by the organization and aligned with the other activities. A dynamic risk approach is preferential to meet emerging and ever-changing risks (Hopkin, 2010). Academic research has published numerous advantages of the integrated ERM approach. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) summarizes 6 major benefits of ERM (Steinberg&Martens, 2004). These 6 benefits are still very relevant today. Especially the need for alignment with the strategy has been numerously repeated after the global financial crisis.

1. Aligning risk appetite and strategy
2. Enhancing risk response decisions
3. Reducing operational surprises and losses
4. Identifying and managing multiple and cross-enterprise risks
5. Seizing opportunities
6. Improving deployment of capital

3.2. Benefits according to empirical academic research

Perhaps more importantly than the theoretical benefits are those observed in reality. In recent years, a lot of empirical research has been done on the association between (traditional) risk management or ERM and higher levels of profitability and market valuation (Lam, 2011). In most empirical studies there is a positive impact on corporate value and firm performance due to an ERM program. Do note however that empirical studies are often restricted to single countries or industry sectors and as a results empirical findings partly differ (Martin&Gatzert, 2013). The following table provides a summary of some key empirical studies providing statistical evidence:

Hoyt & Liebenberg (2008)	A significant positive relation between firm value and ERM. ERM increases the firm value by approximately 17%. Tobin's Q is used as a performance measure.
Hoyt & Liebenberg (2011)	ERM contributes to protecting and enhancing firm value. A significant premium of 20% has been found in this study by again using Tobin's Q measure. This premium has thus increased by 3% in comparison with the earlier study by Hoyt & Liebenberg (2008).
Gordon, Loeb & Tseng (2009)	A significant positive relation between ERM and firm performance. Another important mention is that ERM should be adapted to 5 firm-specific factors: environmental uncertainty, industry competition, firm size, firm complexity and board of directors' monitoring.
Pagach & Warr (2010)	Decrease in stock price volatility and earnings volatility for firms with positive abnormal returns starting on the CRO appointment date.

McShane, Nair & Rustambekov (2011)	A positive relation between increasing levels of TRM capability and firm value but no additional increase in value for firms who have moved to ERM instead of the traditional risk management techniques.
Grace, Leverty, Phillips & Shimpi (2014)	Positive effect of ERM on cost and revenue efficiency. Dedicated risk managers improve operating performance especially if they operate cross-functional and report to the CEO or the board.
Bowling & Rieger (2005)	Successful ERM implementation will lead to a lower risk profile, lowering the cost of capital. ERM makes sure capital can be allocated for long-term sustainable growth. This heightened corporate governance can also lead to higher stock valuations and returns.

Table 2: Benefits of ERM: empirical evidence

3.3. Remarks

One has to be very careful to draw conclusions out of the empirical research in ERM. Most studies ignore endogeneity (Bromiley et al., 2014). If, for example, high performing firms are more likely to adopt ERM than low performing firms, there might be a positive association between ERM and performance even though ERM had no real influence on the performance. Successful implementation of ERM is also highly dependent on a strong risk culture, adequate resources and IT systems (Martin&Gatzert, 2013). A lot of studies (for example: Hoyt&Liebenberg, 2011, Pagach&Warr, 2011) use the appointment of a CRO as a kind of proxy for the existence of an ERM system at the company. In cases where the appointment of a CRO does not correspond with an actual ERM system, this may lead to biased results. Even though there are quite a number of studies where there is a significant

positive advantage of ERM, there are also a lot of studies where no or no significant advantage is found (for example: Beasley et al., 2008, McShane, Nair, &Rustambekov, 2011).

4. Responsibilities in ERM

It is very important, when starting off with an ERM program, to assign the right risk management responsibilities and ownership of risks (Hopkins, 2010; Ittner&Oyon, 2014). ISO 31000 defines risk owners as: "A person or entity that has been given the authority to manage a particular risk and is accountable for doing so." (ISO, 2009) There are in fact 2 views on the distribution of authority in the ERM process. First, a single executive, for example the CFO (Chief Financial Officer) or the CRO (Chief Risk Officer) can be assigned as the risk owner of the entire organization. Another possibility is to have broader ownerships for the risks of the firm. This can go as far as giving risk responsibility to managers of business units. (Ittner&Oyon, 2014) Both approaches have advantages and disadvantages. The following paragraphs explain the duties and tasks of different parties involved in the ERM process.

The Board of Directors are responsible for the general oversight of the risk management processes. They are not involved in the day-to-day operations of the company. It is important that all the board members have a general understanding of risk. In a further stage, it is even possible to establish a risk committee within the Board of Directors. The risk committee is made up of board members with deep risk management expertise. The Board of Directors also approve a 'risk policy' developed by risk management (Lam, 2011). A policy typically includes an ERM framework and risk tolerance levels. It is the task of management to keep the Board of Directors informed.

Internal audit will play a major role in supporting the risk management process. They should evaluate the effectiveness of the risk management processes and evaluate the reporting of key risks. However, there are some roles internal audit should definitely not perform such as: managing the key risks, developing the management processes and establishing risk appetite levels (Branson, 2010).

Senior executives, mainly CFO and CEO, are responsible for the establishment of the enterprise-wide view of risk management. They have to implement the risk policy and effectively manage the key risks the organization faces. Also reporting periodically to the Board of Directors and assigning responsibilities for risk ownership belong to their tasks (Adam et al., 2011; Branson, 2010).

A last and very important individual is the Chief Risk Officer (CRO). The CRO should report directly to the CEO. The COSO ERM framework defines the CRO as: *"The person working together with other managers to establish effective risk management, monitoring progress, and assisting other managers in reporting relevant risk information up, down and across the organization."* The CRO is a kind of 'champion' of the entire ERM process. More and more companies nowadays are appointing a CRO (Hopkin, 2010).

5. ERM frameworks

5.1. An overview

An ERM framework consists of a number of components that will help organizations to design, implement, monitor, review and continually improve their risk management practices (ISO 31000 Guide 73, 2009). Several different frameworks have already been developed. They are often used by auditors. The development is often based upon a collection of best practices, guidelines and industry experience (Crickette et al., 2011). The main goal is to facilitate the company's Risk Management Process (RMP). This process will identify the risks, assess them, and will take care of the treatment of risks and the follow-up. Ideally, an RMP is used for every important decision within a company (Shortreed, 2010).

The design of a framework can be inspired by 3 objectives:

Focus of framework	Description	Standard/Guideline
Organizational objectives	Improve the organization's abilities to meet or to exceed its objectives; Reaching the strategic/key objectives of the organization	ISO 31000 – 2009 COSO – 2004 FERMA – 2002 AS/NZ 4360
Compliance and control objectives	Mostly the mitigation or transfer of risks; keeping the objectives 'under control' and making sure the organization is not exposed to excess risk	OCEG "Red Book" 2.0 – 2009 COSO – 2004
Regulatory	Used when an organization has to apply certain practices or standards in order to meet regulatory requirements	Solvency II Basel II

Table 3: ERM frameworks

This division is important for the risk managers since choosing a certain standard/guideline can depend upon the objectives one wants to accomplish with it (Crickette et al., 2011).

Two have risen to prominence: The COSO Enterprise Risk Management – Integrated Framework and ISO 31000:2009. We will thus discuss these 2 frameworks in detail. The COSO Framework is the most widely used framework.

5.2. COSO Enterprise Risk Management – Integrated Framework

History

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) has been founded in 1985. It is comprised of 5 professional private associations: the American Accounting Association (AAA), American Institute of Certified Public Accountants (AICPA), Financial Executives International (FEI), the Association for Accountants and Financial

Professionals in Business (IMA) and the Institute of Internal Auditors (IIA) (Crickette et al., 2011). The main goal of COSO is developing recommendations and frameworks to assist corporations in improving their internal financial control systems and more specific to improve organizations' enterprise risk management (COSO website, 2016). In 1992 COSO published its "Internal Control-Integrated Framework" (Charette, 2010). In 2004 COSO developed its "ERM – Integrated Framework" in cooperation with PricewaterhouseCoopers (PWC). This framework provides corporations a broader view of the risks that must be managed, not just financial risks but also operational and strategic risks. The 2004 framework integrates, rather than replaces the 1992 Internal Control framework (Steinberg, Everson, Martens, & Nottingham, 2004).

The Framework

The COSO ERM – Integrated Framework consists of three dimensions and can be represented visually by a cube as shown this figure:

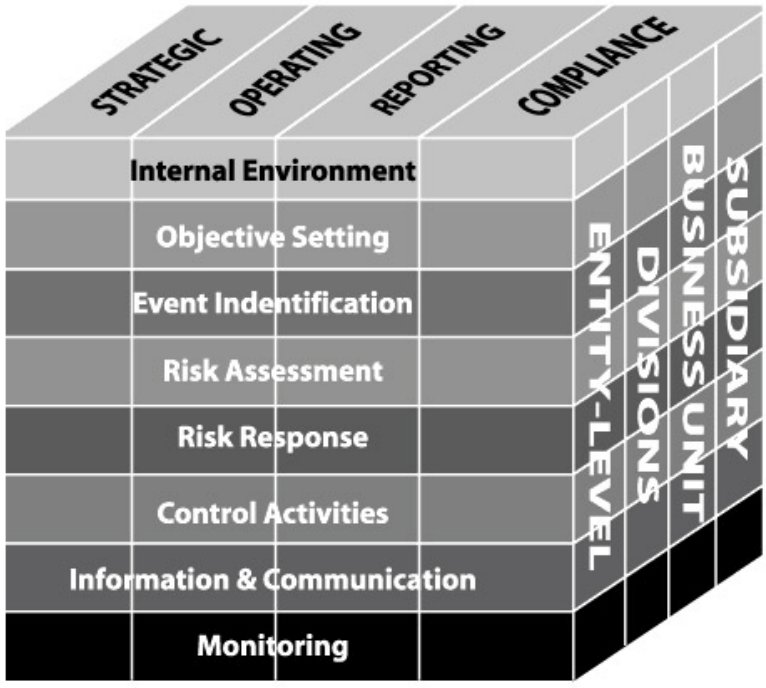

Figure 3: The COSO cube (Kaplan Financial, s.d.)

The objectives

The first dimension represents four objectives of the COSO Framework: strategic, operations, reporting, and compliance (COSO, 2004).

- Strategic objective: relates to high-level goals of the enterprise. The entity's goals in line with the vision and mission.
- Operations objective: effective and efficient use of the resources.
- Reporting objective: decent and reliable financial reporting.
- Compliance objective: compliance with laws and regulations.

This partition allows the board and management to focus on the different aspects of enterprise risk management.

Business entities

The second dimension represents four entity units: entity-level, division, business unit, and subsidiary. This means that this framework can be applied from the entire company to a unit as small as a business unit or subsidiary (COSO, 2004). It also assumes that everyone in the organization is at least partly responsible for enterprise risk management (Crickette et al., 2011).

Components of Enterprise Risk Management

The third dimension represents the eight interrelated components of enterprise risk management. This interrelation is not strictly a serial process, where one component affects only the next. It is a multidirectional, iterative process in which almost any component can and does influence another (COSO, 2004). The description of each component can be found below:

1. Internal environment

This component is the basis for all other components of the framework. It influences how objectives are established, how events are identified and how risks are evaluated. Important factors for a successful enterprise risk management are: an efficient risk culture that enables the entity to take on the right risks; a board of directors who influences other elements of the internal environment and competent personnel that respect the integrity and the ethical values of the entity.

2. Objective setting

Before an entity can identify events that influence its activities, objectives need to be set. The objectives have to be in line with the entity's mission and strategy, and consistent with the risk appetite. After defining strategic objectives an entity can develop related objectives at operational levels.

3. Event identification

Management identifies events which have an impact on the objectives of the organization. Events with a negative impact represent risks, events with a positive impact represent opportunities. Opportunities are cancelled back to the objective setting, risks require assessment and response.

4. Risk assessment

Having identified the risks, management will analyze the risks to determine the extent of the influence on the objectives. This analysis is based on two perspectives, likelihood and impact, and uses a combination of qualitative and quantitative methods. Further on, these risks are assessed on an inherent and a residual basis.

5. Risk response

Having assessed the relevant risks, management will determine how to respond.
The possible responses are, risk avoidance, risk reduction, risk sharing and risk acceptance. An entity will select the responses that bring the likelihood and impact of the residual risk within its risk tolerance.

6. Control activities

The control activities should ensure that the risk responses are carried out effectively. These activities are the procedures and the policies that are performed throughout the whole company, at all levels and in all functions. They are part of the process by which an entity strives to achieve its objectives.

7. Information and communication

Effective information and communication support the other components of the framework. To carry out their responsibilities the people of the entity need the relevant information about their tasks. Therefore the information has to be communicated, top-down and bottom-up across all levels of the organization.

8. Monitoring

Monitoring is necessary because the ERM of an entity changes over time. There are two ways: through ongoing activities or separate evaluations, or a combination of the two. Ongoing monitoring is more effective than separate evaluations because it is built into the normal activities of the ERM process and so reacts more quickly to changing conditions.

Analysis of COSO

Without a doubt, we can say that the COSO frameworks (both for Internal Control and ERM) have risen to prominence. According to a study of Beasley, Branson, & Hancock (2010), the COSO framework was a lot more embedded in business than second in line ISO 31000:2009. Respondents of this study appreciated the common language for ERM that was offered with the framework and the fact that it clearly describes the key elements of ERM. The main point of criticism for the COSO ERM framework is that the ERM guidance is too theoretical. Organizations often find the key principles too vague. For example: the determination of the risk appetite is considered an important step. Organizations however struggle with this. The same goes for the practice and frequency of risk assessment. There is increasing consensus that most guidelines and frameworks, including the COSO framework, use an inadequate and incomplete specification of how ERM should be implemented in practice (Mikes & Kaplan, 2014; Kerstin, Oberlehner, & Zadrazil, 2014). There is a need for a true roadmap for implementation. The framework should also be improved upon the positive side of ERM. It should give more guidance in seizing opportunities (Beasley, Branson, & Hancock, 2010). In this study, a number of respondents also indicated that more industry specific guidance is desirable, indicating the usefulness of our study. The conclusion for COSO was that there was a need for so called ‘Thought Papers’ to make their ERM framework more applicable and user friendly.

