KURUMSAL RİSK YÖNETİMİ VE TÜRKİYE'DE ŞİRKET DEĞERİ ÜZERİNDEKİ ETKİSİ

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(Yüksek Lisans Tezi)

Eskişehir, 2016

ENTERPRISE RISK MANAGEMENT AND ITS EFFECT ON FIRM VALUE IN TURKEY

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YÜKSEK LİSANS TEZİ

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Eskişehir

Anadolu Üniversitesi Sosyal Bilimler Enstitüsü

August, 2016

JÜRİ VE ENSTİTÜ ONAYI

Muhammad FARHAN'ın "Enterprise Risk Management and its Effect on Firm Value in Turkey" başlıklı tezi **25 Ağustos 2016** tarihinde, aşağıdaki jüri tarafından Lisansüstü Eğitim Öğretim ve Sınav Yönetmeliğinin ilgili maddeleri uyarınca toplanan **İşletme (Uluslararası İşletmecilik)** Anabilim Dalında, **yüksek lisans tezi** olarak değerlendirilerek kabul edilmiştir.

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Öz

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Kurumsal Risk Yönetimi (KRY), riskleri şirket stratejisi bağlamında ele alan ve riskleri portföy bakış açısıyla iyi tanımlanmış risk sorumlulukları ve güçlü risk izleme süreçleri aracılığıyla yöneten bütünleşik bir risk yönetimi yaklaşımıdır. Bu çalışmanın amacı Borsa İstanbul'da kayıtlı 130 imalat şirketi için KRY'nin şirket değerine etkisini araştırmaktır. Bu nedenle, 2008-2013 dönemine ait toplanan finansal verilere panel veri regresyon modelleri uygulanmıştır. Bağımlı değişken şirket değerini temsil etmek üzere Tobin'in Q'su olarak ele alınmıştır. Bağımsız değişken ise KRY uygulaması olup kontrol değişkenleri şirket büyüklüğü, kaldıraç ve karlılıkla ilgili rasyolardır. KRY ile şirket değeri arasında ilişki olduğu hipotezi test edilmiştir. Bulgularımız, şirket değeri ile KRY arasında istatistiki olarak anlamlı bir ilişki olmadığını göstermektedir.

Şirketlerin KRY'yi nasıl uyguladıklarını araştırmak ve KRY'yi uygulamaktaki güdüleri, uygulama zorlukları ve KRY'nin benimsenmesinin etkileri vb. konularda bilgi almak amacıyla anket çalışması gerçekleştirilmiştir. Anketi yanıtlayan 29 şirketten 26'sı KRY uyguladıklarını belirtmiştir. KRY'ye geçilmesinin temel nedenleri arasında Yönetim Kurulu'nun talebi ve kurumsal yönetişim ilkelerine uyum ön plana çıkmaktadır. KRY uygulaması ile gözlemlenen değişimlere ilişkin olarak kurumsal yönetişim ilkelerine uyumun güçlendiği ve risk yönetiminden sorumlu alanların koordinasyonunun arttığının vurgulanmaktadır.KRY uygulamasında karşılaşılan sorunlar değişime direnç ve KRY'yi desteklemeyen örgüt yapısı ve kurum kültürü olarak ortaya çıkmıştır.

Anahtar Kelimeler: Kurumsal Riak Yönetimi, Kurumsal Risk Yöneticisi, Şirket değeri, Tobin'in Q'su

Abstract

ENTERPRISE RISK MANAGEMENT AND ITS EFFECT ON FIRM VALUE IN TURKEY

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Enterprise Risk Management (ERM) is an integrated risk management approach, which considers risks in the context of business strategy and manages them with a portfolio perspective through well defined risk responsibilities and strong risk monitoring processes. The purpose of this study is to examine the impact of ERM on firm value for 130 firms operating in the manufacturing industry and listed in Borsa Istanbul. To investigate the relationship between ERM and firm value. For this purpose, we utilized panel regression models on financial data collected in the period 2008-2013. The dependent variable is Tobin's Q, which is used as a proxy of firm value. The independent variable is ERM implementation, whereas the control variables are firm size, leverage ratios and profitability ratios. We tested the hypothesis that there is a relationship between ERM and firm value. Our findings suggest that there seems to be no statistically significant relationship between firm value and ERM.

We also employed a survey to explore how firms implement ERM and obtain information about motivation behind adoption of ERM, challenges of ERM implementation and effects of ERM adoption etc. 26 of 29 manufacturing companies, which responded the survey questions seems to be implementing ERM. The key driving forces for ERM adoption seem to be request of Board of Directors and compliance with corporate governance principles. The most important changes observed with the implementation of ERM are compliance with corporate governance principles and more coordination with different areas responsible for risk management. The most important

problems encountered in the implementation of ERM seem to be resistance to change and organizational structure or corporate culture discouraging ERM.

Key words: Enterprise Risk Management, Chief Risk Officer, Firm Value, Tobin's Q

Etik İlke ve Kurallara Uygunluk Beyannamesi

Bu tez çalışmasının bana ait, özgün bir çalışma olduğunu; çalışmamın hazırlık, veri toplama, analiz ve bilgilerin sunumunda bilimsel etik ilke ve kurallara uygun davrandığımı; bu çalışma kapsamında elde edilmeyen tüm veri ve bilgiler için kaynak gösterdiğimi ve bu kaynaklara kaynakçada yer verdiğimi; bu çalışmanın Anadolu Üniversitesi tarafından kullanılan bilimsel intihal tespit programıyla tarandığını ve hiçbir şekilde intihal içermediğini beyan ederim.

Her hangi bir zamanda, çalışmamla ilgili yaptığım bu beyana aykırı bir durumun saptanması durumunda, ortaya çıkacak tüm ahlaki ve hukuki sonuçlara razı olduğumu bildiririm.

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Önsöz

Tez çalışmam süresince, elinden gelen tüm yardımı, tavsiye ve yönlendirmeleri yapan, çalışmamın her aşamasında desteğini, bilgisini ve hoşgörüsünü esirgemeyen danışmanım Yrd. Doç. Dr. Özlem Sayılır'a, araştırma sürecindeki değerli katkıları için Kurumsal Risk Yönetimi Derneği Yönetim Kurulu Başkanı Bircan Akdemir'e, Marsh Risk Consulting Yöneticisi Hande Bilgisu'ya ve Ereğli Demir ve Çelik Fabrikaları T.A.Ş. Kurumsal Risk Yönetimi Müdürü Serdar Öngün'e teşekkür ederim. Eğitim hayatımın her aşamasında maddi ve manevi destekleyen Annem, Babam ve kardeşlerime en kalbi duygularımla sonsuz teşekkür ederim.

Muhammad Farhan

İçindekiler Sayfa

Şekiller Listesi **Sayfa**

Tablolar Listesi **Sayfa**

Kısaltmalar

AAA	American Accounting Association
AICPA	American Institute of Certified Public Accountants
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CI	Competitive Intelligence
CICA	Canadian Institute of Chartered Accountants
CPA	Certified Public Accountants
COSO	Committee of Sponsor of Organization
CRO	Chief Risk Officer
CSR	Corporate Social Responsibility
ERM	Enterprise Risk Management
FEI	Financial Executives International
GRC	Governance, Risk and Compliance Processes
IIA	The Institute of Internal Auditors
IMA	Institute of Management Accountants
LDA	Long-term debt to assets
RAROC	Risk-Adjusted Return on Capital
ROA	Return on Asset
ROE	Return on Equity
SAS	Statements on Auditing Standards
SDA	Short-term debt to assets
SOx	Sarbanes-Oxley Act of 2002

TRM	Traditional Risk Management
VaR	Value-at-Risk

1. Risk and Risk Managemet

21st century is an era of continuous change. People have been witnessing enormous transformations in all fields of social and economic life. Businesses strive to survive in this turbulent environment of continuous change. Some mega trends affecting all businesses are as follows (Lam, 2014):

- Globalization: process of international integration arising from the interchanging of world understandings, products, ideas and other aspects of cultural aspects;
- Technology: the new operational risks that are connected with technology related businesses;
- Changing structure of markets: privatization of firms, mergers and acquisitions, strategic alliances, outsourcing and re-engineering

Businesses are trying to survive and succeed in a world of uncertainties arising from these mega trends and they are exposed to a wide variety of risks in their operations. Good risk management is a vital part of business decision making strategies. Hence, risk management has become a significant field of research especially after the global financial crises of 2008.