Revision of the COSO framework

The framework is being updated as we speak (September 2016) to enhance concepts developed in the original framework and to reflect the evolution of risk management thinking and practices, as well as changing stakeholder expectations. The update will be called: Enterprise Risk Management – Aligning Risk with Strategy and Performance (COSO, 2016).

5.3. ISO 31000: 2009 – Risk management – Principles and guidelines

History

This framework has been developed in 2009 by the International Organization for Standardization (ISO), the world's largest developer and publisher of international standards. ISO 31000 is based on the risk management standard AS/NZ 4360, which was published in 1995 by Standards Australia and Standards New Zealand. The main goal of ISO is to provide a set of operating guidelines, implementation techniques and advices for risk management (Charette, 2010). ISO wants to begin a process of standardization in terms of definitions, frameworks and techniques used. It is clear that there is a need to change something about the many inconsistencies in risk management theory (Purdy, 2010). There are 5 clauses in this standard, of which clause 3-5 are most important. To get a complete overview of ISO's work on risk management and to better understand the 31000: 2009 framework, one should consider taking a look at the other 2 papers:

- *ISO Guide 73 – 2009*: *Risk management – Vocabulary* provides a collection of terms and definitions.
- *ISO/IEC 31010-2009*: *Risk management – Risk assessment techniques* focuses on the risk assessment.

The framework

The ISO standard consists of 11 principles of risk management, a framework with 5 components: mandate and commitment, design of the framework, implementing risk management, monitoring and reviewing the framework, and improving the framework. Finally we have the risk management process (Crickette et al., 2011). This can be seen on the following picture:

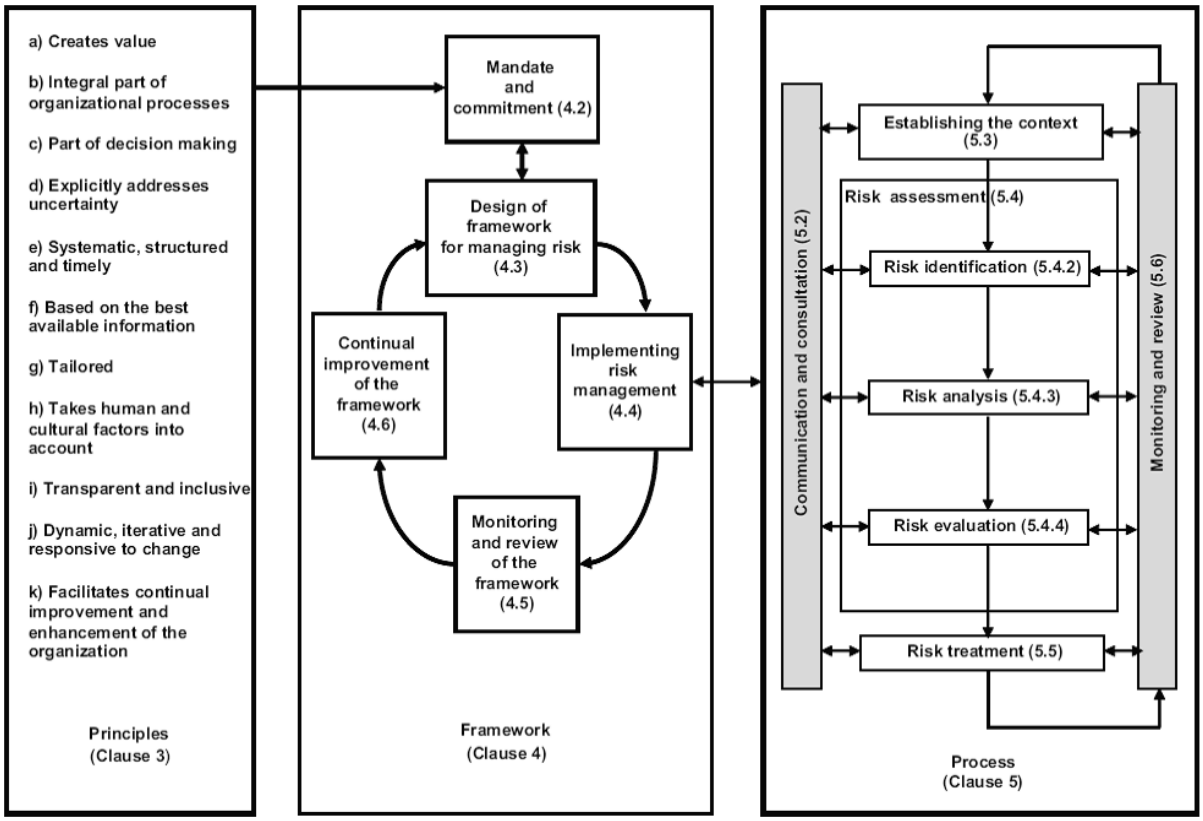

Figure 4: ISO 31000-2009 Framework (health.wa.gov.au, 2013)

The 5 components of the framework (clause 4) are meant to implement the risk management process into the organization's decision making and to make sure that this process stays up to date and gets reviewed periodically. This review of the framework is also necessary since the needs of every organization are different and the process should be tailor-made (Purdy, 2010). Two components of the actual risk management process (clause 5) are continuously applied: communication/consultation and monitoring/review. Communication and consultation happens with the internal and external stakeholders. They can give their input and advice and are often responsible or concerned for the output. Monitoring and review means that the appropriate actions should be taken when new risks and opportunities arise. Changes in current risk exposure or risk management practices can also lead to an update of the process. An important task here is scanning the internal and external environment by risk owners, analyzing new information and learning from past experiences (Purdy, 2010).

Analysis of ISO 31000: 2009

Risk practitioners appreciate the fact that ISO 31000 is short and precise. COSO takes far more time to grind through (Fraser, 2012; Schanfield, 2012). An additional benefit of ISO 31000, as mentioned by Schanfield (2012), is that a lot of industry sectors and thought leaders were present for the creation of the ISO framework. A lot of different approaches have thus been considered. Parkinson (2012) says that there is maybe a lack of detail but detail should be developed for specific sectors and circumstances. Charette (2010) also mentions, just as Parkinson (2012), the lack of detail in ISO. The task of making an enterprise specific ERM framework, derived from ISO 31000, can be time-consuming. This can result in organizations choosing for a more prescriptive framework, such as COSO. ISO 31000 is less top-down based than COSO. This probably due to the fact that COSO has been developed by accountancy firms. It means that ISO can support a bottom-up approach, especially important because of the fact that bottom level employees often possess the most relevant information (Charette, 2010). Finally, Leitch (2010) sees certain strong points in the new framework, but thinks the overall result is still disappointing and sometimes illogical or ambiguous.

Revision of ISO 31000: 2009 and ISO Guide 73

ISO 31000 is a generic guidance document which has been found to be very useful for small to medium-sized companies. This review is an opportunity to seek changes that reflect the needs of major corporations for a high-level document. ISO will take into account all the comments from the March 2015 meeting in Paris. Several remarks have also been made by risk practitioners and national standards bodies over the years (Tranchard, 2015).

6. Critical Success Factors

6.1. Definitions and purpose

The key focus of this study is to identify the Critical Success Factors (CSF's) for an ERM process. This will also be the research conducted in the empirical research section of this paper. In this section, we will examine the existing literature about the critical success factors for ERM practices. We look at specific ERM literature, but also more general

academic literature focused on implementing ERP systems and other enterprise systems. A lot of critical success factors will overlap. The notion of CSF's has first been introduced by Rockart in 1979. He defines CSF's as: "*The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired*." (Rockart, 1979; Manab, Othman, &Kassim, 2012). The critical success factors are thus the key activities in which favorable results are necessary to reach the goals of the firm. One can interpret the notion of CSF's as a deterministic way of action and a predetermined road to success (Axelsson, Melin, &Söderström, 2011). Wagner, Scott, &Galliers (2006) look at these CSF's as short-cuts to inform and help executives towards business success. In ERM, CSF's can be defined as a limited set of very important factors that can increase the effectiveness of risk management.

6.2. Overview of academic literature on CSF's

To examine the CSF's (Critical Success Factors), 10 relevant papers and researches are selected. In the following table, these 10 papers are listed:

Number	Date	Title and origin	Authors
1	2013	CSF's for ERM in Chinese construction companies	Zhao, Hwang, & Low
2	2014	Integrated Enterprise Risk Management: From Process to Best Practice.	Cormican
3	2012	Enterprise-Wide Risk Management Best Practices: The CSF's	Manab, Othman, & Kassim
4	2005	ERM: An empirical analysis of factors	Beasley, Clune, & Hermanson

		associated with the extent of implementation	
5	2013	Factors that affect the adoption of ERM	Malik & Holt
6	2013	Risk Management Theory: The Integrated Perspective and Its Application in the Public Sector	Spikin
7	2007	The Economist: Best Practice in Risk Management, A function comes of age	The Economist Intelligence Unit
8	2005	Success Factors for Implementing Enterprise Risk Management. (Bank Accounting & Finance)	Bowling & Rieger
9	2001	Critical Factors for Successful Implementation of Enterprise Systems	Nah, Lau, & Kuang
10	2009	Critical success factors for ERP implementations in Belgian SME's	Doom, Milis, Poelmans, & Bloemen

Table 4: Academic literature on Critical Success Factors

6.3. Analysis and determination of CSF's

The first paper by Zhao, Hwang, & Low (2013) forms a perfect starting point for the entire examination. They have followed a similar approach and investigated 15 academic papers to come up with a list of 16 possible CSF's. Not all CSF's are equally important, so the frequency of occurrence is examined over these 10 papers. The CSF's cited the most are considered as most critical success factors in enterprise risk management.

CSF's	1	2	3	4	5	6	7	8	9	10	Sum
Commitment of board and senior management	X	X		X			X	X	X	X	7
Corporate governance and compliance			X								1
A cross-functional team			X						X	X	3
ERM ownership	X			X		X	X	X			5
Risk-aware culture	X	X	X		X		X	X	X	X	8
Sufficient resources	X	X	X		X	X	X	X			7
Risk identification, analysis and response: a clear RM process	X	X			X		X	X		X	6
Leveraging risks as opportunity											0
Risk communication						X			X	X	3
A common risk language											0
A risk management information system						X					1
Training programs					X					X	2
Formalized key risk indicators											0
RM strategy and objective setting		X			X	X		X	X	X	6
Monitoring, review and improvement of ERM framework						X			X		2
Measurement of results and benefits		X									1

Table 5: Overview of mentioned CSF's

As we can see, certain CSF's are mentioned a lot more than others. The six most important critical success factors according to the studied literature are: commitment of board and senior management, ERM ownership, a risk-aware culture, sufficient resources, a clear RM process and finally, a risk management strategy. The most important success factor is a risk-aware culture. This has been mentioned by 8 out of the 10 studies. Organizational culture is the number one factor in influencing and motivating people to achieve a successful risk management implementation (Manab, Othman, &Kassim, 2012). The risk culture should make it clear to employees that managing risk is everyone's responsibility. Not only executives or the board should manage risks in the organization because often lower-level employees are more suited to identify and assess the risks they encounter in daily operations. However, in order to achieve this, senior management plays a pivotal role in setting a 'tone from the top' and in driving change in the current culture (Price, 2013).

Commitment of the board and senior management and provision of sufficient resources are two other success factors. This commitment can be seen as an internal driving force behind ERM implementation and effectiveness. It also makes sure that organizational objectives are more aligned with the risk strategy (Zhao, Hwang, &Low, 2013). As seen above, the tone of the top will also set the direction and give guidance. Closely related to this is of course the fact that sufficient resources are provided for ERM implementation. Appropriate tools and techniques should be available, enough funds and time to be able to implement the risk strategy.

The fourth critical success factor is having a clear risk management process with predetermined steps to follow. As stated above and by Cormican (2014), risk identification is a process that should occur at all hierarchical levels of the organization. The inability to do so is a first barrier towards effective risk management. Developing the right risk management processes are a strong foundation and a step towards improving risk management and corporate governance (Frigo&Anderson, 2011).

Next on the list is having a clear risk management strategy and objective setting. Most organizations fail to establish this broader RM strategy. A RM strategy can prevent the risk

management processes from becoming more fragmented and less focused towards the organization's objectives (Malik&Holt, 2013).

The last factor we consider to be of significant importance is risk ownership. This is the division of responsibilities. Determining who is responsible for which part of the risk management implementation and/or execution will also improve reporting and communication (Manab, Othman, &Kassim, 2012).

Chapter 2: Empirical Research Methodology

1. Goal of the empirical research

The main goal of the master thesis is of course, identifying the critical success factors in enterprise risk management. In further detail, we will also try to identify some differences between industry sectors. In order to make such a comparison statistically meaningful and possible in the first place, a big number of respondents in these different sectors are necessary. Our research also tries to identify the characteristics of companies engaging in an ERM process and tries to discover the drivers and motivation behind ERM.

To start off our empirical research, we will explain some interesting sectors to compare. The sectors are chosen according to their importance in Belgium and their growth potential. The 5 sectors are presented below together with the reasoning behind them.

1. The food industry

The food industry is the biggest industrial sector in Belgium. It is the number 1 in terms of employment, turnover and investments. Directly and indirectly, around 230000 people are employed in the food industry and up to this date, this sector is still slightly growing (De Bock, 2014). They are third on the list in terms of export. According to an investigation by Bosteels (2014), there are more than 500000 full-time equivalent jobs directly and indirectly connected to the food industry in Belgium. Subsectors are the meat processing industry, dairy products, beverage industry, sugar and chocolate industry. The sector most closely related to this is of course retail (business.belgium.be).

2. The chemical industry

Belgium is, as is commonly known, one of the world leaders in the chemical industries. The most important chemical industries in Belgium comprise the pharmaceutical industry, the petrochemical industry and biotechnology (Essenscia, 2016). According to a study by Store (Steunpunt ondernemen & regionale economie) in cooperation with KULeuven (De Ruytter, Goesaert, Konings, &Reynaerts, 2012), this industry ranks third in Flanders in terms of employment. According to Essenscia (2016), the chemical sector employs almost 90000

people directly in Belgium, with another 150000 indirect jobs. Essenscia is the umbrella organization that defends the interests of more than 800 companies in the chemical sector. Although being not the absolute highest in terms of employment, the sector is by far the leader in terms of productivity and added value.

3. The banking sector

As one of the early adopters of risk management of some sort and ERM in particular, the banking sector is probably one of the most suited sectors to investigate. We have outlined some of the regulations in the literature study. A lot of these regulations were aimed specifically at the banking sector.

4. The construction industry

The construction industry employs over 200000 people in Belgium. This sector however has declined over the years and is going through difficult times possibly increasing the relevance of risk management (Atradius, 2016).

5. Professional services

The service sector in general is the number one sector in Belgium both in terms of GDP and employment figures. It composes 77% of the GDP compared to only 22% for the industry sector (Internations, s.d.). The professional services are part of the tertiary sector of the economy.

2. Used approach

2.1. Type of data collection

In general, there are 2 types of research: qualitative and quantitative research. Often a combination is used, the multi-method research approach. This last method has gained a lot of popularity in recent years (Bryman, 2006). This is also the method used in our empirical research. First, qualitative data is collected through a questionnaire. The questionnaire consists of 25 (mainly multiple choice) questions. We go through a lengthy qualitative review as this is often the only way to review certain data and questions. Where applicable,

quantitative statistical methods are used. Conducting a survey is, contrary to an interview-based research method, one of the only ways to collect enough responses to make a quantitative analysis possible. Conducting interviews would be a time consuming task, not suited for a quantitative analysis unless done on large scale with a group of people.

2.2. Sources of data collection

We give an overview of the different methods we used to gather enough responses to our survey. With the database of Bureau van Dijk, Belfirst, we were able to collect the data of 5201 big Belgian enterprises to send our survey to. Belfirst possesses all kinds of information about both Belgian and Luxembourgian companies. According to Belgian law, a big enterprise is an enterprise that exceeds at least two of the following thresholds: average personnel of 50, a turnover (without Value Added Tax) of 9.000.000 euros and a balance sheet total of 4.500.000 euros. Selecting the turnover and balance sheet thresholds gave us the highest number of companies so those were the ones we chose in order to select the big companies. This, at first sight, arbitrary selection method is made because we believe that these 'big' companies have a higher likelihood of possessing an ERM process or having interest in engaging in one. Belgian companies alone were not sufficient to collect enough responses, so also the Orbis database has been consulted. Orbis is also a database of Bureau van Dijk, but possesses information about companies around the globe. We had access to information about European companies and thus selected the neighbouring countries of Belgium (France, The Netherlands and Germany) in order to increase the amount of responses. More than 50000 additional e-mails have been sent out to the neighbouring countries. A third method was using LinkedIn. On this social networking site, there are a number of groups dedicated to (Enterprise) Risk Management. Via private mail, we contacted the owners of these groups in order to get permission to post the survey and to possibly make this the 'featured post' on the group. This gave us only a small number (<10) of additional respondents. A last way in which we collected answers was thanks to a collaboration with BELRIM. BELRIM is the abbreviation for Belgian Risk Management Association. On a national level, BELRIM tries to bring risk and insurance managers together to share their experience and also aims to increase the knowledge base about risk management. On an international level, the organization is a member of FERMA, the

European Federation of Risk Management. This is a platform for the exchange of information among different national associations in 15 European countries. It is also active worldwide through the IFRIMA organization, the International Federation of Risk and Insurance Managers Associations (BELRIM, 2017). BELRIM has sent our survey to 121 of their active members. After leaving out the incomplete and blank responses, we come to a total number of 114 completed surveys. This is enough to make a meaningful statistical analysis but is, considering the amount of effort put into this and the amount of sent emails, very low. The picture below shows a summary of some key figures. 58433 e-mails have been sent. Out of 288 started surveys, 92 were completed leading to a completion rate of 26%.

	Audience Size	Surveys Started	Responses	Completion Rate
Invite Over Email	58433	288	92	26%
Anonymous Link			22	

Table 6: Distribution summary

There are a number of possible reasons for this. The biggest reason, in my opinion, is the fact that more and more companies have to deal with a very high number of similar requests. Many companies thus adapt a policy not to participate anymore in surveys, since this would take far too much time and effort. Another important reason is the fact that the topic of my survey is very specific. It can only be answered by people working in risk management or having experience with it. Most of the emails were sent to a general company address so then we had to hope for the good-will of the recipient of the message to forward this to the relevant department or person in the company. The risk management procedures are also quite new, so most of the companies have not yet implemented a program or do not yet see any value to do so. On LinkedIn, the survey was put onto some groups dedicated to risk management. Twice, it was even made the featured post of the group. However, the responses were limited due to a lot of inactive people on these groups and the fact that the members do not receive notifications about a new post.

In the next chapter, we will go over the different aspects and questions in the survey.

3. Drafting of the survey

In this chapter, we go over the different topics and questions in the survey and why these questions have been asked. While drafting the survey, a lot of attention has also been paid to 'best practices'. Most questions were multiple choice questions, because of the well-known problems with open questions. People will often skip open questions because these demand more effort and the trustworthiness of open question is also debatable. Multiple choice questions on the other hand are easier to answer and the answers are easier to process. (Van Kenhove & De Pelsmacker, 2014). The questionnaire is divided into 4 major blocks of questions. The first block (questions 1 – 9) asks questions about some general characteristics about the company and its environment. The second block (questions 10 – 13) deals about the start of enterprise risk management in the organization. The third block (questions 14 – 23) is mainly focused on the critical success factors. Not only questions about enablers and barriers are asked but also questions about drivers, used techniques and maturity in order to make a profound analysis and to discover underlying dependencies. The last block of questions (questions 24 – 25) ask about the current position of the respondent in the company. These questions have been placed at the end of the survey because we first wanted to collect answers on the real important questions and place less important questions at the end of the survey.

3.1. Company characteristics and its environment

We included a number of questions in order to gather some basic information about the companies we are dealing with. We will go over these questions and explain the reason why they have been asked.

1. Name of the company

This was only an optional question, because the first goal of the survey is to keep all the answers confidential. If the respondent however did give the name of the company, this allowed us to double check some of his answers on other questions such as industry sector.

2. Industry sector

This question allows to later classify the companies and to try to look for differences between them. This is an open question, so the quality of the answers depends upon the respondents.

3. Listed company

Asking whether the company is listed or not can allow us to later investigate whether listed companies possess a more advanced ERM system compared to non-listed companies.

4. Yearly turnover

This financial measure can be a representation of the size and the financial performance of a company.

5. Number of employees

This also gives an idea about the size of a company. Together with the question about the yearly turnover, we can examine the relationship with ERM effectiveness.

6. Big Four audit

We want to see how many companies with an ERM process are in fact audited by a Big Four firm and if having a Big Four as your audit firm has an influence on the ERM process.

7. Uncertainty of the external environment
8. Uncertainty of the industry sector
9. Instability within the company itself

These questions all deal about the complexity of operations and the uncertainty of the environment in which the company is active. This division in 3 questions is based on a paper of Miller (2013) in which he stated that managers encounter uncertainty on 3 levels: the general environment, the industry itself and in firm-specific variables.

3.2. The start of enterprise risk management at the company

Some questions have been asked about the start of ERM. This can also be seen as a semi critical success factor. It is important to know what induces companies to engage in ERM.

10. Use of a risk management framework

We ask the respondents whether the ERM program is based upon one of the well-known frameworks such as COSO or ISO 31000. If a lot of people report this and do seem to have good results with it, this can be a recommendation for people starting out with their own program. We also give the option to select 'other' and to specify a certain framework not mentioned between the possible choices.

11. Factors leading to the start of ERM

In this question, respondents can indicate which specific factors led to the start of ERM and to what extent. The extent to which can be indicated on a 5-point Likert scale.

12. Organizational changes

Implementing an ERM program can be accompanied with some minor or major changes to the structure, culture or procedures in a company.

13. Consulting firm assistance

A question to see whether the start of risk management was initiated with the help of a consulting firm. This question together with the question about a big four audit firm allows for a deep analysis on this topic.

3.3. Enablers, barriers, drivers and evolution of ERM over the years

These are the most important questions in the survey since they deal about the actual research questions. It mostly deals about barriers, enablers, internal and external drivers of ERM. Hereby the respondents have the possibility to indicate to what extent they agree with a certain factor. This block of questions will be the main focus of deeper analysis.

14. Age of the risk management function

How long has there been a formal risk management function in the company? It can be interesting to investigate the link with ERM maturity and older departments can maybe report different drivers compared to newly formed departments.

15. Formal responsibility

Looking whether the responsibility for ERM lies with one person or is divided between a number of people.

16. Biggest barriers

This question tries to verify what the biggest difficulties are companies encounter when they try to implement an ERM program. The respondent can indicate to what extent he agrees with a specific barrier on a 5-point Likert scale.

17. Biggest enablers

This question focuses on the core topic of this master thesis and looks for the enablers of ERM. As with the previous question, people can once again indicate to what extent they agree with a specific enabler on a 5-point Likert scale.

18. Benefits and value

A number of possible benefits the users of ERM might want to pursue.

19. Improvement of ERM

A Yes-No question to ask whether there was an improvement in the process over the last few years.

20. Internal drivers

This question is only displayed when the respondent indicated that there was an improvement. It looks for internal factors leading to an improvement in risk management.

21. External drivers

This question is only displayed when the respondent indicated that there was an improvement. It looks for external factors leading to an improvement in risk management.

22. ERM maturity

There are 5 stages of ERM maturity. Every stage is a bit more advanced in terms of risk management experience and practices. There are a number of different theoretical models of ERM maturity. Most of them work with 4 or 5 stages through which the company progresses as the ERM program becomes more mature. The 5 stage model we use is based upon the maturity model presented in the book of Lam (2014).

23. ERM tools and techniques

A more practical question that tries to look into actual risk assessment. Some of the more popular techniques are summed up but the respondent also has the option to give another answer that is not listed.

3.4. Current position of the respondent

These questions have only been asked at the end of the survey in order to first capture other, more important information.

24. Current position of the respondent

There is a list of the most likely profiles that the people working in risk management could have.

25. Responsibility for risk management

A simple Yes-No question to see whether the respondent is currently involved in risk management.

Chapter 3: Results

1. Descriptive statistics

In this chapter, we will present the results on the most important questions in the survey. A lot of recommendations can be derived from these answered questions. A detailed, in-depth analysis will be done in the following chapter and if possible, regarding the number of respondents and types of questions.

A first concern should be that the survey is preferably completed by people active in the risk management department on the company or people having some prior experience in a risk-related function. If we look at the answers on that particular question, we see that this is the case. 83 people responded to this question, which was at the very back of the survey. 40 people were C-level executives so CEO, CFO, COO, CRO or another C-level title. This amounts to 48,2%. Other profiles were: internal auditor, member of the Board and controller. 25.3% of respondents or 21 in total indicated the answer 'other'. In that case, he or she is asked to specify in more detail what his or her job is. Looking at these answers, we can see that for the most part, these people often have functions that are quite similar to CRO or CEO. Most occurring job titles in this category are for example: director, risk officer or head of risk. We can thus conclude that the respondents of the survey were most likely knowledgeable about risk management. This makes the answers of the entire survey more trustworthy.

1.1. Company characteristics

In this section, we will describe the answers to the questions in this block. The first question asked whether the company was listed on the stock market or not. All 112 respondents answered to this question. This gives the following result:

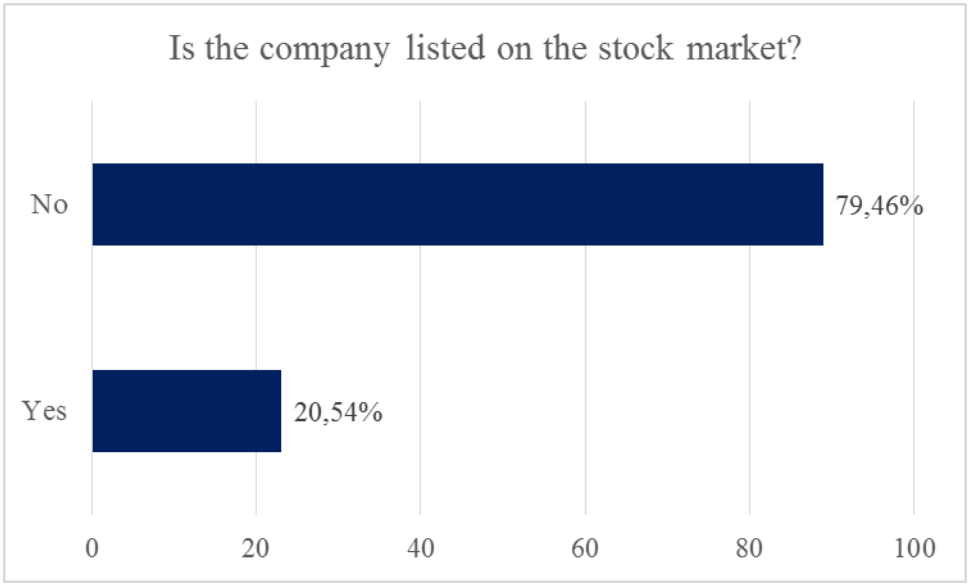

Figure 5: Distribution between listed and unlisted companies

The majority (79.46%) of companies are thus unlisted. In terms of the yearly turnover, there are 6 categories between which the people can choose from.