The book written by Peter Bernstein explains the concept of risk as both threat and opportunity. The calculation and analysis process of past data can predict possible opportunities. Today risk management is a fascinating word, which can generate adverse results if we do not take it into consideration. Previously loss and benefit was a matter of fortune and most philosophers and theologians linked them to bad luck (or in business terminology we can say it risk) with the will of God. In earlier ages, Bernstein's book changed the perception of risk. He explained that loss can be changed in to opportunity with proper planning. He also explained that probability based projections of the event can change helplessness to choice (Fraser and Simkins, 2010).

Risk means different things to different people in different contexts. For example for the student it is the possibility of failing a course, for the miner the chance of an explosion, for the entrepreneur the chance of failure of business (Arthur, John, and J., 2011).

Institute of Internal Auditors explains risk as the vagueness of an event happening that could effect the accomplishment of the goals. Risk is measured in terms of consequences and probability (Hopkin and Institute of Risk Management, 2014).

Risk can be defined as probability of adverse event occurrence during a specific period of time or outcome from a specific challenge. Some researchers explain the term "detriment" related with risk as: the calculation of expected harm or loss linked with a hostile event. Risk and harm can be expressed in the form of cost in dollars, expected losses in current year or productivity losses. Companies use different analysis to find out expected risk, such as "cost-benefit analysis" or "risk-benefit analysis" (Adams, 1995).

1.1. Risk Concepts

In this section, some of the most widely used risk concepts, namely exposure, volatility, probability, severity, time horizon in this section are explained briefly.

Exposure

Exposure is known as the maximum volume of loss that will be expected in near future during event of occurrence. There is a relationship between risk and exposure. Keeping all other factors equal, risk connotation with a particular incident increases as exposure increases. For example, default of the borrower increases the risk for lender or we can say that it increases the exposure of the lender. The transactions with that borrower make the position of the lender more risky with respect to that borrower. (Lam, 2014).

The classification of risks as long, medium and short-term impact is a very useful means of analyzing the risk exposure of an organization. The risk exposure should be quantified, the appetite to take that level of risk should be confirmed, and the capacity of the organization to withstand any foreseeable adverse consequences should be clearly established (Hopkin and Institute of Risk Management, 2014).

Volatility

Volatility arises from unpredictability of possible outcomes. It is one of the well-known risk proxies of risk in different applications. It is a significant measure to analyze total risk in terms of possible losses. There is a general law: tasks with greater volatility have higher risk. Credit card business requires more intention to take care about potential losses, namely bad debt, as compared to real estate business. Like exposure, volatility can be quantified. For example, market risk can be calculated by using standard deviation of returns. Uncertain outcomes theory is successful when we consider other risks too. For example, production costs might increase due to rises in energy prices (Lam, 2014).

Probability

Probability can be defined the possibility that an event will occur. The higher the probability, the greater the risk. For a coin, two sides have equal probability. There is equal chance of tail as head, so they have probability of ½ or we can say that 50% probability. In business, certain activities require more attention, like interest rate movements or credit card defaults. They need to be planned and they require mitigation strategies due to high probability of occurrence. Risk management of these activities should be an integral part of the business's regular operations. Other less likely events also require attention like fire at a computer center and earthquake, since they may have devastating effects on businesses. Back-up facilities and contingency planning may decrease the probability of catastrophes (Lam, 2014). The word 'probability' is more often used in risk management literature to describe the likelihood of a risk occurring (Hopkin and Institute of Risk Management, 2014).

Severity

There is difference between severity and exposure. Exposure explains the likelihood of event occurrences whereas severity gives the estimation of damage that is actually likely to be suffered. The relationship between severity and risk is significantly positive. Thus, the higher the severity, the greater the risk. Probability and severity are partners. If we

have information about event occurrence and estimation of loss suffering, we have an appealing upright idea about the risk. Severity is a function of risk factors like volatility. For example price of stock is $100. The exposure is $100. There is a possibility of the stock price to go down to zero, but actually this is not going to happen, so severity is less than $100. More volatile stocks have more risk, so severity is grater and the position is more risky. (Lam, 2014).

Time horizon

Time horizon is the duration in which an event is expected to happen. Longer duration of an exposure contains higher risk. For example, there are more chances of borrower default in a 10-year loan as compared to a one- year loan. The time horizon tells us how challenging it is to inverse the effects of a decision. The key issue of financial risk exposure is the liquidity of positions which are affected by the decision or event. U.S. Treasury bonds are vastly liquid instruments, so in a short period of time positions can be reduced, while commodities like real estate, or unlisted equity require a longer period to sell off. For operational risks, time horizon is the duration required by the company to recover from an unexpected event. For example, fire in IT center of company will damage its whole data and make it un-operational during the time unless back-up facilities come online (Lam, 2014).

Expected loss

There is another very common method used by firms to anticipate the average rate of loss, which is expected loss. This is the risk which organizations predict to suffer on credit risk portfolio in near future. This is considered as a cost of doing business, and it is reflected on transaction pricing. The expected value of credit losses is equal to the product of the expected values of each of its components:

EL = Expected Loss = E (Loss)

= E (Exposure) × E (Default) × E (Severity)

E (Exposure) = Expected exposure at the time of the credit event.

Exposure has strong reliance on future random events occurrence and the type of transaction. In the loans agreement, exposure is generally the amount of loan, where transaction coverage to counterparty is involved. Organizations usually model the expected exposure. For example, companies develop simulation models to calculate the expected exposure for long-dated transitions like swaps or forwards.

E (Default) = Expected default frequency

(It reflects the underlying credit risks of the particular borrower or counterparty)

Companies can calculate or estimate the borrower or counterparty default rate through public debt ratings or by attuning the organization's own credit-grading scale. There is possibly two states of transaction; performing or default, so there is slight central ground between two states. There is also a possibility of default within an overall portfolio.

E (Severity) = Expected loss in the event of default

(It is a function of facility type, seniority, and collateral)

It is a function of competence type, priority, and indemnity. The severity is equal to total amount of loss which includes principle and interest rate, addition of administering the impaired amenities. It is defined as fraction of the coverage at the point of default. This data vary with the type of transaction, so in absence of public recovery data, companies should estimate it from the organization's recovery data. Major rating agencies are only able to provide data of publicly traded bonds. The sum of individual ELs is known as the EL of portfolio (J. Lam, 2014).

EL Portfolio = $\sum$ EL Transaction

Unexpected Loss

Unexpected loss (UL) requires more attention as compared to expected loss. It is clear from the name of expected loss that organizations expect these losses in the near future, but do not pledge any separate budget. On the bases of prediction, they consider future transactions will be according to the calculation. If you look at the other side, unexpected loss represents the picture of actual losses. In short, UL shows the volatility of losses at the expected level. UL helps safeguard viability of the firm by pushing the

firm to provide capital cushion if unexpected losses are considerably high (J. Lam, 2014).

Reserves and Economic Capital

Firms take prevention measure against default and allocate credit loss reserves to bear credit portfolio losses. For example, provisions of bad debt can be used to cover losses over the life of the loan portfolio. If we check out account treatment, reserve is an item of the balance sheet while provision and actual losses are items of the income statement (J. Lam, 2014).

1.2. Types of Risk

Risks which are most commonly faced with businesses can be classified as credit risk, market risk, Stock price risk, Market risk, Stock price risk Investment Risk, Hedging Risk, Secondary Risk, Operational and Insurable risk, People Risk, System Risk, Event Risk Catastrophic Failures, Business Risk, Culture Risk, Reputation Risks.

1.2.1. Credit risk

Credit risk is a risk that borrower or counterparty incompetent to fulfill the obligations (Hong Kong Institute of Bankers, 2012). Credit risk is compound of three things, whether it's on complex swaps or straightforward loan.

Loss = Exposure × Default × Severity

Organization bears credit loss as a result of default or downgrade of a borrower. It is actual economic loss to the company as a result of a credit event. Exposure is the amount company expected to receive from borrower on due period of time or time of maturity. If borrower will enable to pay in defined period of time, so there is possibility of loss. We can also say that amount at risk. Default is a random variable which is either (if the transaction is in default) one or zero in the perspective of single borrower or counterparty, but it may also characterize the inclusive default rate of a portfolio.

Severity defined the actual lost during event. It's the portion of total exposure. Debt covenants, downgrade provisions, netting and collateral arrangements reduces the severity amount (J. Lam, 2014).

1.2.1.1. Off-balance sheet credit risk

Large loan losses come to our mind when we think about credit risk. The association of last decade financial crisis with different sectors likes real estate. Less develops country, leverage buyout debt, Russian bonds, long term capital management; energy trading counterparties, had affected a lot. Mortgage backed securities and subprime loans like event in past give sense of credit risk management to investor (Hong Kong Institute of Bankers, 2012; Lam, 2014).

1.2.1.2. Credit risk of options

Call option offers holder the right to purchase an asset on the prearranged price without any obligation (Greiner, 2013). The seller has no credit risk exposure because the buyer has already paid option premium. Buyer has no obligation to fulfill. If the contract expires without practice, it is the best situation for the seller and no future payment is required (Saunders and Allen, 2002).

1.2.1.3. Credit risk of swaps

The agreement between two parties in which they exchange cash flows based on determined price is a swap (Greiner, 2013). It is challenging to anticipate the estimation of credit risk of derivative products. Every company has credit risk unless the payment is received before services are rendered. If a company has credit losses continuously, it will endanger the success of the corporation. Another credit risk is the counterparty risk, where the vender or strategic partner is unable to provide service due to credit burden. It may slow down the operations or become reason of company failure. Corporations need to build some benchmark to counter this problem. For example, executives should be aware of credit risk and they should specify the amount of credit losses or define some

limits. Corporations need to review their policies to reduce credit risk without losing customers. Corporation should develop systems to review accounts receivable status. One and the most important thing a company needs to do is to make strong legal contracts to protect itself against credit losses (Lam, 2014; Saunders and Allen, 2002).

1.2.2. Market risk

Market risk can be defined as fluctuations in financial market variables such as security prices, interest rates, foreign exchange rates etc. Thus, variation in these variables may raise firm risk by changing the value of portfolio; this is known as market risk (Dun and Bradstreet Corporation, 2007).

Three most common market risks are Asset/ liability mismatch, liquidity risk and trading risk. Trading risk is an interest risk, exchange rate, equity price and commodity price instability faced by trading and investment portfolio of company. Investment banks and dealers face these type of market risks more commonly. Trading risk is also faced by energy firms which are involved in market making activities and by non-financial corporations with trading book.

An interest rate sensitivity difference between assets and liabilities on the balance sheet leads to asset/Liability mismatch. This interest rate risk is generally less liquid as compared to trading risk and adjusted irregularly, although it is possible to be hedge and re-hedge it more frequently. Typical sectors which face this type of risk include retail banks, insurance companies, investment banks and retail banks.

If a company is unable to manage funds to fulfill its obligations, it is moving toward default. At this point, the company may face liquidity risk and tackle it by increasing liabilities or by transfiguring assets without incurring extra charges. Most firms are affected by this risk. These three risks can be subdivided into different individual forms, known as interest risk, foreign exchange risk, basis risk; equity risk and commodity risk (J. Lam, 2014).

Fluctuations in market price produce different risks; which corporations face in the form of interest rate risk, foreign exchange rate risk, commodity prices risk, equity price risk. Price fluctuation effects corporation position in three ways.

1. Transaction Exposures
2. Economic Exposure
3. Translation Exposure

In transaction exposures, revenues and expenses are affected due to the changes in market variables. In economic exposure, competitive position as well as purchasing behavior is affected due to changes in market prices. Thirdly, translation exposures arise where a company faces problem while merging its financial statements with the financial statements of the parent company.

1.2.2.1. Stock price risk

Stock price risk is one of the major risks faced by the publicly listed companies due to fluctuations in their own stock prices. A company's stock gains high market value when investors trust and invest in it. A company can use this stable and high stock price as strength to achieve strategic goals. For example, a company can develop its business through mergers and acquisitions. By contrast, drop of stock prices limit company's capital raising opportunities. This risk is specified for financial corporations, but non-financial corporations are also affected by stock price variations. For example, in 2000 Procter and Gamble declared 11 percent low earnings as compared to previous year. This announcement caused the value of Procter and Gamble stock to fall by 30 percent in one day and the company faced a loss of $$ 4.3 billion in market capitalization (J. Lam, 2014).

1.2.2.2. Investment risk

Most companies invest their available cash in fixed income securities, investment portfolios or venture funds, so variations in stock prices affect them. (J. Lam, 2014).

1.2.2.3. Hedging risk

Hedging is used to control the risk of fluctuation of prices in the market. For example, price variation in computer chips and cost of database width transportation affect the technology firms. Oil, gas and electricity prices affect the energy firms. Companies use hedging techniques to protect themselves from price fluctuations. These hedging strategies are quite risky and may increase company risk related to market. For example, in April 1994, "Gibson Greeting" announced that they faced a $20 million loss on hedging purpose derivatives trading. News of loss deteriorates the trust of investors on "Gibson Greeting" and they lost 40 percent of their share value in less than four months. (J. Lam, 2014).

1.2.3. Operational risk

Operational risk is a risk which occurs due to inefficient internal processes, derisory, people and systems or due to unexpected events. The risks face by financial institution other than market and credit risks are known as operational risk. Basel committee on banking supervision in 2001 explained operation risk as loss resulting from insufficient internal processes, people, and system or from external event (Hull, 2012). Operational risks include all types of risks related with operations, process and system including negative relations, poor hiring practices, skill labor, inadequate or faulty data and information security breaches. The main reason of operation risk is ineffective and inefficient processes. The processes which cannot achieve their objectives are known as ineffective processes. Inefficient processes are processes which can achieve their objectives against disproportionate expenditures (J. Lam, 2014). Types of operation risks also include fraud risk, non-delibrate incorrect information and disaster and personal risk (Allen, 2013).

Operational risk is critical because it may create enormous damage within the corporation. Failures of processes in which people are involved or technology failure is considered as operational risk. Different form of operational risk faced by nonfinancial corporations is as follows:

1. Product defectiveness

2. Failure of mergers and acquisitions
3. Research and development Risk
4. Reliance on faulty financed models
5. Tax laws and regulation compatibility

1.2.3.1. People risk

People risk is related to the human resources ineptitude, corporation culture which fails to provide risk awareness platform and restraints on staff. The main reasons of staff constraints are labor shortages and unattractive position due to unappealing compensation packages for new candidates. The main reason of incompetence is the lack of necessary skills required by employees to perform tasks. Training and development programs should be used to educate and skill people for appropriate positions (J. Lam, 2014).

1.2.3.2. Culture risk

Culture risk is a form of operational risk; in which a company implements an improper corporate culture. For example, IBM adopted the culture named "bureaucracy run amok" while other companies in the same sector establised flat hierarchies. They also did not follow the market trend and took the wrong decision to focus on manufacture of mainframe computers instead of personal computers. This decision affected the company badly and produced a loss of $5 billion just two years later (J. Lam, 2014).

1.2.3.3. System risk

Information Technology (IT) system is back bone of companies nowadays, so technology system risk is more common in most areas of business. System failures are the main reason of operational risk. Most of the companies use integrated systems across the firm to fulfill their business requirements. If the company's technological structure does not match with its requirements, there is chance of new risk and failure of system. There are a number of risks which can be faced by the system such as data

reliability, illegal access, system accessibility and business retrieval from different viruses (J. Lam, 2014).

1.2.4. Other risks

There are also other risks which may effect the organization, which include following risks.

1.2.4.1. Event risk

The occurrence of an unlikely event, which gives birth to somber consequences, is known as event risk. For example events include system failures, natural disasters, internal or external fraud and market dislocations. The prediction of event risk is difficult because it is often random, so only proper and effective planning can control or decrease their effects.

1.2.4.2. Catastrophic failures

Union carbide plant incident in “Bhopal India” is a common example of catastrophic failure, in which 3000 people were killed and tens of thousands got injured. The incident happened due to leakage of 5 tons of poisonous methyl isocyanate gas into air. Company bore a lawsuit of $470 million from India government. This incident damaged corporation reputation and became the reason of criminal proceeding against them. In 1989, Exxon’s oil tanker spilling of more than 10.8 million gallons of crude oil into the ocean is also an example of catastrophic failure (J. Lam, 2014).

1.2.4.3. Business risk

Adaptation of proper strategy is a key of success. It is very important that company should measure and manage business plan assumptions, competitor responses and technology. Besides developing proper strategy, the company should develop a proper mechanism of feedback. For example, “Olivetti” was one of the leading typewriter manufactures in 1980s. The corporation had firmly believed that typewriter usage will

never go old, so they did not focus on market innovations. Due to this strategy; the company lost its entire market share (J. Lam, 2014).

1.2.4.4. Reputation risks

It is observed that good market reputation of a firm affects its stock price in a positive way. The first thing investors observe while doing investment is market reputation of firm. The valuable asset structure of a corporation is the main reason of investor's interest and maybe the most precise measure of its assets is its reputation in the market. "Coca Cola" was the leading brand and its trademark value was estimated as $83.8 billion in 1999, which is nearly 60 percentage of the company's market value. The company lost market share when more than 100 people fell ill after consuming Coca Cola. A number of European governments imposed ban after this incident. It was the largest product recall in Coca Cola in its 113 year history. This recall costed the company US$ 60 million and the stock price fell 13 percent below its value in one month (J. Lam, 2014).