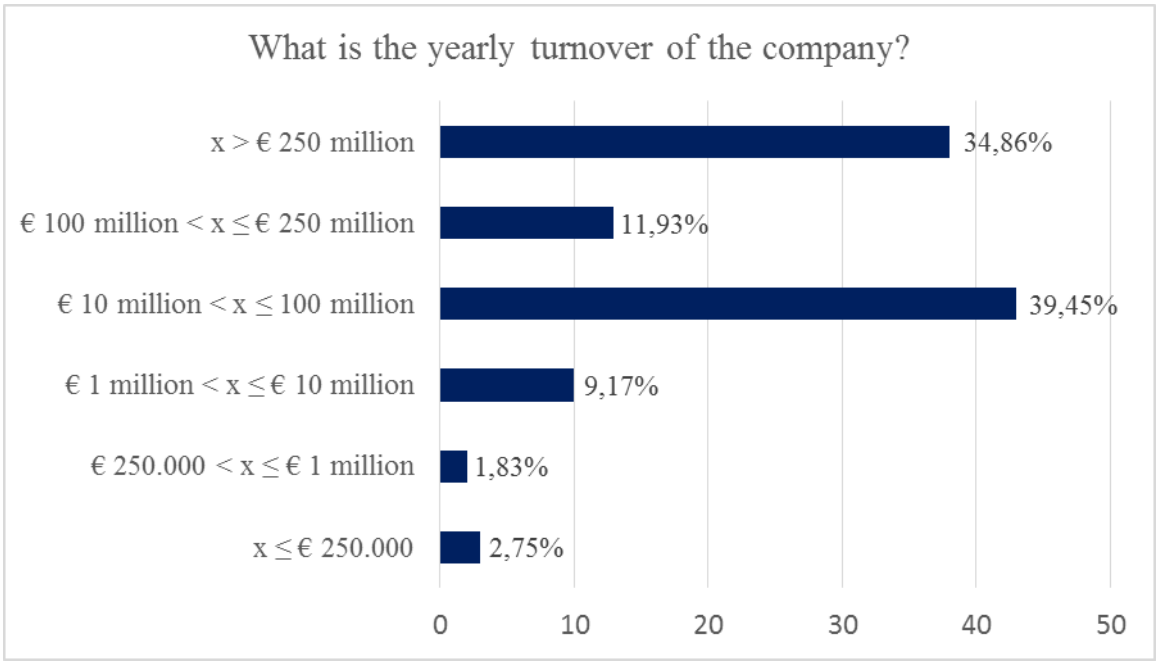

Figure 6: Yearly turnover

Purely from looking at these numbers, we can already see that companies with a higher turnover are probably more likely to possess an ERM system. Out of the 109 respondents on this question, only 13.75% had a turnover of € 10 million or less. This means that 86.25% of companies had a turnover of more than € 10 million. One important remark here however is that in our emailing campaign, we did select the companies with a turnover of € 9 million or

more. However, the LinkedIn and BELRIM surveys were not limited to this constraint. Looking at the number of employees, there is no clear trend. Even though, we selected 'big companies', in terms of employees, both small numbers of employees and very big numbers of employees occur.

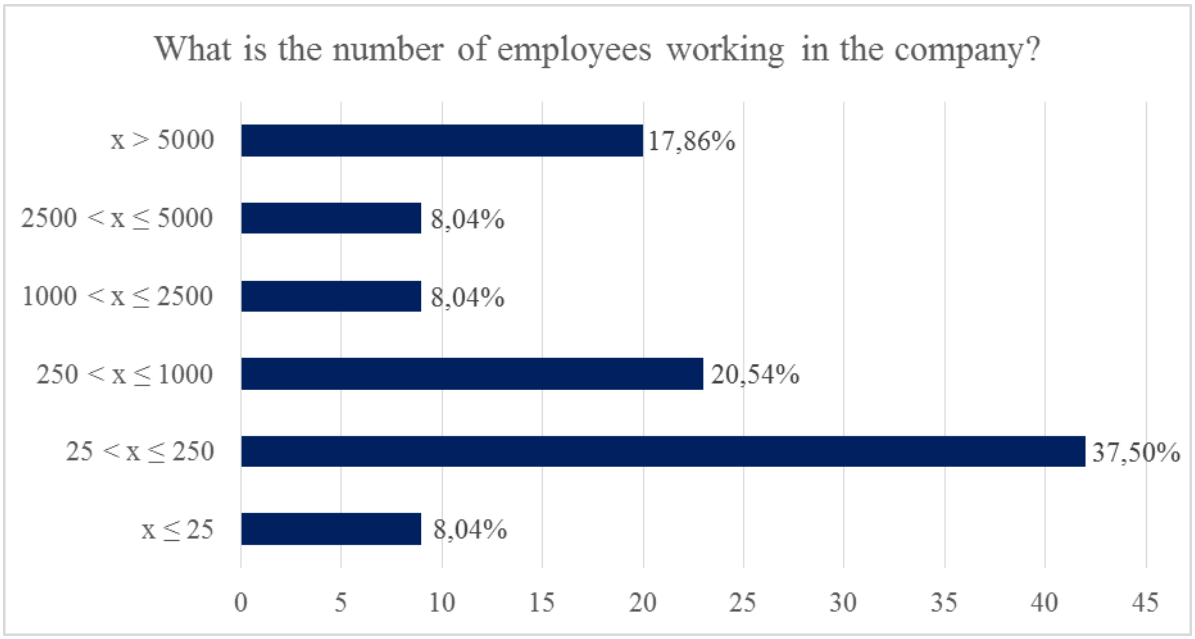

Figure 7: Headcount

The biggest group of companies (42 in total), have between 25 and 250 employees. Noteworthy is that also 20 companies possess more than 5000 employees. One important remark to make is that the number of employees can also depend upon the view of the respondent. If he or she only counts the employees at his or her office or whether he or she also adds the employees at other subsidiaries. A question often asked, is whether the external audit of a company is conducted by one of the Big Four companies or not. In our survey, these are the results to this answer:

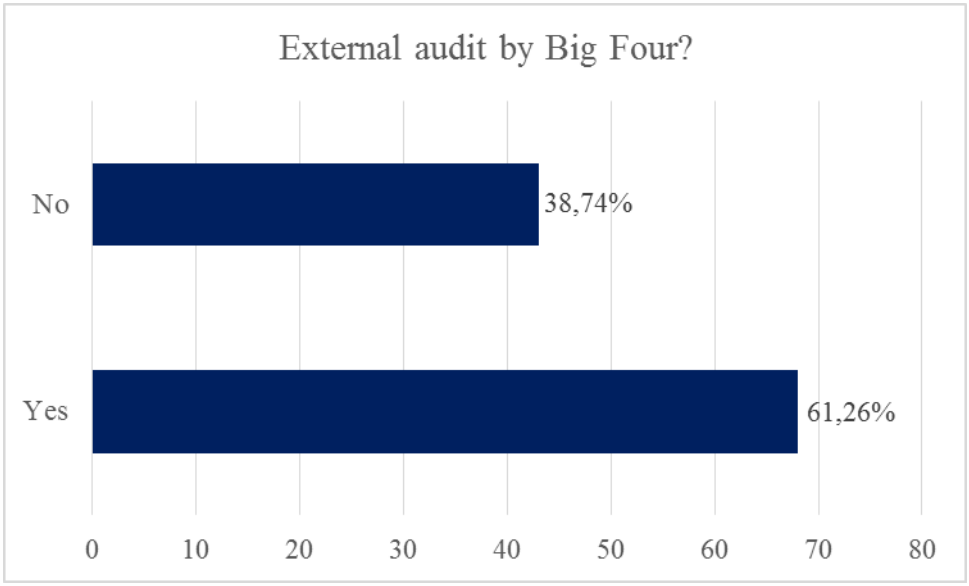

Figure 8: External audit conducted by Big Four

In our case, 61.26% of companies had the external audit conducted by a Big Four company, so either PwC, Deloitte, EY or KPMG.

1.2. Uncertainty and instability

There were 3 questions asking for uncertainty and instability. 111 respondents answered these questions. However, it seems as if a lot of respondents went for the middle and more neutral option. There were 5 answer categories: no uncertainty, minimal uncertainty, moderate uncertainty, above average uncertainty and high uncertainty. The question about the external environment, so macroeconomic or political instability pointed towards higher levels of uncertainty compared to uncertainty in the industry sector itself.

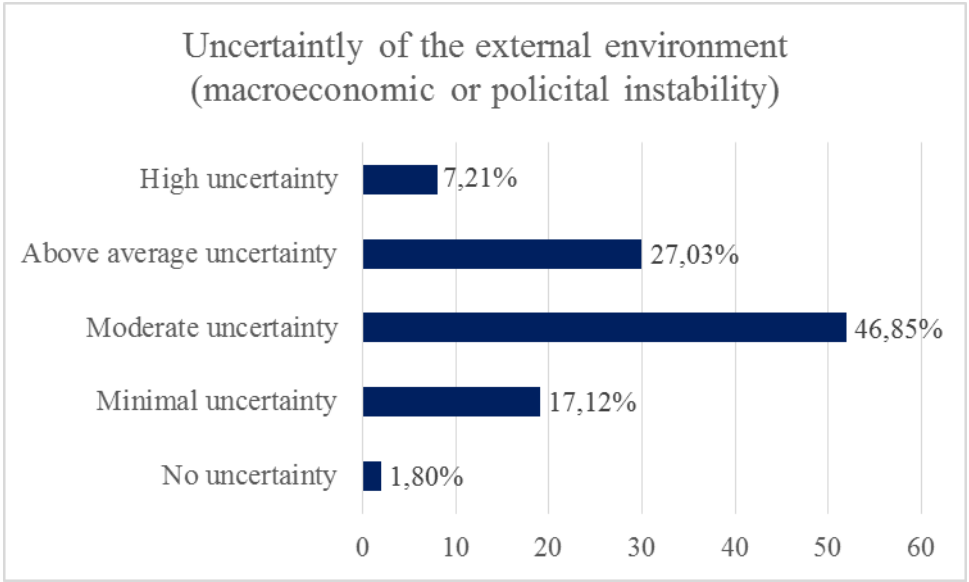

Figure 9: Uncertainty of the external environment

We see that for macroeconomic uncertainty, more than 81% of people indicate that there is at least moderate uncertainty. If we only look at the above average and high uncertainty, we see that this amounts to 34.24%. Let's compare this to the uncertainty in the industry itself. By this, we mean competitiveness between firms or technological uncertainty.

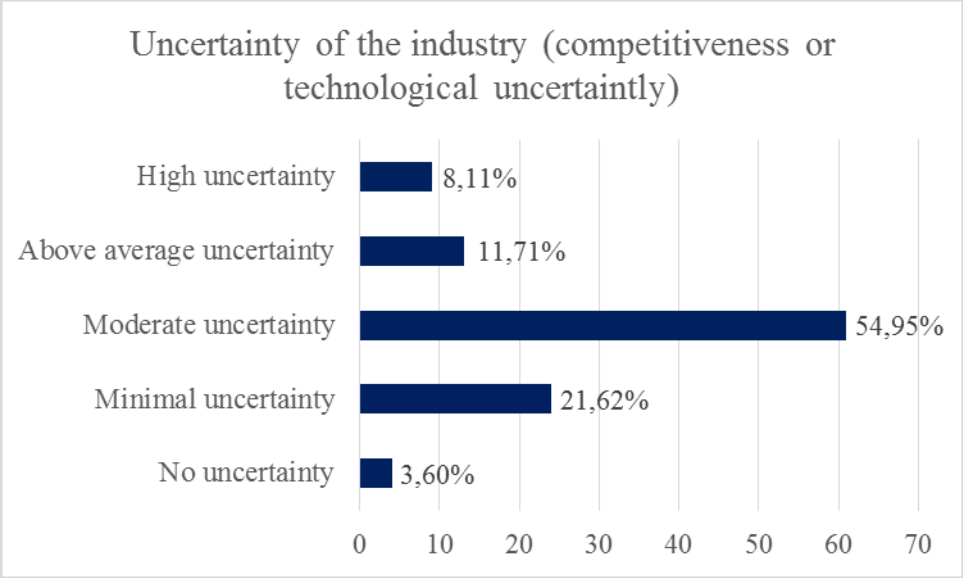

Figure 10: Uncertainty of the industry sector

If we now take the same sum of the above average and high uncertainty categories, we see that this now amounts to less than 20% compared to the 34% for macroeconomic uncertainty. These questions were posed after one another, so the respondent probably has given a consistent answer meaning that macroeconomic uncertainty is of greater importance than competition between firms. The last question dealt about the instability in the company itself. Most respondents depicted their company as either 'stable' or experiencing 'minimal instability'. 31% presented it as being at least moderately instable. This instability or insecurity can be a good motivation to engage in an ERM program.

1.3. The start of enterprise risk management

There were 4 questions dealing about the start of ERM at the company and also the triggers leading to this decision. The first question asked whether they made use of a theoretical framework. A number of theoretical frameworks have been covered in the literature review earlier. The 2 most important frameworks are COSO and ISO 31000. Surprisingly, the vast majority did not use a theoretical framework.

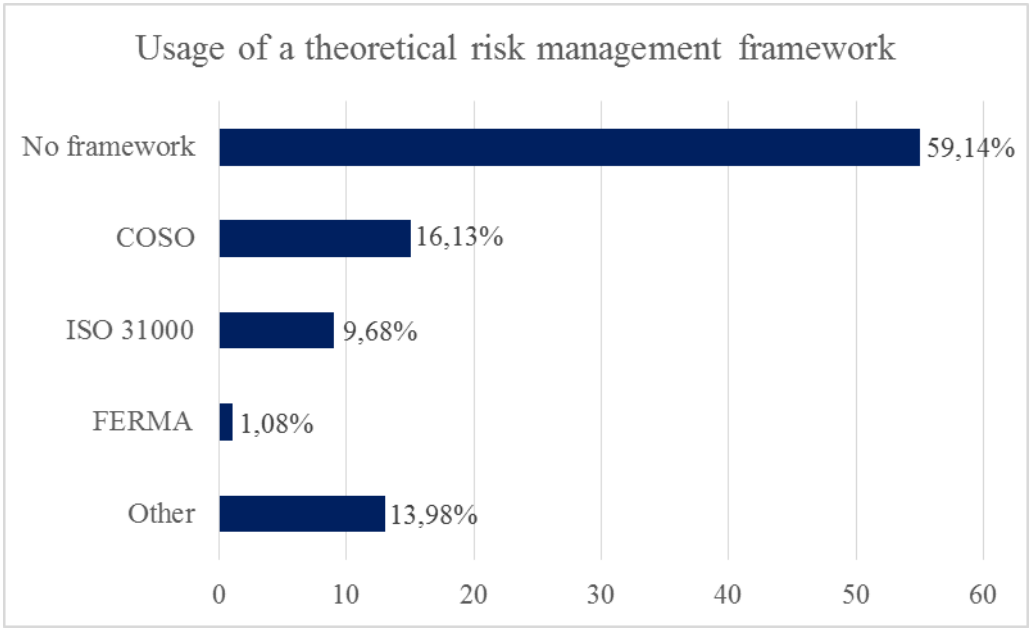

Figure 11: Usage of a theoretical framework

Almost 60% responded that they were not using any theoretical framework to assist them in the risk management process. 27% of people were using either COSO or ISO 31000 with COSO being slightly more popular. FERMA was only mentioned once. If we examine the 13 'Other' responses, we see a lot of different frameworks and management systems. Often, companies use more industry-specific management systems or a guideline that is actually a regulatory requirement such as the Basel norms (Basel I, Basel II and Basel III) or the solvency II norm.