1.3. Risk Management and Hedging

Remuneration and harmonizing risk is known as risk management. It is about balancing art and science. Previously limited attention has been given to develop measureable risk management systems. If you look at any typical book about risk management, their main focus is only derivatives or risk measurement procedures. It is true that they help to decrease the overall risk faced by firms but it can be treacherous to give excessive focus on them. For example, let us look at one of the main risk management cases known as "Long term Management (LTCM)", a hedge fund established by Nobel Prize Winner Scholars. This case reminds the world that models are unable to predict scenarios of financial disasters due to unforeseen union of events. These events can by tackled through management experience and decree.

Risk management is a process of balancing processes and people. A company can survive with bad processes but it cannot survive with bad people, because employees are

the actors who take decisions about the risk profile of the company. The process of risk reporting and auditing delivers valuable checking to ensure whether people are performing their jobs adequately. To ensure the efficiency of these processes, companies should motivate people with the right culture and job incentives (J. Lam, 2014).

Risk management idea can only grow if workers have free will to make decisions. Risk management measures are mostly taken on the basis of numbers instead of focusing on experience. Organization prove incompetent to tackle the risks unless workers' suggestions are included in the process of designing risk management systems.

One of the most important things for an organization is to build a supportive and cognizant culture. This supportive and informative culture leads the organization towards success in the long term.

The main purpose of risk culture awareness is to confirm that all corporate decision makers apprehend and recognize the elements of culture which include

- The prominence of ascertaining risks in present and potential business activities.
- The significance of collaborating present and potential risks.
- The significance of tackle risk and reward into account in business decisions (Fraser and Simkins, 2010).

1.4. Profession of Risk Management

Risk professionals have more space as compared to the past because risk management scope now extends from silo approach to an ERM approach. Previously risk professionals were recognized with a title of auditor, market risk manager, actuary, credit analyst, asset/liability manager. These positions are similar in terms of education, program, training, certification, professional qualifications, terminologies, professional association and work practices, but their responsibilities are different from each other.

The scope of risk professionals are broad, so proficiency in purchasing insurance or estimating derivatives do not mean someone is risk professional. A professional risk manager should have complete knowledge of risk management systems and he/she may

become the head of a department like chief auditor or head of liability/asset management. Nevertheless, it is not necessary that he/she is also head of chief risk committee of the firm. Mostly, their only duty is to deal with their counterparts in the line units. However, since 1990's, risk management has been considered as the most professional discipline compared to other specializations. Most risk management professionals share a common set of competencies in accounting and law.

The question is: Why do they get more attention now as compared to ever before? The quick answer is that successful implementation of strategies against rapid changing business conditions influence companies. In this global world, companies have more pressure to act responsibly because there is no chance to act unwisely. Now, firms operating environment change recklessly due to IT innovations. This is a discipline which is in demand due to massive technology development, which changes the overall structure of businesses. These contributions make role of executive management more valuable and prominent. The contributions of CRO inspire the professionals to adopt the position of chief risk officer, who is responsible of all risk tasks within company. One of the most significant members of the executive committee is CRO, who is responsible of sudden cultural, innovational and environment change within enterprise (J. Lam, 2014).

It is not necessary that the profile of a professional designated for the post of CRO matches the profile of a traditional risk manager. The professional with a background of finance, math or accounting are more attractive candidates for this position. The expertise of a candidate required to solve real life problems in field of risk management are as follows; covariance analysis, quantitative methods, securities valuation and probability estimation.

The introduction of ERM trend in risk management enhances the role of risk manager. CRO role is a vast role as compared to risk manager, in which they are not only responsible of quantitative analysis, but also take part in strategic planning and development. If we want to define the CRO in word, he has now become a full business partner. Expectedly one day CRO position will become more attractive for risk professionals. "E-Risk" has organized an internet conference in September 2000. They asked a question for 175 professionals whether or not they desired to become a CRO. 70 percent of the professionals replied "yes" whereas only 30 percent said "no". The CRO

position provides risk professionals the opportunity to think in broad prospective and learn new skills so that they can add more value to the business. The reason of rapid rise in compensation packages is that companies now understand the value added by risk professionals.

According to the research, the compensation package for CROs has increased as compared to other designations Moreover; CRO offers the risk professional the opportunity to become more authoritative in the firm. According to the position of CRO, he authorizes directly reporting to the CEO or board of directors. For example, CROs of "Citigroup" and CROs of "Duke Energy" directly report to their CEOs. CROs are now powerful positions and they also take part in key business decisions of companies because they have key role in business.

Risk management career is more exciting and stimulating than ever before. In broader perspective, if organizations want to improve risk management standards, they should focus on other aspects rather than inspiring risk managers. If they really want to improve standards, they must disseminate the know-how of risk throughout the firm. Nowadays, employees understand staff work functions e.g. accounting or legal effects. Trading desk managers have information of tax and financial transactions. The company efforts to train employees helps increase the efficiency of processes (J. Lam, 2014).

Integration of all phases of risk management can be helpful to mitigate the possible consequences of risk. The position of CRO plays an important role to expand centralization and enlarge the prospects of risk management function. CRO works with his team mostly named as risk management committee (RMC) with proper mechanism and authority (J. C. Lam and Kawamoto, 1997).

In the organization structure usually the position of CRO directly reports to CEO or CFO, while some CROs directly report to the board of directors. CRO generally receives reporting from head of credit risk, market risk, operational risk, insurance and portfolio management. Under the supervision of the chief risk officer, head of departments are responsible to manage the following activities: formation of risk policy, capital management, analysis and reporting of risk and appointment of risk officers to business units.

The basic responsibility of CRO is to provide the leadership, vision and direction. Risk management integration system development is a function of CRO. He defines the management's risk appetite by precise risk margins. The management policy should include risk indicators fatalities, events, key risk revelation and early caution instruments. The function of CRO also includes capital allocation to business activities on foundation of risk threats, development of risk portfolio and risk transfer strategies. It is the responsibility of CRO to update risk profile and present it to the stakeholders such as the board of directors, regulators, stock analysts, rating agencies and business partners. To support the risk management program, it is CRO's obligation to develop analytical and date management systems. According to Lam, CRO should possess following skills: leadership, enthusiasm, stewardship to maintain the company reputation, technical skills in credit, market and operational risks, consulting skills to educate the senior management.

2. Enterprise Risk Management (ERM)

When risk management system is not executed flawlessly, there is a possibility of big losses. Risk models used before 2007 and 2008 proved to fail. 2008 crisis occurred due to weak regulations in capital markets and contagion risks. 2008 crisis strengthened the importance of risk management (Jorion, 2009).

Importance of ERM increased more especially after 2008 financial crisis. ERM has been adopted by an increasing number of firms and it is a supreme topic for business firms which seek to survive and succeed in the future global business environment. Most of the organizations have started adopting ERM programs, rating agencies have started to consider ERM approach in rating processes, universities have started to offer ERM courses and establish research centers (Hoyt and Lienberg, 2011).

The field of insurance was developed to cover a wide variety of risks, related to external and internal risks, covering natural catastrophes, accidents, human error, and even fraud. Financial risk has been controlled through hedge funds and other tools over the years, often by investment banks. In time, it was realized that many risks could be prevented or their impact reduced, through loss prevention and control systems. These finding led firms to a broader view of risk management. ERM seeks to provide the means to recognize and mitigate risks with a holistic approach.

(D'Arcy and Brogan, 2001) explain that ERM is not new form or subset of risk management; it is only management of all risks under one umbrella with a single approach. ERM provides the opportunity to risk manager to manage risks in a more appropriate vital scale. ERM approach enhances technics toward managing risk efficiently.

Most of the organizations previously used traditional risk management (TRM) systems or "silos" to prevent risk. These systems are not compatible because in TRM systems individuals are not held responsible from identification and assessment of risks, but instead they focus on discrete risks only, while in ERM systems risk is viewed in the context of business strategy, development of a portfolio of risks, focusing on critical

risks, well defined risk responsibilities and strong risk monitoring processes (Banham and Basics, 2004).

ERM comes into an existence when both traditional risk manager and financial risk manager starts reporting to chief risk officer with different methods and terminology. Overlapping reports create the necessity of new approach that is later called Enterprise Risk Management, which integrates separate approaches and builds a common framework to identify risks (Jorion, 2009).

2.1. Definition of ERM

> "Enterprise risk management is a process, affected by an entity's board of directors, management and other personnel, applied in a strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives" (R. R. Moeller, 2011).

The definition proposed by International Organization of Standardization (ISO 31000):

> "Risk is the "effect of uncertainty on objectives" and risk management refers to "coordinated activities to direct and control an organization with regard to risk" (Lam, 2014) .

COSO and ISO provide comprehensive description of ERM. They explain that ERM should be a value adding function, which provides complete integration framework against risks to attain corporate objectives, reduce unforeseen earnings volatility, and maximize firm value.

There is no standard definition for ERM, which is creating confusion among companies planning to introduce an ERM system in the firm. The same ERM definition is not valid for every organization, so organizations should implement an ERM definition and framework that best fits to their business scope (J. Lam, 2014).

The dictionary definition of process is a static procedure and only a certain person has the authority to execute it, but when we talk about ERM process, it tends to be a more

flexible arrangement. An organization may show flexibility to the good credit customer who faces term problems. ERM consists of a series of steps which evaluate the execution process based on a wide range of factors throughout the enterprise.

ERM is not a set of rules. It is practiced by corporate people. It is people's concern to manage risks, which are related to their operation systems. They need to understand the various factors adjacent to risk including their repercussions.

Different future actions require a vast range of strategies or alternative set of strategies. Due to continuous innovation, companies require different changes within processes and management operations. Proper and effective ERM structure within the organization plays a major role in establishing alternative strategies. ERM provides a portfolio type approach that consists of a mixture of high and low- risk activities. This mixture should be applied across the entire enterprise.

The concept of risk appetite determines the intensity and level of risk that a company can bear. Categorization of risk appetite in high, medium and low is conceivable. All organizations endure some level of risk according to their attitude toward risk and opportunity. Similarly, an aggressive investor will accept risky ventures against high returns, while other investors will prefer low risk ventures. Enterprises should have system to manage risks according to their risk appetite.

ERM provides an effective approach towards risk management, but it cannot provide any confident security of its outcome. Pre-planning can only decrease the intensity of loss. However there is the possibility of human errors, unexpected actions or even natural disasters. Southeast Pacific Tsunami in December 2004 is an unexpected event. ERM provides solitary reasonable assurance not absolute assurance.

ERM should be designed in a manner to help the organization to attain its objectives. Overall ERM program provides assistance regarding the operations' compliance with laws and regulations and delivers reliable financial reporting to all stakeholders.

ERM is a more sophisticated and upgraded version of risk management to observe the entire risk portfolio. As compared to other specific risk management approaches like stovepipe or silo, ERM provides a better established risk management approach. William Spinard, senior vice president in the Washington, D.C., office of "Marsh Inc."

explains that CPAs (Certified Public Accountants) care about ERM because it directly affects their jobs.

ERM establishes hierarchy with separate risk managers typically reporting to a central figure using dash board technology. According to Cozzarelli, risk is not necessarily bad. Proper analysis and planning can give you opportunity to invest capital efficiently. You can also better understand the pros and cons of risk. “Marsh Inc.” developed a risk identification questionnaire to 250 battle product- line managers and research support staff stimulating their perspective on risk. They identified 10 risks after several workshops, assessments and surveys through anonymous voting techniques. “Marsh Inc.” also drew a new draft of risk management structure governed by an executive risk management group. Cozzarelli said that “Risk management is not a separate work, it is implanted in every one’s job description (Banham and Basics, 2004).

2.2. Benefits of ERM

To raise the business case for ERM practice, it is important to confide the expected benefits and how it can be helpful to create value for a business. There are three major benefits of ERM (Lam, 2014):

- enhanced organizational effectiveness,
- better risk assessment and reporting,
- and improved business performance

Organizational effectiveness

Most companies already have risk management and supporting oversight functions, such as insurance and audit. In addition, there may be expertise in risk units: for example, investment banks always have market risk management units, while energy firms have always commodity risk managers. The appointment of a CRO and the formation of an enterprise risk function creates the top to down coordination needed to make these different functions work efficiently. An integrated team can better identify not only individual risks of the company, but also connections between these risks (Lam, 2014).

Risk reporting

As previously noticed, one of the important requirements of risk management is that it should produce well-timed and relevant risk reporting for the senior management and board of directors. However, this is often not the case. In a silo framework, either no one takes responsibility for final risk reporting, or every risk-related unit provides inconsistent and sometimes disputed reports. An enterprise risk function can decide the level and content of risk reporting that has to be delivered to senior management and the board and develop an enterprise wide perspective on aggregate losses, policy exceptions, risk incidents, key exposures, and early warning indicators. This might take the form of a risk dashboard that provides timely and concise information on the company's main risks. Obviously, this goes beyond the senior level; the goal of ERM reporting is by to increase risk transparency in the overall organization.

Business performance

Business Companies that use an ERM approach have seen solid progresses in business performance. ERM supports key management decisions such as capital allocation, product development and pricing, and mergers and acquisitions. This leads to advances such as, less fluctuations in earnings, improvements in profitability and enhanced shareholder value. These improvements arise from taking a portfolio view of all risks; managing the links between risk, capital, and profitability; and justifying the company's risk transfer methods. As a result, companies can reduce their risks and also exploit opportunities. Firms that understand the true risk/return economics of a business can assume more profitable risks that the company can benefit from.

For individual companies, the benefits of ERM depend upon their specific business challenges, investments, expertise and systems competence and implementation abilities. However, it may be useful to analyze industry surveys and empirical studies that express how good governance and ERM implementation are applied with improved performance and shareholder's returns.

In 2002, McKinsey and Company conducted a cross-industry, global survey to about 200 institutional investors, which showed that due to poor structure of governance 60 percent of investors might quit investing. Almost one-third of the survey participants also stated that they would even avoid an entire country that has poor standards of

governance. In fact, investors are ready to pay more for well-governed firms. McKinsey surveys stated that the average premium was around 12 to 14 percent in the United States, around 20 to 25 percent in Asia and Latin America, and 30 percent in Europe and African countries. (Lam, 2014).

ERM is about integration, which necessitates a well-controlled risk management unit reporting to the CEO, the board in support of their firm and board-level risk oversight responsibilities. An increasing number of companies now have a Chief Risk Officer (CRO) who is responsible for watching all types of risks within the organization. Second, the integration of risk transfer strategies is also required by enterprise risk management. Under the silo approach, risk transfer strategies are conducted at an individual level. Third, enterprise risk management needs also the integration of risk management into the business approaches of a firm. Rather than defensive or control-oriented methods that are used to manage risk and earnings abilities, enterprise risk management optimizes business growth by supporting and influencing pricing, resource allocation, and other business decisions making areas. It is where risk management becomes an offensive approach for management. All this integration is not easy to create.

For most firms, the implementation of ERM needs years long initiative that requires continuing senior management funding and prolonged investments in human and technical resources. Obviously, the time and resources allocated to risk management is not very different for leading organizations. The most important difference is: leading organizations make investments in risk management and are active, optimizing their risks. Lagging organizations, on the other hand, make continuous investments and are reactive, having one crisis after another. The investments of the main leader companies in risk management are more than offset by improved abilities and reduced losses.

Despite all these benefits, many companies would amuse at the profile of a well blown ERM initiative was it is not for the existence of strong internal and external values pressures. In this business environment, managers are often takes into action after a near miss either averted within their own firm or an actual crisis at a similar firm. In result, the board and senior executives are likely to question the effects of the environment and the adequacy of risk reporting in their company. To put it another way, they will start to

question how well they know the firm's major risk. Such events are also often followed by critical assessments from auditors and regulators both groups which are concerned with the effectiveness of risk management. Finally, managers focus on all outcomes of risk during analyzing, setting risk-based capital and requirements, and making reinforced key roles for the executives and senior management in the risk management methods. This often leads to the emergence of risk management experts among the senior executives who will sponsor a major program to establish an enterprise risk management approach. As noticed above, this risk champion is increasingly becoming a formalized senior management position the chief risk officer, or CRO. Aside from this, direct pressure also comes from influential beneficiaries such as shareholders, employees, ratings agencies, and analyzing experts. Not only do such shareholders expect more capital abilities, management has lesser reasons today for not issuing it. For past few years, ability based profiles such as value-at-risk (VaR) and risk-adjusted return on capital (RAROC) has been imposed to control all types of market risk within a firm; their benefit is now spreading as credit risk, and even to management risk. The increased availability and liquidity of others risk transfer products such as credit derivatives bonds also means that firms are no longer stuck with many of the risks they had no choice but to on hold. Overall, the availability of such methods makes it more complex and less chance of acceptance for firms to go on with more primitive and less efficient alternatives. Management risk is management's job (Lam, 2014).