The next question asks in more detail about the triggers for the decision to engage in ERM. We listed 9 possible factors that could lead to the start of an ERM process at a company. The respondent could indicate to what extent he or she agreed with a specific factor by means of a 5-point Likert scale ranging from 'Not at all important' to 'Extremely important'. We give 1 point if somebody voted for 'Not at all important' and 5 points when somebody voted for 'Extremely important'. By multiplying the amount of choices for a category and the score (1 to 5), we get a number. This number must then be divided by the amount of answers to get the mean. This mean indicates an average score for a certain trigger, which shows the importance as perceived by the respondents.

Trigger	Minimum	Maximum	Mean	Median
Pressure from the board of directors	1.00	5.00	3,17	3
Audit committee pressure	1.00	5.00	2,62	3
Top management pressure	1.00	5.00	3,26	3
Regulatory requirements	1.00	5.00	3,22	3
External audit recommendations	1.00	5.00	2,84	3
Strategic need to better identify and anticipate certain risks	1.00	5.00	**3,53**	**4**
Increasing operational performance	1.00	5.00	**3,33**	**4**
Enhancing or protecting the reputation of the organization	1.00	5.00	**3,38**	3
A high-risk event in the past	1.00	5.00	2,34	2
Other factors	1.00	5.00	1,64	1

Table 7: Triggers for the start of ERM

This analysis shows that the 3 most important triggers were 'The strategic need to better identify and anticipate certain risks', 'Increasing the operational performance' and 'Enhancing or protecting the reputation of the organization'. There are however other factors that score almost equally as high so there is a need for a further statistical analysis. Basing this conclusion on the mean is however statistically not completely correct. The question is an ordinal type of question. This means that, in order to comply with the strict statistical rules, we have to look at the median instead of the mean to make conclusions. Based on the median, there are 2 top factors leading to the start of ERM namely: the need to better identify and anticipate certain risks and increasing operational performance.

Implementing an ERM system often means trying to integrate this new department or process into the organization rather than using it as a stand-alone entity. Therefore, changes to the organization are needed. The next question was focused specifically at these changes due to the new ERM process.

Figure 12: Organizational changes following the introduction of ERM

As one can see, a risk-aware culture was clearly the number one change that organizations tried to implement. This was also one of the main conclusions in the literature research. Risk training for personnel scored second. The last question that dealt about the start of ERM was a question about the use of an outside consulting firm to help with the implementation of the new program or department.

Figure 13: Outside consultancy use

There were 93 different respondents answering this question. Clearly, almost 70% did not use an outside consulting firm at all. When companies did use a consulting firm, this was mainly for the identification and assessment of risks. This can be seen as the 'core' process in ERM. To take away from this section is obviously the fact that no framework nor consulting is strictly needed to start with ERM. The right mix of qualified people and tools is sufficient to get started. The most important triggers for companies to start up a risk management program have been identified, as well as the following structural changes to the company as a result of this new program.

1.4. Enablers, barriers, drivers and evolution of ERM over the years

This section holds the most interesting and relevant questions for our research. These questions are also the main focus of the deeper statistical analysis in later chapters. In this chapter, we will briefly go over the answers of the respondents to these questions and make

some early statements. The first question was about the age of the risk management function in the company.

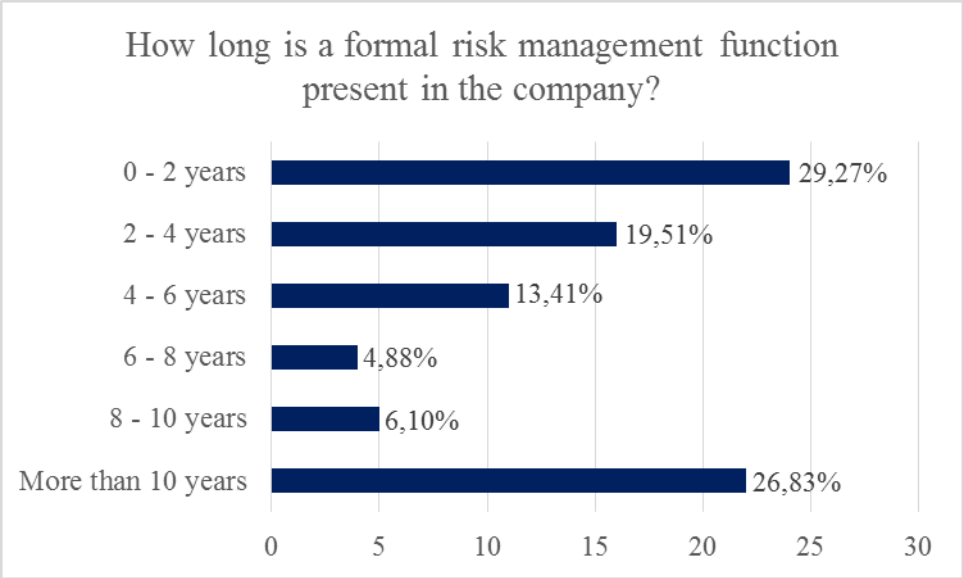

Figure 14: Age of the risk management function

We see that there is a nice spread of the age of the function. We have both newly established departments or processes and also older and mature processes. It indicates that there are still a lot of companies starting to engage in ERM as it is a recent development. Yet other companies have already built a knowledge base.

The question about the division of responsibility shows a similar spread. A lot of companies have either no individual with formal responsibility or the responsibility is divided amongst different people working with ERM. This accounts for 45.97% of companies. The remaining companies have mostly a CRO appointed (33.33%). Other possibilities are: the Internal Audit Manager, the Chief Financial Officer (CFO) or the Chief Executive Officer (CEO). The visual representation can be found below:

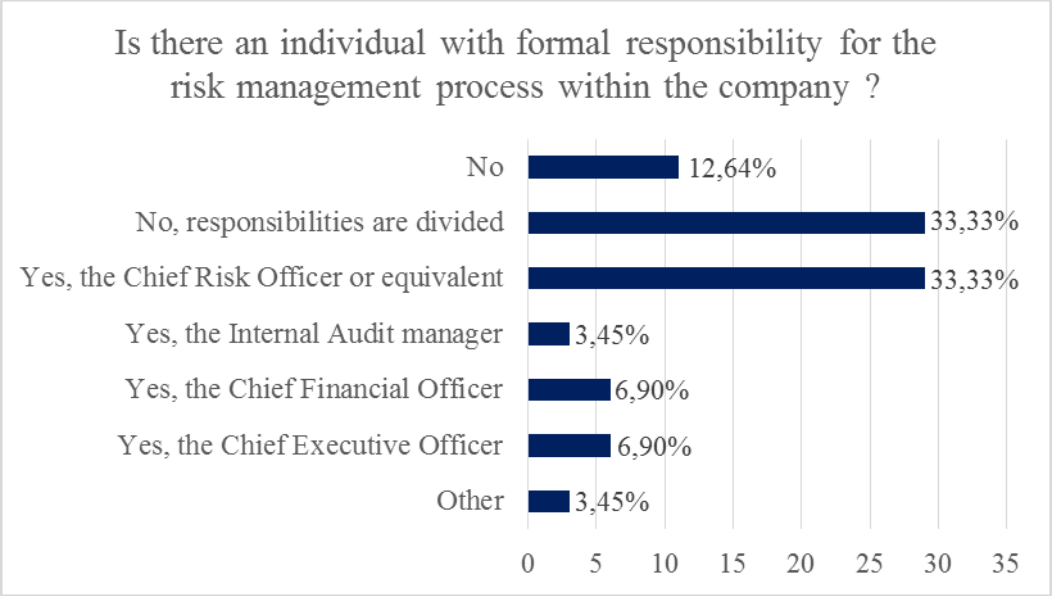

Figure 15: Division of responsibility

Now, we've come to the most interesting and relevant part of this master thesis, being the discovery of the enablers and barriers of enterprise risk management. The enablers are those factors that are indispensable when starting off with ERM and trying to upgrade your ERM program. The barriers are those things you should try to avoid. Asking these 2 questions at the same time will allow to verify if the respondents are answering in a consistent way and also gives the full picture on the problem. We start off with the barriers of ERM:

Barrier	Minimum	Maximum	Mean	Median
Lack of monetary resources	1.00	5.00	2,59	3
Lack of qualified personnel	1.00	5.00	3,07	3
Resistance to change within the organization	1.00	5.00	**3,22**	3
No risk-aware culture within the organization	1.00	5.00	**3,18**	3
An inadequate organizational structure	1.00	5.00	2,98	3
Other management priorities	1.00	5.00	**3,39**	**4**
No clear risk communication	1.00	5.00	3,01	3
Other barriers	1.00	5.00	1,52	1

Table 8: Barriers of ERM

The three biggest barriers of a successful program are 'Other management priorities', 'Resistance to change within the organization' and 'No risk-aware culture within the organization'. The fact that a risk-aware culture is mentioned here goes together with the results of our earlier question about the changes to make ERM work. To that question,

implementing a risk-aware culture was seen as the biggest necessary organizational change. The same remark as previously made is also relevant here. In case of ordinal variables, one should actually look at the median instead of the mean. Looking at the median, there is one variable clearly more important than others being 'Other management priorities'.

Moving on to the enablers or the critical success factors of ERM, we see the following results:

Enabler	Mimimum	Maximum	Mean	Median
Commitment of the board of directors	1.00	5.00	**4,11**	**4**
Commitment of senior management	1.00	5.00	**4,12**	**4**
Determining (enterprise) risk management ownership and responsibilities	1.00	5.00	**3,71**	**4**
Determining risk appetite and tolerance levels	1.00	5.00	3,31	3
Establishing a risk-aware culture	1.00	5.00	**3,88**	**4**
Sufficient resources targeted towards the program	1.00	5.00	3,25	3
Risk identification through meetings, workshops, key risk indicators,...	1.00	5.00	3,37	**4**
Risk assessment and analysis with specific tools such as heat maps	1.00	5.00	2,96	3
Risk response	1.00	5.00	3,21	3
An iterative and recurring process of: identifying risks, analysis and appropriate response	1.00	5.00	3,54	**4**
Leveraging risks as opportunities	1.00	5.00	3,34	**4**
Clear and understandable risk communication with shared vocabulary	1.00	5.00	3,36	3
A risk management software system to share information	1.00	5.00	2,46	2
Regular risk training programs for employees	1.00	5.00	2,88	3
Integration of (enterprise) risk management into business processes	1.00	5.00	**3,59**	**4**
Setting clear objectives and targets for the risk management program	1.00	5.00	3,45	**4**
Monitoring, review and improvement of the theoretical framework	1.00	5.00	3,13	3
Other enablers	1.00	5.00	1,54	1

Table 9: Enablers of ERM

In this list, we indicated the 5 most important factors (instead of 3) because the number of enablers is higher than the number of barriers. Next to that, in academic literature, authors typically tend to mention between 5 and 7 items when they talk about 'Critical Success Factors'. The 5 most important enablers (based on the mean) are indicated in green. They correspond to the critical success factors mentioned in literature. They are also consistent to the barriers and to the organizational changes. The 2 most important ones are 'Commitment of the board of directors' and 'Commitment of senior management'. The third spot is taken by, once again, 'Establishing a risk-aware culture' followed by 'The determination of risk ownership and responsibilities' and 'The integration of risk management into the business processes'. If we base our conclusion on the median instead of the mean, results are quite a

bit different. The most important factors determined with the mean are also coming forward if we use the median. However, the median does point out additional enablers. Next to the enablers for a risk management program, we also asked some closely related questions about the internal and external drivers for the improvement of ERM. First we asked whether the respondents had the perception that there was indeed an improvement of ERM. If they indicated that there was no improvement, they could skip these 2 questions. 59 out of 82 people indicated that there was an improvement (71.95%). The other 28.05% indicated that there was no improvement in the last three years. In terms of internal drivers, these were the results:

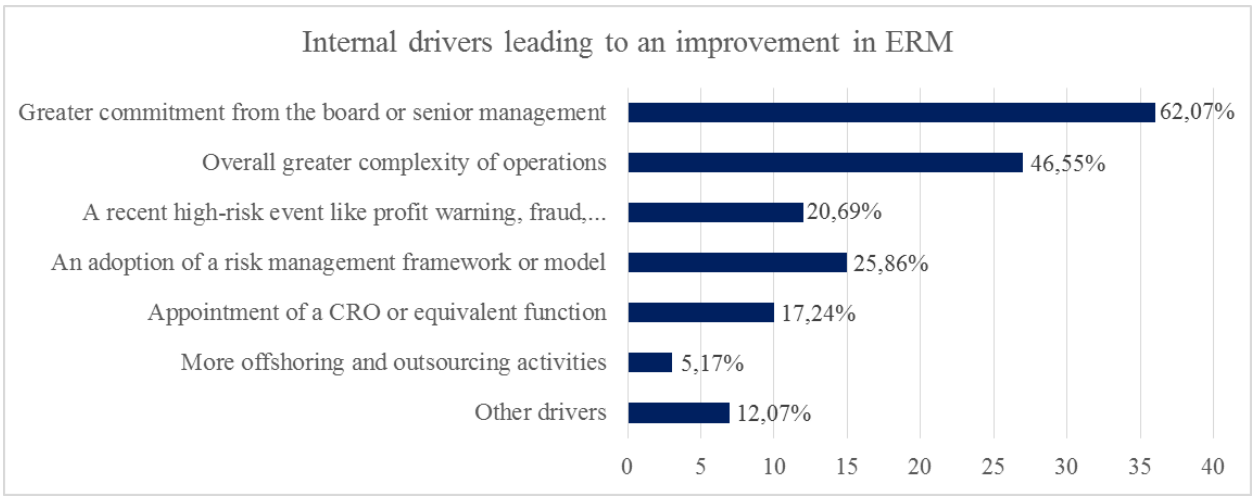

Figure 16: Internal drivers for ERM improvement

Once again, the factor involving board and senior management comes out on top. The greater complexity of operations is another big factor. Looking at the external drivers:

Figure 17: External drivers for ERM improvement

We see that increased regulation leads to an improvement in ERM in more than 50% of cases (29 out of 56 answers on this question). As seen in the literature study, a number of industry sectors indeed encounter increased regulation over the years. This is the case in for example the banking and insurance sector. The second external driver are new risks the company has to face followed by more competitiveness with other companies. There are a couple of things to take away from this chapter. We reviewed the most important barriers and enablers for ERM. It seems that it corresponds to a great deal to what has been found previously in literature. Commitment of higher management and the Board is crucial as well as the establishment of a risk-culture, as pointed out earlier. The combination with the internal and external drivers does shine a new light and widens the scope of the research. As mentioned earlier, respondents were quite concerned about macroeconomic volatility. If we consider the external driver 'Increased regulation' as being political uncertainty, this does correspond to these earlier conclusions. These internal and external drivers can help managers wanting to improve their ERM processes in identifying excellent opportunities or the timing for improvement.

1.5. Value of Enterprise Risk Management

Another very interesting question, partly related to the previous questions is the value that the users of ERM derive from their program. These value propositions can be an important trigger for people who want to derive the same benefits from their program.

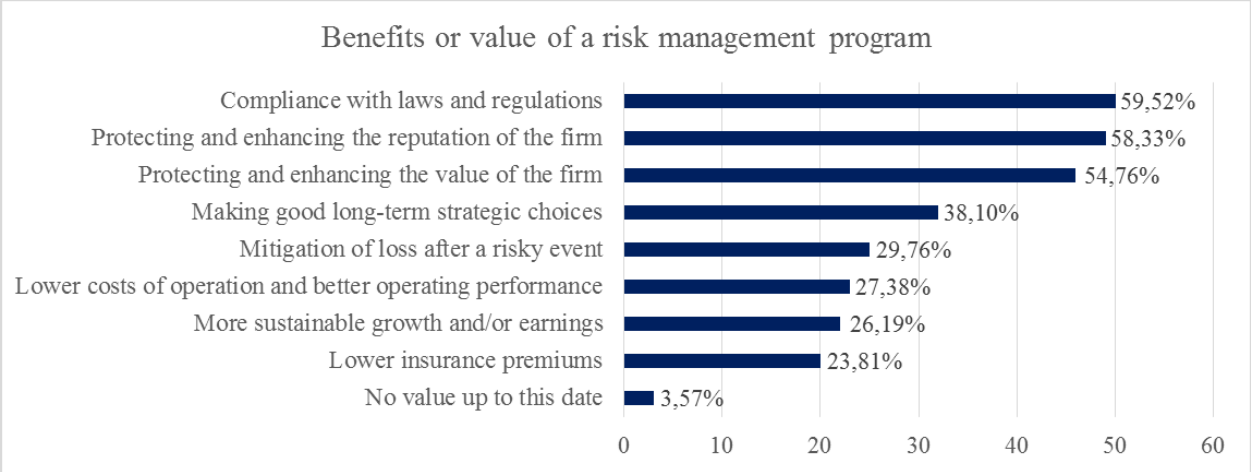

Figure 18: Benefits or value of ERM

There are 3 clearly outlined top factors. The first one is the compliance with laws and regulations. Increased regulation was also the number 1 external driver to ERM improvement. Merely compliance however does not add pure business value or additional profits. A close second was protecting and enhancing the reputation of the firm. This has become increasingly important. Nowadays, customers often search the internet for people with past experiences with a certain company. Having good 'reviews' and an aura of being a reputable firm is thus very important. This was only one of the triggers leading to more companies starting off with some sort of risk management. Protecting and enhancing the value of the firm is a close third. This corresponds to new emerging risks and more competitiveness reported by a lot of firms.

1.6. ERM maturity

There are a lot of different maturity models, we chose for a 5-stage maturity model based on Lam (2014). Every stage is more advanced in terms of integration of ERM and ERM practices than the previous stage. The respondents need to make an estimate about the maturity of their ERM program. Looking at the results, we see that the companies are quite equally

spread over the 5 stages. The third stage is the biggest, but this can be due to the fact that uncertain respondents choose the middle or 'safe' answer.

2. Statistical Analysis

In the previous part about descriptive statistics, we gave an overview about what people answered to our questionnaire. Now in this part, we want to analyze these results in a little more detail and try to investigate some relationships and correlations. We will analyze our data with the statistical program called SPSS where appropriate and possible. Often however, it does not make sense to work with SPSS because we have too little responses on a specific answer category or because the variables are measured in an ordinal scale instead of ratio scale. When working with SPSS, it is important to formulate a hypothesis, which is basically an assumption about reality. The null hypothesis (H_0) is in fact a hypothesis stating the opposite of what you are trying to prove. The alternative hypothesis (H_A) on the other hand, is the hypothesis stating what you expect the result to be. Before starting off, we determine the significance level to be 1%. 1% is a level often used in market research, but is quite stringent. We will reject the null hypothesis when the p-value or probability value is smaller than this significance level of 1%. Another important thing to note is the distinction between the different scales of measurement and the difference between parametric and non-parametric tests. The different scales of measurement are: nominal scale, ordinal scale, interval scale and ratio scale. Most statistical tests are meant for interval or ratio scale variables.

2.1. The analysis of enablers and barriers

Even though the answers to the questions about barriers and enablers (Critical Success Factors) are in a strict sense measured in an ordinal scale (not at all important – extremely important), we still want to apply the standard t-test to our results. Knowing that a small error will be made in the process, we can carry out the test with a number of assumptions. We assign numbers to the different answer categories, from 1 to 5. We assume that these categories do follow a reasonable sequence. We also make the assumption of equal appearing intervals. De Pelsmacker & Van Kenhove (2014) acknowledge that using the interval or ratio statistical tests for ordinal scale variables happens quite often without too

much distortion given a sufficient amount of respondents. The test we are conducting is the one-sample t-test. The null hypothesis and alternative hypothesis would look like this:

H_0: There is no difference between the middle score of 3 representing 'moderately important' and the scores measured in the survey.
H_A: There is a significant difference between the middle score of 3 and the measured scores in the survey.

In the test, we select those enablers with an average score above 3 and check which of those do differ significantly in order to identify the factors being stated as being at least somewhat more important than just 'moderately important'.

Enabler	Mean	P-value
Commitment of the board of directors	4,11	**0**
Commitment of senior management	4,12	**0**
Determining (enterprise) risk management ownership and responsibilities	3,71	**0**
Determining risk appetite and tolerance levels	3,31	**0,004**
Establishing a risk-aware culture	3,88	**0**
Sufficient resources targeted towards the program	3,25	0,016
Risk identification through meetings, workshops, key risk indicators,...	3,37	**0,002**
Risk response	3,21	0,055
An iterative and recurring process of: identifying risks, analysis and appropriate response	3,54	**0**
Leveraging risks as opportunities	3,34	**0,004**
Clear and understandable risk communication with shared vocabulary	3,36	**0,002**
Integration of (enterprise) risk management into business processes	3,59	**0**
Setting clear objectives and targets for the risk management program	3,45	**0**
Monitoring, review and improvement of the theoretical framework	3,13	0,281

Table 10: Statistical analysis of enablers

As we can see, respondents did consider a lot of the factors as being at least 'moderately important'. 11 out of the 18 presented enablers to be exact. In these cases we can thus reject the null hypothesis and state that we have reason to believe that in those 11 cases, we can accept the alternative hypothesis with a 1% significance level. In statistics, it is correct to state that the lower the p-value the more significant the result is. There are 7 factors with a p-value of 0.

We can do the same analysis for the barriers. We try to look for those barriers most obstructive for a successful ERM execution. The null hypothesis and alternative hypothesis would look like this:

H_0: There is no difference between the middle score of 3 representing 'moderately important' and the scores measured in the survey.
H_A: There is a significant difference between the middle score of 3 and the measured scores in the survey. Thus in our case meaning that the factor under consideration is significant in being obstructive to a successful ERM program.

Barrier	Mean	P-value
Lack of qualified personnel	3,07	0,53
Resistance to change within the organization	3,22	0,06
No risk-aware culture within the organization	3,18	0,14
Other management priorities	3,39	**0,001**
No clear risk communication	3,01	0,906

Table 11: Statistical analysis of barriers

In this test, only one factor namely 'Other management priorities' is significant with a confidence level of 1%. Even if we made the test less stringent with a confidence level of 5%, the test would yield the same result. Respondents clearly did not choose as much of a clear standpoint as they did for the enablers.

Summing up these results, we conclude that it is probably more meaningful to look at the descriptive statistics in this case as they give more of an intuitive result about the responses to the survey. And as already noted, it is, purely from a statistical point of view, not entirely correct to apply the one-sample t-test to an ordinal value.

2.2. The start of enterprise risk management

This analysis is similar to the one done on the barriers and enablers. Respondents can once again indicate to what extent they agree with a specific answer category on a scale from 1 to 5. With 1 being 'Not at all important' and 5 being 'Extremely important'. The null hypothesis and alternative hypothesis look like this:

H_0: There is no difference between the middle score of 3 representing 'moderately important' and the scores measured in the survey.

H_A: There is a significant difference between the middle score of 3 and the measured scores in the survey.

We select those factors with a mean above 3 so that way, if we find a significant factor we are sure it contributes to the start of ERM.

Trigger	Mean	P-Value
Pressure from the board of directors	3,17	0,158
Top management pressure	3,26	0,023
Regulatory requirements	3,22	0,12
Strategic need to better identify and anticipate certain risks	**3,53**	**0**
Increasing operational performance	**3,33**	**0,002**
Enhancing or protecting the reputation of the organization	**3,38**	**0,001**

Table 12: Statistical analysis of ERM triggers

We get the same results as we do when using the mean. 3 factors are significant being: 'Strategic need to better identify and anticipate certain risks', 'Increasing operational performance' and 'Enhancing or protecting the reputation of the organization'. If we had used the less strict rule of a 5% significance level, 'Top management pressure' would have been significant as well.

2.3. Influence of getting outside consulting on ERM maturity

An interesting item to investigate would be to see if having outside consulting assistance for the implementation of ERM also improves ERM maturity. As already described in the previous chapter, the majority of respondents did not make use of an outside consulting firm. Number wise, 65 out of 93 respondents who answered this question did not make use of the advice of a consultancy bureau, while 28 did.

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
No	12	15	12	6	7	52 respondents
Percentage	23,08%	28,85%	23,08%	11,54%	13,46%	
Yes	3	5	11	5	3	27 respondents
Percentage	11,11%	18,52%	40,74%	18,52%	11,11%	

Table 13: Relation between external consulting and ERM maturity

The above picture shows the results of the survey. A purely qualitative review leads us to believe that our previously made statement seems true. If we consider everything from stage 3 and above as being a higher stage ERM process, we see that the companies with consultancy assistance amount to 70.37% of total respondents compared to only 48.08% for companies without consultancy. Knowing that respondents often answer the middle category in case of laziness or not being sure about the answer, we could also consider stage 4 and stage 5 only. In that case, we have 25% and 29.63%, so the companies using consultancy still score almost 5% higher. One very important remark however, is that the small amount of respondents in these groups can influence the conclusion we make. To analyze these results with SPSS, we will use the chi-square test for nominal variables. The null hypothesis and alternative hypothesis would look like this:

H_0: There is no difference between the frequencies of both groups.
H_A: The frequencies of both groups are not equal, leading us to believe that the group using consultancy also has a higher state of maturity.

	Value	P-Value
Pearson Chi-Square	4,693	0,32

Table 14: Statistical analysis of the relation between external consulting and ERM maturity

The actual statistical analysis showed us however that the previous qualitative relation is negligible. This test was valid since we met the requirements of the test being that not more than 20% of the expected frequencies should be smaller than 5 and no (observed) frequency should be smaller than 1. The final conclusion is thus that we cannot state that there is indeed a positive relation between getting outside consulting and the degree of ERM maturity (on a 1% significance level).

2.4. The uncertainty of the external environment compared to industry uncertainty

This analysis is meant to see whether there is a difference between the uncertainty of the external environment and the uncertainty of the industry sector itself as reported by the respondents. In the qualitative statistics chapter, we have already stated that it is very likely that this is indeed the case. We stated that the external environment was considered to be a lot more uncertain. This was also reflected in other questions. The null hypothesis and alternative hypothesis for this test look like this:

H_0: There is no difference between the frequencies of both groups.
H_A: The frequencies of both groups are not equal, leading us to believe that the uncertainty in the external environment is significantly higher than the uncertainty on the industry level.

	Value	P-Value
Pearson Chi-Square	97,743	0

Table 15: External uncertainty versus uncertainty in the industry sector

The p-value of this test is zero, so we reject the null hypothesis on the 1% significance level and accept the alternative hypothesis. We can thus conclude that our earlier conclusion was probably correct on the 1% significance level.

Chapter 4: Conclusion and recommendations

This conclusion will briefly go over the key aspects of this thesis and also cover some recommendations for companies wanting to start off with an ERM program or companies currently already conducting ERM. As already noted, the initial aim to make a distinction between different industry sectors could not be fulfilled due to a lack of respondents to our survey. However, this research is a lot broader than the majority of academic research dealing about critical success factors. This will thus add value to the base of knowledge about ERM. The literature study touches the, in my opinion, most relevant topics. It prepares the inexperienced reader to fully grasp the ideas in the empirical research. We covered the basic terminology and the history of ERM development as an introduction. The benefits and value are covered according to different viewpoints and always with a critical note or remark. Also the main frameworks currently in use are reviewed with a critical eye. A very thorough review of 10 academic papers was done to come to the theoretical success factors and as an input for the questionnaire.