2.3. Key Components of ERM

There are some organizational aspects which make ERM different from traditional risk management approaches. Firstly; ERM suggests having a formal report which is submitted to board level at least annually on the current state of, and effectiveness of the risk management program. In ERM, there is also a senior level position usually called "Chief Risk Officer" (CRO), who has the highest responsibility for overseeing the centralized risk management function and who is independent of risk taking activities and decisions.

CRO assumes ownership of the risk management program and reports directly to the top of the organization. Moreover, a board level committee with pure responsibility for risk management oversight is another key element in the ERM process. Furthermore, ERM has a formal written risk management philosophy (policy), which refers to a set of shared beliefs and attitudes characterizing how the firm considers risk in everything it does and describes responsibility of management and board. A formal written statement of the firm's risk appetite, which is the amount of risk specified at board level that the firm is willing to accept in pursuit of value, is also considered to be essential in ERM implementation. A centralized department or staff function dedicated to risk management is another component of ERM. ERM also suggests allocating risk owners who have primary responsibility and accountability for managing risk within their respective areas. Lastly, a centralized technology-enabled process to obtain risk-related information has importance in an ERM process (COSO - Executive Summary, 2004).

2.4. Key Steps of ERM

ERM is a frequentative and disciplined process that can take many forms and designations. It typically includes these key steps: clarifying strategies and objectives, identifying risks, assessing risks, acting upon those assessments, and monitoring risks. At the outset in ERM implementation, it is critical to the success of the initiative that C-level (CEO, CFO, chief audit executive) support is unwavering. Without that level of commitment, a project as important and overarching as ERM will not obtain the needed support and resources, or even survive (J. Fraser and Simkins, 2010).

2.4.1. Clarifying strategies and objectives

Firms must be clear on their road map of strategies and related objectives before they assess their risks. These can be the firm’s strategic goals if ERM is being implemented to the firm as a whole. Alternatively, they can be a department’s objectives or the objectives for a new project if ERM is being applied at those levels. For example, an energy company can use ERM to identify and manage risks around a new e-business

initiative, as well as to identify and manage risks of the entire organization (Walker, Shenkir, and Barton 2002, 63). Without this initial focus on strategy and goals, managers have no way of knowing how their daily efforts and risk management processes relate to the firm's goals. They would also have no way of knowing if they are managing the relevant risks. One of the early lessons companies gather from ERM is that many layers of the company including senior management, operating managers, and regular employees do not know or understand the strategies and objectives of the organization and how these, in turn, relate to their daily job and tasks. ERM compels companies to identify and focus on the organization's strategies and objectives. Indeed, some companies have had to call a temporary halt in the ERM implementation process and spend time clarifying and estimating the strategies and goals with their sub firms before they proceed to the next step. Enterprises like retail businesses can start ERM process with a focus on vision, strategy, and objectives (Barton, Shenkir, and Walker, 2002).

In the typical ERM process, risks are defined broadly to include any event or action that will create hurdles for a firm to achieve its goals and objectives. ERM can strengthen the core concerns of everyone involved, and ultimately generate an attention on the risks surrounding those core concerns. To understand the priorities and the risks is essential to generate value for the shareholders and to manage the company effectively. As one general auditor who served as the ERM process owner, noted: "An organization can't reduce its way to become great, it must grow and one of the keys to successful growth is excellence to risk management" (Barton et al., 2002).

2.4.2. Identifying risks

Companies assess their risks by using a plenty of different methods. In studying how firms have approached risk assessment, it is obvious that one approach cannot fit for all organizations. Some of risk identification techniques are given as below:

Internal interviewing and discussion:

- Interviews
- Questionnaires and surveys

- Brainstorming
- Self-assessment
- SWOT analysis (strengths, weaknesses, opportunities, and threats)

External sources:

- Comparison with other firms
- Discussion
- Goals
- Risk consultants

Tools, diagnostics and processes:

- Checklists
- Flowcharts
- Analysis of scenarios
- Analysis of value chain
- Business process analysis
- Systems engineering
- Mapping of system

2.4.3. Assessing risks

The next step of the ERM process approach is to assess risk. Some firms believe it is a compulsory step to validate numerically the effect of a risk on the firm using a traditional metric. Many firms set their assessments on risk maps because this way they can summarize all important risks in one display. Risk road maps embody the 80/20 rule in that 80% of risk management focuses on 20% of the total risks. The maps allow others such as senior executives' members and board members to check the assessed risks and related rankings, thus enable them to focus on key risks management issues (J. Fraser and Simkins, 2010).

2.4.4. Acting on the risks

Once the risks environment the firm's goals are identified and assessed the next step is to differentiate the risks and then take actions on the risks accordingly. Possible actions related to the risk include accepting the risks, avoiding, assessing, eradicating and sharing the risk (J. Fraser and Simkins, 2010).

2.4.5. Monitoring risks

Once the approach of process and actions are undertaken; the next step includes monitoring the risks. Monitoring includes communication both upstream and downstream and across the organization. Monitoring also includes periodic reporting and follow up of risks at all levels of management through approved authorities like risk committees, and internal auditors. (J. Fraser and Simkins, 2010)

2.5. Implementation of ERM

Some factors seem to play very important role for the implementation of ERM, including factors such as appointment of a CRO, leverage, profitability, international diversification, majority shareholders, size and turnover (Yazid, Razali, and Hussin, 2011).

There are as many as three major financial applications of risk management. The first is minimizing the downside, the second is managing the uncertainty, and the third is performance optimization. The combination of all these is enterprise risk assessment and management. This order is both the order in which the implementations were developed experimentally, and also the order in which a specific institution will typically develop its risk assessment abilities (Lam, 2014).

2.5.1. ERM implementation stages

ERM can be implemented in three stages:

1. Minimizing the downside

2. Managing the uncertainty
3. Performance optimization

Below are the details of each stage.

2.5.1.1. Stage I: Minimizing the downside

The first level in risk management, which was developed during the 1970s and 1980s, focuses on reduction of risks. Risk management procedure mainly involves establishing credit checks and controls, investment policies, audit processes, and insurance coverage. The main goal of these defensive risk management practices is minimizing losses.

For example, credit risk management was developed to reduce the chances of default and to increase recovery in the case of default, through credit approval and recovery of debt. Market risk management practices were organized to reduce potential portfolio loss and liquidity crises. Portfolio risk was reduced through traditional investment policies, favoring the government bonds and high quality corporate bonds. Operational risk management focused on reducing the probability and potential harms of operational risks with audits to ensure that operations were accomplished according to appropriate procedures. Insurance is the main means of risk transfer (Lam, 2014).

2.5.1.2. Stage II: Managing the uncertainty

The second level of risk management which originates in the 1990s focuses on managing volatility within business and financial results. Over the past decades, many other new sources of volatility have emerged and their effects on traditional sources of volatility have become more significant. The 1970s saw a shift from a fixed to a floating exchange rates, along with surging oil prices; the 1980s, double-digit inflation, interest rate, and lending crises. The trend goes on into the 1990s with derivative losses, volatile equity markets, and the rapid contagion of turmoil between markets. Finally, the turn of the century brought about the Internet bubble and crash of economic system.

At the same time, investors in the market have shown lesser tolerance for fluctuations in earnings. As companies came across the challenges of increased volatility, risk

management implementations revolved to help management foresee future losses and mitigate volatility.

Credit scoring and migration models helped credit risk managers to create more accurate estimates of the chances of default when reviewing the credit transactions. This permitted more accurate prediction of losses and reduction in earnings volatility. Important advances were made in the assessments of financial market risks. Advanced simulation models estimated potential changes in earnings and market value, while techniques such as value-at-risk and economic capital were developed. The value of operational risk management was appreciated suddenly during this period of time. Disasters such as Kidder Peabody, the Exxon Valdez oil spill, and the 1990 Perrier benzene-contamination scare made crisis prevention and management more prominent. Moreover, several industry studies namely the Treadway report (1991) in the U.S.A, the Dey Report (1994) in Canada, and the Turnbull report (1999) in the UK highlighted the importance of effective corporate governance.

As risk managers mainly focused on their ability to manage volatility, risk transfer products gained popularity. However, derivatives can cause significant risks if used improperly; in particular, derivatives such as swaps are often widely levered transactions that are highly vulnerable to market movements. Highly publicized disasters such as Barings, Metal Gesellshaft, and Bankers Trust persuaded many people that derivatives were themselves a danger to economic stability. However, most of the failures stemmed from incompetence of management and processes.

One of the most significant developments was the integration of different risk management silos. This reflected the development of joint internal risk models e.g., the integration of market and credit risk when assessing default risk (Lam, 2014).