Looking at the number of employees working in the companies of our respondents, we see a wide variety. We have companies with a very small headcount, and obviously also very large corporations. We did select 'big' companies on our mailing lists, but it should be noted that also the smaller companies can obviously profit from risk management of some sort. The majority of enterprises (61%) had their external audit (mostly obligatory) conducted by one of the Big Four. However, most companies (almost 70%) did not use an outside consulting firm for the implementation of their ERM program. It seems that a mix of qualified people is sufficient as a knowledge base to engage in ERM.

Companies invested in risk management mainly because they felt the strategic need to better anticipate certain risks and because they wanted to increase their operational performance. These objectives are thus purely from an economical point of view. Risk management can deliver and the investment will pay off when implemented properly! Another motivation was the protection of a company's reputation. Once the decision has been made to start off with such a program, obviously some changes have to be made to

fully integrate this new function or department into the whole of the company. Establishing a risk-aware culture is certainly most important in this respect. This risk culture should be based upon a mutual feeling of responsibility and should encourage people to pursue the right risks in a responsible manner as they can present great opportunities.

As a company, make sure that everyone gets on the right track. Management should back the decision to engage in risk management, otherwise the effort will be futile. The integration of risk management throughout the company is more valuable than it acting as a stand-alone entity. Being risk-aware is not a question of applying certain tools and techniques. It is a change in doing everyday business.

For managers looking for the perfect timing of entry, we can state that internally a greater commitment of board or senior management and a greater complexity of operations are ideal arguments to get going with ERM. When implemented properly, there is a high chance that you will see an increase of value for stakeholders and overall a more sound business.

Time will tell if Enterprise Risk Management is here to stay and become a fully-fledged department in nearly every company. There are certainly a lot of benefits, but it still has to stand the test of time.

Chapter 5: Future research

For future research, I have three major recommendations.

1. In future years, It is probably recommended to step away from questionnaires. More and more companies are adopting a policy that states that they do not want to participate in any questionnaires anymore. Numerous times, I heard that the amount of requests amounted to dozens a day. For very specific subjects, it is even harder to find enough respondents and to make sure that the answers are trustworthy and do present actual business practices. A practice more popular in Germany for example is combining the master thesis with an internship. This would put the student in a rich environment and a lot closer to actual practices. He or she also gets access to a network of people knowledgeable about the topic, in this case risk management.

2. Going on with the topic of critical success factors in ERM would give even more insights. An investigation of the differences between critical success factors among different industries can certainly be useful. This has also been stated in academic literature. Ideally and in my opinion, this would be done in a duo master thesis and interviews could be the investigation method of choice. The fact that it is a duo thesis will lower the workload of doing many interviews.

3. Another important remark I have towards the current research in ERM is that it is, in my opinion, overly theoretical. Companies find it hard to start off with a theoretical framework or overly theoretical recommendations and to fit these to their needs. This might be another interesting topic for a master thesis: A kind of implementation guide focused more towards actual business practices.

References

Adam, R. et al. (2011). *Enterprise Risk Management: Framework.* Ontario Deposit Insurance Corporation of Ontario

Adams, J. et al. (2012). IRM: Risk culture: Under the Microscope (The Institute of Risk Management). Geraadpleegd via: https://www.theirm.org/media/885907/Risk_Culture_A5_WEB15_Oct_2012.pdf

Anonymous (2016). Atradius: Market monitor – construction industry – Belgium. Geraadpleegd via: https://atradius.be/nl/rapporten/market-monitor---construction-industry---belgium.html

Anonymous (s.d.). Internations: Working in Belgium. Geraadpleegd via: https://www.internations.org/belgium-expats/guide/working-in-belgium-15357

Anonymous (2007) Economist Intelligence Unit: Best practice in risk management, a function comes of age.

Anonymous (2009). *ISO Guide 73: Risk Management Vocabulary.* Geneva: International Organization for Standardization.

Axelsson, K., Melin, U., &Söderström, F. (2011). *Analyzing best practice and critical success factors in a health information system case: Are there any shortcuts to successful IT implementation?* (Linköping University). Geraadpleegd via: http://liu.diva-portal.org/smash/record.jsf?pid=diva2%3A453802&dswid=2495

Beasley, M. S., Clune, R., & Hermanson, D. R. (2005). Enterprise risk management: An empirical analysis of factors associated with the extent of implementation. *Journal of Accounting and Public Policy, 24*(6), 521-531. DOI: 10.1016/j.jaccpubpol.2005.10.001

Beasley, M. S., Branson, B. C., Hancock, B. V. (2010). *COSO's 2010 Report on ERM: Current State of Enterprise Risk Oversight and Market Perceptions of COSO's ERM Framework.* Raleigh: North Carolina State University. Geraadpleegd via: http://www.coso.org/guidance.htm

Beasley, M., Frigo, M. (2010) *ERM and its role in strategic planning and strategy execution.* Chapter 3 ERM: today's Leading Research and Best Practices for Tomorrow's Executives (Fraser J., Simkins B.)

Bosteels, L. (2014). *Voedingsindustrie is grootste industriële sector van België* (Retail-Detail). Geraadpleegd via: https://www.retaildetail.be/nl/news/food/voedingsindustrie-grootste-industri%C3%ABle-sector-van-belgi%C3%AB

Bowling, D. M., & Rieger, L. A. (2005). Making Sense of COSO's New Framework for Enterprise Risk Management. *Bank Accounting and Finance, 18(2), 29-34.* Geraadpleegd via: http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=38f8e703-72bd-426e-98d0-abcecc45f634%40sessionmgr106&vid=1&hid=107

Bowling, D. M., & Rieger, L. A. (2005). Success Factors for Implementing Enterprise Risk Management: Building on the COSO framework for enterprise risk management to reduce overall risk. *Bank Accounting and Finance, 18*(3), 21-26.

Branson, B. (2010). *The Role of the Board of Directors and Senior Management in Enterprise Risk Management.* Chapter 4 ERM: today's Leading Research and Best Practices for Tomorrow's Executives (Fraser J., Simkins B.)

Bromiley, P., McShane, M., Nair, A., & Rustambekov, E. (2014). Enterprise Risk Management: Review, Critique, and Research Directions. *Long Range Planning, 48*(4), 265-276. DOI: http://dx.doi.org/10.1016/j.lrp.2014.07.005

Bryman, A. (2006). Integrating quantitative and qualitative research: how is it done? Qualitative Research, 6, 97-113. DOI: 10.1177/1468794106058877

Carey, M., Curtis, P. (2012) *Risk Assessment in Practice.* COSO Committee of Sponsoring Organizations of the Treadway Commission.

Charette, R. N. (2010). Enterprise Risk Management – Supplemental Material. In Simon, P. (Ed.), *The Next Wave of Technologies : Opportunities in Chaos* (pp. 265-284). Hoboken (New Jersey): John Wiley and Sons. Geraadpleegd via: http://www.philsimon.com/wpcontent/uploads/2009/10/15_Charette.pdf

Cormican, K. (2014). Integrated Enterprise Risk Management: From Process to Best Practice. *Modern Economy, 5*, 401-413. DOI: http://dx.doi.org/10.4236/me.2014.54039

Crickette, G., Drobnis, K., Egerdahl, R., Fox, C., Gjerdrum, D., Gofourth, R., Zavatsky, D. (2011). *An Overview of Widely Used Risk Management Standards and Guidelines* (RIMS Standards and Practices Committee and RIMS ERM Committee). Geraadpleegd via: https://www.rims.org/resources/ERM/Documents/RIMS%20Executive%20Report%20on%20Widely%20Used%20Standards%20and%20Guidelines%20March%202010.pdf

Crockford, G.N., (1982). The bibliography and history of risk management: Some preliminary observations. *The Geneva Papers on Risk and Insurance 7*, 169-179.

De Bock, J. (2014). *Voedingsindustrie grootste industriële sector van België* (Gondola – Retail facts and trends). Geraadpleegd via: http://www.gondola.be/nl/content/voedingsindustrie-grootste-industriele-sector-van-belgie-73916

De Pelsmacker, P., & Van Kenhove, P. (2014). *Marktonderzoek: Methoden en toepassingen.* Amsterdam: Pearson Benelux.

De Ruytter, S., Goesaert, T., Konings, J., & Reynaerts, J. (2012). *Sectoranalyse van de Vlaamse industrie* (Ondernemen en regionale economie). Geraadpleegd via: https://steunpuntore.be/publicaties-1/wp3/STORE-B-12-001_sectoranalysevlaamseindustrie

Dickinson, G. (2001). Enterprise risk management: Its origins and conceptual foundation. *Geneva Papers Risk Insurance, 36*(3), 360-366.

Doom, C., Milis, K., Poelmans, S., & Bloemen, E. (2009). Critical success factors for ERP implementations in Belgian SME's. *Journal of Enterprise Information, 23*(3), 378-406. DOI: 10.1108/17410391011036120.

Dornberger, K., Oberlehner, S., Zadrazil, N. (2014). Challenges in Implementing Enterprise Risk Management. *Journal of Finance and Risk Perspectives, 3*(3), 1-14. Geraadpleegd via: http://www.acrn-journals.eu/resources/jfrp201403a.pdf

Essenscia website (2016). *Onze sector & kerncijfers 2016.* Geraadpleegd via: http://www.essenscia.be/nl/onze_sector

Fraser, J. R. S., Schoening-Thiessen, K., & Simkins, B. J. (2010). Who Reads What Most Often? A Survey of Enterprise Risk Management Literature Read by Risk Executives. In Fraser, J., Simkins, B. (Eds.), *Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executive* (pp. 387-417). Hoboken New Jersey: John Wiley and Sons

Frigo, M. L., &Anderson, R. J. (2011). Strategic Risk Management: A Foundation for Improving Enterprise Risk Management and Governance. *Journal of Corporate Accounting and Finance, 22*(3), 81-88. DOI: 10.1002/jcaf.20677

Gatzert, N., & Martin, M. (2013). *Determinants and Value of Enterprise Risk Management: Empirical Evidence from the Literature.* Doi: 10.1111/rmir.12028

Gordon, L. A., Loeb, M. P., & Tseng, C-Y. (2009). Enterprise Risk Management and Firm Performance: A Contingency Perspective. *Journal of Accounting and Public Policy. 28*(4), 301-327. Doi: 10.1016/j.jaccpubpol.2009.06.006

Grable, J. E. (2000). Financial Risk Tolerance and Additional Factors that affect Risk Taking in everyday money matters. *Journal of Business and Psychology, 14*(4), 625-630. Doi:10.1023/A:1022994314982

Grace, M. F., Leverty, J. T., Phillips, R. D., & Shimpi, P. (2014). The Value of Investing in Enterprise Risk Management. *The Journal of Risk and Insurance. 82*(2), 289-316. Doi: 10.1111/jori.12022

Hopkin, P. (2010). *Fundamentals of Risk Management: Understanding, evaluating and implementing effective risk management.* London: KoganPage.

Hoyt, R. E., & Liebenberg, A. P. (2008). *The Value of Enterprise Risk Management: Evidence from the U.S. Insurance industry* (Society of Actuaries). Geraadpleegd via: https://www.soa.org/library/monographs/other-monographs/2008/april/mono-2008-m-as08-1-hoyt.pdf

Hoyt, R. E., & Liebenberg, A. P. (2011). The Value of Enterprise Risk Management. *The Journal of Risk and Insurance*, *78*(4), 795-822. Doi: 10.1111/j.1539-6975.2011.01413.x

International Organization for Standarisation ISO/IEC (2009). *Guide 73, risk management – vocabulary.* Geneva

Ittner, C., & Oyon, D. (2014). The Internal Organization of Enterprise Risk Management.

Kerstin, D., Oberlehner, S., Zadrazil, N. (2014). Challenges in implementing Enterprise Risk Management. *ACRN Journal of Finance and Risk Perspectives, 3*(3), 1-15.

Kloman, F., (2010). A Brief History of Risk Management. In Fraser, J., Simkins, B. (Eds.), *Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives* (pp. 19-30). Hoboken New Jersey: John Wiley and Sons

Lam, J. (2011). *Risk Management: The ERM Guide from AFP.* Geraadpleegd via: http://www.jameslam.com/images/PDF/AFP%20Enterprise%20Risk%20Management%20Guide_Lam%202012.pdf

Lam, J. (2014). *Enterprise Risk Management: From Incentives to Controls.* Hoboken, New Jersey: John Wiley & Sons.

Leitch, M. (2010). ISO 31000:2009 – The New International Standard on Risk Management. *Risk Analysis, 30*(6), 887-892. Doi: 10.1111/j.1539-6924.2010.01397.x

Malik, S. A., & Holt, B. (2013). Factors that affect the adoption of Enterprise Risk Management*. OR Insight, 26*, 253-269. DOI: 10.1057/ori.2013.7

Manab, N. A., Othman, S. N., Kassim, I. (2012). Enterprise-Wide Risk Management Best Practices: The Critical Success Factors. *OIDA International Journal of Sustainable Development, 04*(03), 87-96. Geraadpleegd via: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2054977

McShane, M. K., Nair, A., & Rustambekov, E. (2011). Does Enterprise Risk Management increase Firm Value? *The Journal of Accounting, Auditing and Finance*, *16*(4), 641-658. Geraadpleegd via SSRN website: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1829027

Mikes, A., & Kaplan, R. S. (2012). *Managing Risks: A New Framework* (Harvard Business Review). Geraadpleegd via: https://hbr.org/2012/06/managing-risks-a-new-framework

Mikes, A., & Kaplan, R. S. (2014). *Towards a Contingency Theory of Enterprise Risk Management*. Boston: Harvard Business School. Geraadpleegd via: http://www.hbs.edu/faculty/Publication%20Files/13-063_5e67dffe-aa5e-4fac-a746-7b3c07902520.pdf

Miller, K. D. (2013). A Framework for Integrated Risk Management in International Business. *Journal of International Business Studies , 23*(2), 311-331. Geraadpleegd via: https://www.iei.liu.se/fek/frist/723G33/yinghong-files/1.460486/aframeworkforintergratedriskmanagementforMNE.pdf

Nah, F., Lau, J., Kuang, J. (2001). Critical factors for successful implementation of enterprise systems. Business Process Management Journal, 7(3), 285-296. DOI: http://dx.doi.org/10.1108/14637150110392782

Nerby, P. (2013). Moody's assigns negative outlook to Deutsche Bank AG and subsidiaries. Geraadpleegd via: https://www.moodys.com/research/Moodys-assigns-negative-outlook-to-Deutsche-Bank-AG-and-subsidiaries--PR_288943

Pagach, D., & Warr, R. (2010). *The Effects of Enterprise Risk Management on Firm Performance.* Raleigh: North Carolina State University. Geraadpleegd via SSRN website: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1155218

Parkinson, M. (2012). Risk Summit Practitioner Answers. Geraadpleegd via: https://na.theiia.org/standards-guidance/Public%20Documents/IIA_Risk_Summit_Practitioner_Answers.pdf

Practitioner Answers, (2012). *Practitioner Answers: Comparative Strengths and Weaknesses of COSO ERM and ISO 31000 (Institute of Internal Auditors IIA).* Geraadpleegd via: https://na.theiia.org/standards-guidance/Public%20Documents/IIA_Risk_Summit_Practitioner_Answers.pdf

Purdy, G. (2010). ISO 31000:2009 – Setting a New Standard for Risk Management. *Risk Analysis, 30*(6), 881-886. Doi: 10.1111/j.1539-6924.2010.01442.x

Rochette, M. (2009). From risk management to ERM. *Journal of Risk Management in Financial Institutions, 2*(4), 394-408. Geraadpleegd via: http://www.ingentaconnect.com/content/hsp/jrmfi/2009/00000002/00000004/art00006

Rockart, J. F. (1979). Chief executives define their own data needs. Harvard Business Review, 57(02), 81-93. Geraadpleegd via: http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=3112ecb5-445f-436c-b88d-5800b11e44b7%40sessionmgr105&vid=1&hid=128

Schanfield, A. (2012). Risk Summit Practitioner Answers. Geraadpleegd via: https://na.theiia.org/standards-guidance/Public%20Documents/IIA_Risk_Summit_Practitioner_Answers.pdf

Shenkir, W., & Walker, P. (2007). *Enterprise Risk Management: Tools and Techniques for Effective Implementation (Institute of Management Accountants IMA).* Geraadpleegd via: http://www.stjohns.edu/sites/default/files/documents/academics/tobin/enterprise_tools_and_techniques.pdf

Shinkman, M., & Herd, D. (2014). Establishing an Appropriate Risk Culture. Geraadpleegd via: http://www.rmmagazine.com/2014/08/01/establishing-an-appropriate-risk-culture/

Shortreed, J. (2010). ERM frameworks. In Fraser, J., Simkins, B. (Eds.), *Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives* (pp. 19-30). Hoboken New Jersey: John Wiley and Sons

Spikin, I. C. (2013). *Risk Management Theory: The Integrated Perspective and its Application in the Public Sector* (Universiteit Twente, Nederland). DOI: 10.5354/0717-8980.2013.29402

Steinberg, R., & Martens, F. (2004).Enterprise Risk Management – Integrated Framework (COSO). Geraadpleegd via: http://www.coso.org/documents/coso_erm_executivesummary.pdf

Tranchard, S. (2015). *The revision of ISO 31000 on risk management has started (ISO).* Geraadpleegd via: http://www.iso.org/iso/news.htm?refid=Ref1963

Van Asselt, M. B. A. & Renn, O. (2011). Risk Governance. Journal of Risk Research, 14(4), 431-449. DOI: 10.1080/13669877.2011.553730

Wagner, E. L., Scott, S. V., Galliers, R. D. (2006). *The creation of 'best practice' software: Myth, Reality and Ethics. Information and Organization, 16*(3), 251-275. DOI: http://dx.doi.org/10.1016/j.infoandorg.2006.04.001

Zhao, X., Hwang, B., Low, S. P. (2013). Critical success factors for enterprise risk management in Chinese construction companies*. Construction Management and Economics, 31*(2), 1199-1214. DOI: http://dx.doi.org/10.1080/01446193.2013.867521.

Appendix

Questionnaire design

Dear Mr. / Ms.
I would like to request your kind participation in a short survey. This research is conducted in the context of my master thesis at the University of Ghent and is supervised by Professor Dr. Ir. Regine Slagmulder. The goal is to identify the critical success factors for companies engaging in a (enterprise) risk management program. This survey will only take about 10 minutes of your time to complete. We guarantee complete anonymity and answers will be processed confidentially. If you provide us with your contact information at the end of the survey, we will send you the results of the research.
Thank you very much in advance,

Laurens Sap (Student Business Engineering – Finance).

Part I. Company Information.

1. What is the name of the company? **(Optional)**
   Click here to enter text.

2. In which industry sector is the company active?
   Click here to enter text.

3. Is the company listed on the stock market?
   ☐ Yes
   ☐ No

4. What is the yearly turnover of the company?
   ☐ x ≤ € 250.000
   ☐ € 250.000 < x ≤ € 1 million
   ☐ € 1 million < x ≤ € 10 million
   ☐ € 10 million < x ≤ € 100 million
   ☐ € 100 million < x ≤ € 250 million
   ☐ x > € 250 million

5. What is the number of employees working in the company?
   ☐ x ≤ 25
   ☐ 25 < x ≤ 250
   ☐ 250 < x ≤ 1000
   ☐ 1000 < x ≤ 2500
   ☐ 2500 < x ≤ 5000
   ☐ x > 5000

6. Is the external audit of your company conducted by one of the Big Four companies (PwC, Deloitte, EY or KPMG)?
   ☐ Yes
   ☐ No

7. How would you describe the uncertainty of the external environment (macroeconomic or political instability) in which the company is present?
   ☐ No uncertainty
   ☐ Minimal uncertainty
   ☐ Moderate uncertainty
   ☐ Above average uncertainty
   ☐ High uncertainty

8. How would you describe the uncertainty of the industry (competitiveness or technological uncertainty) in which the company is present?
   ☐ No uncertainty
   ☐ Minimal uncertainty
   ☐ Moderate uncertainty
   ☐ Above average uncertainty
   ☐ High uncertainty

9. How would you describe the instability within the company itself (operational instability or R&D uncertainty)?
   ☐ Stable
   ☐ Minimal instability
   ☐ Moderate instability
   ☐ Above average instability
   ☐ High instability

Part II: The Implementation of (Enterprise) Risk Management at the Company.

10. Is the risk management process in your company based on a risk management framework such as COSO or ISO 31000? If so, please specify the framework.
    ☐ No, the process is not based on a specific theoretical framework
    ☐ COSO
    ☐ ISO 31000
    ☐ FERMA
    ☐ AS/NZ
    ☐ Other, please specify:

11. What factors led to the start of (enterprise) risk management and to what extent? **(1 = Not important at all, 5 = very important)**
    Pressure from the board of directors
1	**2**	**3**	**4**	**5**
    Audit committee pressure

1	2	3	4	5

Top management pressure

1	2	3	4	5

Regulatory requirements

1	2	3	4	5

External audit recommendations

1	2	3	4	5

Strategic need to better identify and anticipate certain risks

1	2	3	4	5

Increasing operational performance

1	2	3	4	5

Enhancing or protecting the reputation of the organization

1	2	3	4	5

A high-risk event in the past

1	2	3	4	5

Other, please specify:

1	2	3	4	5

12. What organizational changes were made to make (enterprise) risk management work? **(Multiple answers possible)**
    - ☐ Establishing a risk committee in the board of directors
    - ☐ Forming a risk department within the company
    - ☐ Changes in responsibilities of personnel with respect to ERM
    - ☐ Creating and encouraging of a new (risk-aware) culture
    - ☐ Risk training for personnel
    - ☐ Hiring of a CRO or equivalent function
    - ☐ Other, please specify:

13. Was an outside consulting firm used to help with the implementation of the risk management program? If yes, please specify their role. **(Multiple answers possible)**
    - ☐ No, an outside consulting firm was not used for the implementation of risk management within the company
    - ☐ To improve the risk culture within the company
    - ☐ To give risk trainings to the employees
    - ☐ To help with the identification and assessment of risks
    - ☐ To help with the reporting and communication of risks
    - ☐ To reduce the costs of and increase the effectiveness of the current risk management program
    - ☐ To align the program with the company's objectives and strategy
    - ☐ Other, please specify:

Part III: Current State of Risk Management

14. For how long is a formal risk management function present in the company?
    - ☐ 0 – 2 years

☐ 2 – 4 years
☐ 4 – 6 years
☐ 6 – 8 years
☐ 8 – 10 years
☐ More than 10 years

15. Is there an individual with formal responsibility for the management of the risk management process within the company?
☐ No
☐ No, the responsibility is divided amongst different people or divisions
☐ Yes, the Chief Risk Officer or equivalent function
☐ Yes, the Internal Audit Manager
☐ Yes, the Chief Financial Officer
☐ Yes, the Chief Executive Officer
☐ Other, please specify:

16. What do you consider as the biggest barriers in implementing a risk management program in a company? **(1 = Not important at all, 5 = very important)**
Lack of monetary resources
1 2 3 4 5
Lack of qualified personnel
1 2 3 4 5
Resistance to change within the organization
1 2 3 4 5
No risk-aware culture within the organization
1 2 3 4 5
An inadequate organizational structure
1 2 3 4 5
Other management priorities
1 2 3 4 5
No clear risk communication
1 2 3 4 5
Other, please specify:
1 2 3 4 5

17. What are, in your opinion, the most important enablers for a risk management program in a company? Please indicate to what extent a chosen factor is important. **(1 = Not important at all, 5 = very important)**
Commitment of the board of directors
1 2 3 4 5
Commitment of senior management
1 2 3 4 5
Determining (enterprise) risk management ownership and responsibilities

1	2	3	4	5

Determining risk appetite and tolerance levels

1	2	3	4	5

Establishing a risk-aware culture

1	2	3	4	5

Sufficient resources targeted towards the program

1	2	3	4	5

Risk identification through meetings, workshops, key risk indicators,…

1	2	3	4	5

Risk assessment and analysis with specific tools such as heat maps

1	2	3	4	5

Risk response

1	2	3	4	5

An iterative and recurring process of: identifying risks, analysis and appropriate response to risks

1	2	3	4	5

Leveraging risks as opportunities

1	2	3	4	5

Clear and understandable risk communication with a shared vocabulary

1	2	3	4	5

A risk management software system to share information

1	2	3	4	5

Regular risk training programs for employees

1	2	3	4	5

Integration of (enterprise) risk management into business processes

1	2	3	4	5

Setting clear objectives and targets for the risk management program

1	2	3	4	5

Monitoring, review and improvement of the theoretical framework

1	2	3	4	5

Other, please specify:

1	2	3	4	5

18. What benefits or value does the risk management program bring to your company? **(Multiple answers possible)**

☐ No, up to this date, the risk management process does not provide value for the company.
☐ It protects and enhances the value of the firm
☐ It protects and enhances the reputation of the firm
☐ Lower insurance premiums
☐ Mitigation of loss after a risky event
☐ More sustainable growth and/or earnings
☐ Lower costs of operation and better operating performance
☐ It is easier to make long-term strategic choices thanks to risk management
☐ Compliance with laws and regulations
☐ Other, please specify:

19. Was there over the past three years a noticeable improvement in the risk management processes and practices of the company?
    ☐ Yes
    ☐ No. Please go to question 22.

20. In the past three years, what have been the biggest internal drivers leading to an improvement of risk management in the company? **(Multiple answers possible)**
    ☐ Greater commitment from the board or senior management
    ☐ Overall greater complexity of the operations
    ☐ A recent high-risk event like profit warning, fraud…
    ☐ An adoption of a risk management framework or model
    ☐ Appointment of a CRO or equivalent function
    ☐ More offshoring and outsourcing activities
    ☐ Other, please specify: Click here to enter text.

21. In the past three years, what have been the biggest external drivers leading to an improvement of risk management in the company? **(Multiple answers possible)**
    ☐ Increased regulation
    ☐ Demands from investors or other stakeholders for greater disclosure
    ☐ Macroeconomic volatility
    ☐ Higher cost of capital
    ☐ New emerging risks the company has to face
    ☐ Pressure from customers for more continuity or stability
    ☐ Higher insurance premiums
    ☐ Political uncertainty
    ☐ More competitiveness in the market in which the company operates
    ☐ Terrorism
    ☐ Other, please specify:

22. Please indicate to which of the 5 following stages your company has advanced in terms of its risk management practices.
    ☐ Stage 1: First steps in terms of risk management. Resources are reserved and the objectives of the ERM program are determined. Other key tasks in this stage could be: developing a framework, obtaining board-level support and establishing an ERM task force.
    ☐ Stage 2: Early development. Formalizing the roles and responsibilities in the process and identifying key risk. Other key task: enhancing risk knowledge and awareness.
    ☐ Stage 3: Standard practice. Frequent risk assessments. An operational risk model and value delivering practices.

☐ Stage 4: Business integration. Integration of risk management into other business practices. Risk management practices become distributed across the organization.
☐ Stage 5: Business optimization. Risk management is applied to really optimize business performance and to help in strategy formulation. This is a stage where risk management is omni-present in the organization.

23. Which risk measurement techniques are being used in the organization?
☐ None
☐ SWOT Analysis
☐ Expected shortfall
☐ Scenario analysis
☐ Value at risk
☐ Earnings at risk
☐ Heat maps
☐ Risk rankings
☐ Net present value
☐ Other, please specify:

Part IV: Interviewee Background.

24. What is your current position or department in the company?
☐ CEO – Chief Executive Officer
☐ CFO – Chief Financial Officer
☐ COO – Chief Operating Officer
☐ CRO – Chief Risk Officer
☐ Other C-level executive
☐ Internal Audit
☐ Board member
☐ Risk Committee
☐ Controller
☐ Accountant
☐ Treasurer
☐ Other, please specify:

25. Are you in your current position responsible for risk management?
☐ Yes
☐ No