2.5.1.3. Stage III: Performance optimization

The integrated view of risk made the risk/return profile of a firm clear, which stimulated the use of risk management as a device for performance optimization. The partial integration of similar risks in Stage II ensures complete integration of silo risk

management functions within the organization and the rationalization of risk control and transfer strategies (Lam, 2014).

2.5.2. COSO framework

The COSO ERM framework at first glance looks very similar to COSO internal controls. The COSO ERM framework is shown in the following picture as a three–dimensional cube:

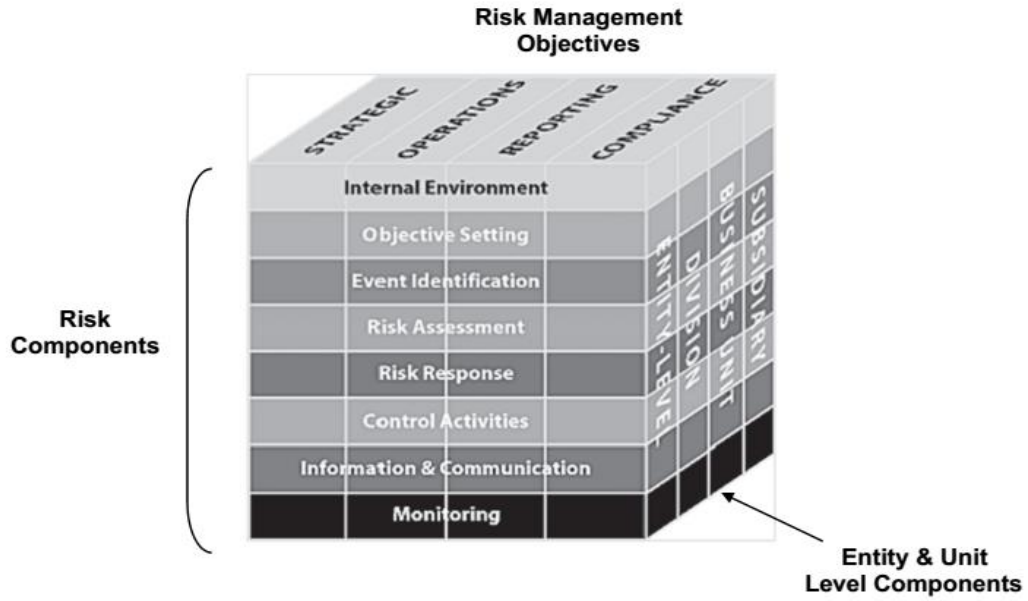


Figure 1. *COSO ERM Components*

Source: Moeller, 2011

Four vertical columns represent the strategic objectives of enterprise risk management while eight horizontal rows show the risk components. Multiple levels of the firm, from a ‘‘headquarters’’ entity level to individually subsidiaries from the third dimension of the cube. Depending on the firm, there can be many ‘‘slices’’ of the model.

The concept behind the ERM framework is providing a model for enterprises to consider and understand their risk-related activities at all enterprise levels as well as their impacts on each other (R. R. Moeller, 2011).

2.5.3. COSO ERM components

Following are the COSO ERM components. Components described as important element to describe the overall picture of practices require by firms to implement ERM.

2.5.3.1. Internal environment

The internal environment is at the top of the contents in the COSO ERM framework. This is in contrast to the control placed at the lowest level for the COSO internal control framework. Hence, it should be considered similar to the ERM control environment as the foundation for all other firm management contents. This level elaborates the basis for all other contents in an organization's ERM model, affecting how strategies and goals should be defined, how risk-related financial activities should be well structured, and how risks are identified and should be acted upon. While the environment for COSO internal controls mainly focus on practices in place, such as human resources policies and approaches, ERM takes the same cases and views them in a more appropriate oriented approach.

The ERM internal foundation contents depend on the following components:

Risk management philosophy

This is a shared attitude that will differentiate how the firm considers risk in everything it does. While most often not just the type of report published in a code of conduct, a risk management philosophy is the type of attitude that will allow experts and others at all levels to respond to high-risk proposals with an solution along the lines of, ''No, that's not the kind of venture our firm will be interested in.'' Obviously, a firm with a different understanding might respond to this same proposal with an answer along the lines of, ''Sounds interesting. What is the expected rate of return?'' Either response is wrong, but a firm should try to come up with a continuous philosophy and attitude to how it takes risky ventures (R. R. Moeller, 2011).

Risk appetite

Risk appetite is the risk a firm's willingness to take risks in the pursuit of its goals. This appetite for risk can be calculated in quantitative or qualitative manners, but all

approaches of management should have a common understanding of this concept as well as the firm's overall risk appetite. (R. R. Moeller, 2011).

Board of directors' attitudes

The board of directors has a vital role in the supervision a firm's risk environment. Independent, outside directors, in particular, should closely appraise management actions, ask proper questions, and act as a check and balance for the firm. When a senior enterprise authority has an ''it can't be done here'' attitude when considering the possibilities of risk environment, members of the board are more often the appropriate people to ask the difficult questions about how the firm would respond to a "can't happen" case that does happen (R. R. Moeller, 2011).

Integrity and ethical values

This ERM internal environment component requires more than a published code of conduct and includes strong integrity and standards of attitude for the firm. There should be a strong corporation culture that may guide the firms at all stages in risk-based decision making. Although it was years ago from now, the Johnson and Johnson Tylenol crisis of the 1990s is still considered a good example of the importance of strong corporate and ethical values to provide direction to help manage risks. Johnson and Johnson, a major medical products provider, introduced a popular over-the-counter painkiller medicine named as Tylenol1. Those days, such medicines were sold in market counters in screw-top bottles. Someone in the Chicago area checked a few of these store-shelves Tylenol bottles, their contents with cyanide poison, and changed the bottles on the store shelves. Several people who bought this tainted Tylenol consequently died from cyanide poisoning, and an investigation quickly started to Johnson and Johnson and the poison-contained Tylenol. This whole case put Johnson and Johnson under significance pressure. The enterprise knew that it had significantly strong quality control procedures in place that would eradicate such poison contamination ingredients to occur within their manufacturing facilities. They also knew that these poison contaminated products had been found only in the Chicago area although Tylenol was found on store shelves everywhere in the world. A whole product recall would be extremely dangerous economically to business. However, Johnson and Johnson did not go through a long series of investigations but did the right thing instead.

They recalled all of the Tylenol from stores worldwide and consequently released it in newly designed sealed bottles. When they were asked why they were able to make an expensive recall decision so immediately with no believable evidence that they were all contaminated, the firm stated that delayed decision may not be a wise thing to do when the human lives are at stake. The Johnson and Johnson Credo, their ethical and social values statement, made them take this decision. That Credo stated very strongly that our first responsibility is to supply high quality products to our customers and partners. At the time of the Tylenol crisis, everyone at Johnson and Johnson thought this Credo was posted widely in enterprise facilities and they were no such in need for a decision like that. This all unfortunate matter really highlighted the importance of a level of ethical values for an enterprise. As a strong corporate representative stated, a very important component of a firm is its integrity and ethical values as well as the written codes of conduct. Although most firms do not face a crisis on this level of Johnson and Johnson's tainted Tylenol, a stronger decision of this sort might have helped other firms to better avoid the scandals around the start of this century that led to still remembered conditions at Enron, WorldCom, and others, as well as the Sarbanes-Oxley Act (SOx). This area should be a compulsory element in every ERM framework (R. R. Moeller, 2011).

Commitment to competence

Competence refers to the expertise and skills necessary to carry out assigned tasks. Management makes decisions how these complex assigned goals will be completed through developing appropriate strategies and approaches, assigning expert people to carry out these often strategic tasks. All firms may not have this level of commitment. Senior management makes sound plans to reach company goals, but often will not make efforts to secure attainment of these goals. The stock market more often punishes such efforts and activities. With a good commitment to competence standards, managers at executive levels will take decisions to achieve their promised and committed goals (R. R. Moeller, 2011).

Organizational structure

Every firm develops a firm structure that will meet its needs. The organizational structure should have a clear line of authorities and responsibilities along with the appropriate lines of reporting. A poorly constructed firm structure makes it more

complex to plan, execute, control, and monitor these activities. There may be cases where a firm‘s structure does not allow appropriate lines of communication. E.g., before SOx, many internal audit groups reported to their board of director’s audit committees only on paper but limited daily communications beyond periodic audit committee meetings. Although SOx has changed this situation these days, those past environments where the audit teams had only limited communications with internal audit function represented a strong failure in organizational structure. This condition has been eliminated through the SOx; however there may always be cases where modifications in the organizational structure are required to apply ERM successfully (R. R. Moeller, 2011).

Assignments of authority and responsibility

The assignment of expertise refers to the extent or level to which authorities and responsibilities are assigned in an enterprise. The trend in many firms today is to allocate managerial authority down the firm’s structure, giving employees more empowerment. A relative trend has been to ‘‘flatten’’ firms by eliminating middle management levels. These firm structures usually encourage employees to be more creative and lead to faster responding times, and of course better customer satisfaction. All employees should well recognize how their decisions and actions are related to and contribute to the overall goals of the firm. A good code of conduct is the key component here and it should be disseminated to the stakeholders of the firm. Management should ensure that people read, understand and agree to conform to it (R. R. Moeller, 2011).

Human resource standards

Practices regarding employee hiring, training, compensation, promotions, discipline, and all other decisions inform members of the firm about what is preferred, allowed, or prohibited. If management overlooks some vague areas instead of taking a solid attitude then this message is quickly disseminated in the firm. A solid set of standards is required to be communicated and applied to all stakeholders and authorities. The early referenced COSO ERM roadmap materials have many other cases and examples of the necessary elements to build a comparatively strong internal environment. These materials comprise standards and procedures that a firm should apply to accept and manage different levels of risks as well as good business practices. Regardless of the

risk appetite of the firm, these standards and procedures are necessary to manage these risks. E.g., the firm can give its sales personnel authority to complete transactions without management supervision, however they should be aware of the legal, ethical, and management policy limits of their actions. Corrective actions should be determined and communicated in the firm in case employees break the limits of these free-hand practices.

2.5.3.2. Objective setting

The objective setting elements of COSO ERM provide some compulsory conditions that must be completed before management can pose an effective risk management process. In order to manage risks at all different levels; a firm needs to set its goals and define its strategic objectives related to its operations, reporting, and compliance activities. High-level strategic goals of the firm should be in conformity with the firm's mission and vision. A mission statement is the key component in the strategic planning of the business firm that creates an overall, well organized statement of purpose. It can be used to cultivate more precise functional strategies.

Starting with an overall mission, the approach is to (1) establish strategic goals to support fulfillment of that mission, (2) develop a strategy to meet goals, (3) define any related goals, and (4) define risk appetites (R. R. Moeller, 2011)

2.5.3.3. Event identification

Events are external or internal incidents that affect the implementation of the ERM strategy or attainment of its objectives. Although people tend to think such cases as negative events, they could be positive, negative, or both. In many firms, performance is scrutinized closely, but monitoring procedures tends to focus on matters such as costs, budget, and quality assurances. However, ERM risk objectives could be ignored in the process of monitoring process-oriented operational objectives. Although firms monitor favorable and particularly unfavorable budget discrepancies, they usually fail to monitor the actual cases or the factors behind those discrepancies (R. R. Moeller, 2011).

2.5.3.4. Risk assessment

Internal environment elements are considered the foundation of the COSO ERM framework. On the other hand, risk assessment is the most important element of framework. Risk assessment enables the firm to evaluate the effects of potential risk-related cases. These risks should be measured from two viewpoints: the likelihood of the risk and its potential impact (R. R. Moeller, 2011).

2.5.3.5. Risk response

As the company detects risks, the next level is to define how to react to these different risks. It is the responsibility of the management to carry out a careful review of estimated risk probabilities and their potential effects. Costs and benefits should be evaluated to formulate proper risk response strategies.

A firm should check several risk objectives as well as the tolerance limits for these objectives. Then, it should assess both the probabilities and effects associated with the known risks to establish a set of risk responses, which may be the most complex stage in building an effective COSO ERM framework.

Risk Management should establish an overall response strategy for each one of its risks using a process built around one or more of the following four general strategies. Doing so, it must consider the costs vs. benefits of each potential risk responses and which one of these strategies better fits the firm's overall risk appetite. (R. R. Moeller, 2011).

Avoidance

Avoidance means walking away from the risk—such as selling a business unit that increases the risk of dropping a product line. However, firms often do not avoid risks before they actually happen. Only if a firm has a low appetite for risks, then it will walk away from future risks. Avoidance can be a costly strategy if investments are already made. An understanding of past mistakes can be helpful to avoid potential risks. If the firms had faced negative conditions in the past, they would have learnt their lesson and escaped from the risk. Yet, due to changes in management and short employment periods, the history is often lost or overlooked. A firm's appetite for risk is probably the

most significant concern to decide if risk avoidance approach is suitable (R. R. Moeller, 2011).

Reduction

A wide range of business decisions can help to eliminate certain risks. Product line diversification may diminish risk of dependency on one important product line. Apportioning an IT operations server center into geographically different locations can decrease the risks of catastrophes. (R. R. Moeller, 2011).

Sharing

Almost all firms share and hedge some of their risks by purchasing insurances and using other technics on a regular basis. For example, a firm can hedge against the risk of potential investment losses due to stock price fluctuations using call options. It can also be share business risks by establishing joint ventures. (R. R. Moeller, 2011).

Acceptance

In this approach, there is no action. For example, a firm can ‘‘self-insure’’ instead of purchasing an insurance policy. Essentially, a firm should assess the probability of a risk and its potential effect considering the risk appetite and then choose whether or not to undertake that risk. For some risks facing the firm, acceptance may be the accurate strategy to adopt.

2.5.3.6. Control activities

Control activities are described as rules and procedures which are used to ensure that required actions are taken against identified risks. The control activity component should be in conformity with the risk response component. Enterprise risk management should select those control activities which can guarantee risk responses are proficiently and timely implemented.

Risk monitoring can be implemented by the following steps (R. R. Moeller, 2011).

Step 1.Establish a strong understanding of the identified risks and develop control procedures to monitor or the risks.

Step 2.Establish testing procedures to determine if these risk-related control procedures are working effectively.

Step 3.Perform the tests of the control procedures to identify if the risk monitoring process tested is working both efficiently and as expected.

Step 4.Making adjustments and improvements to improve risk monitoring processes

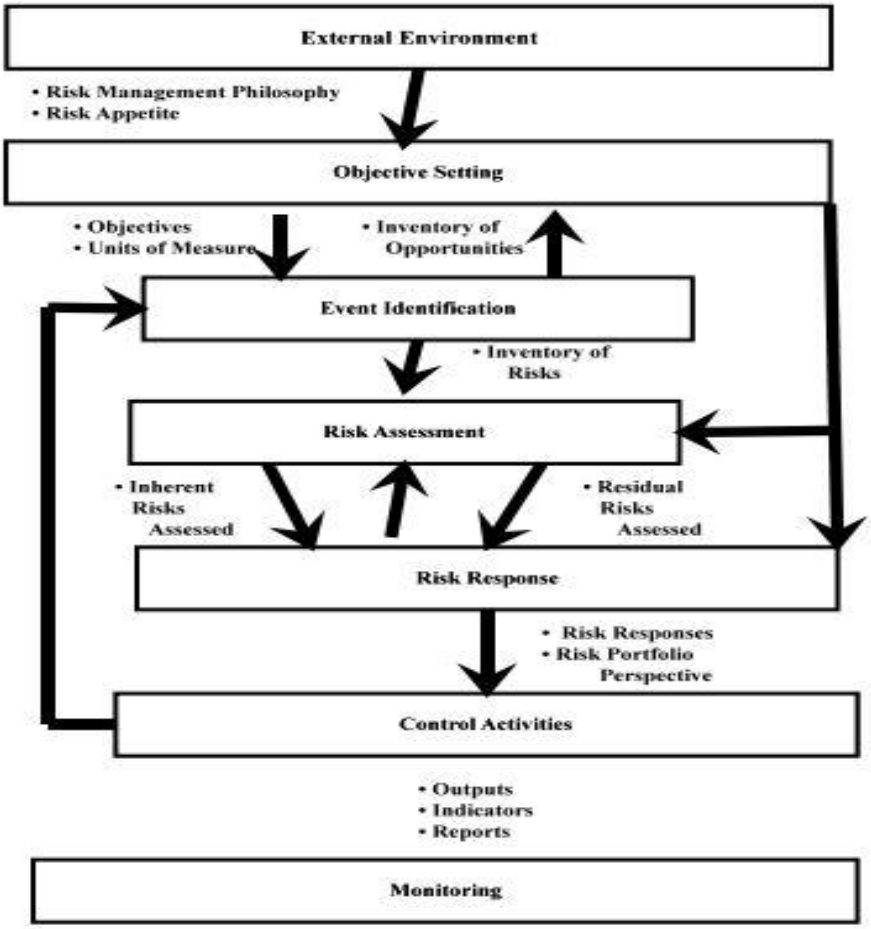
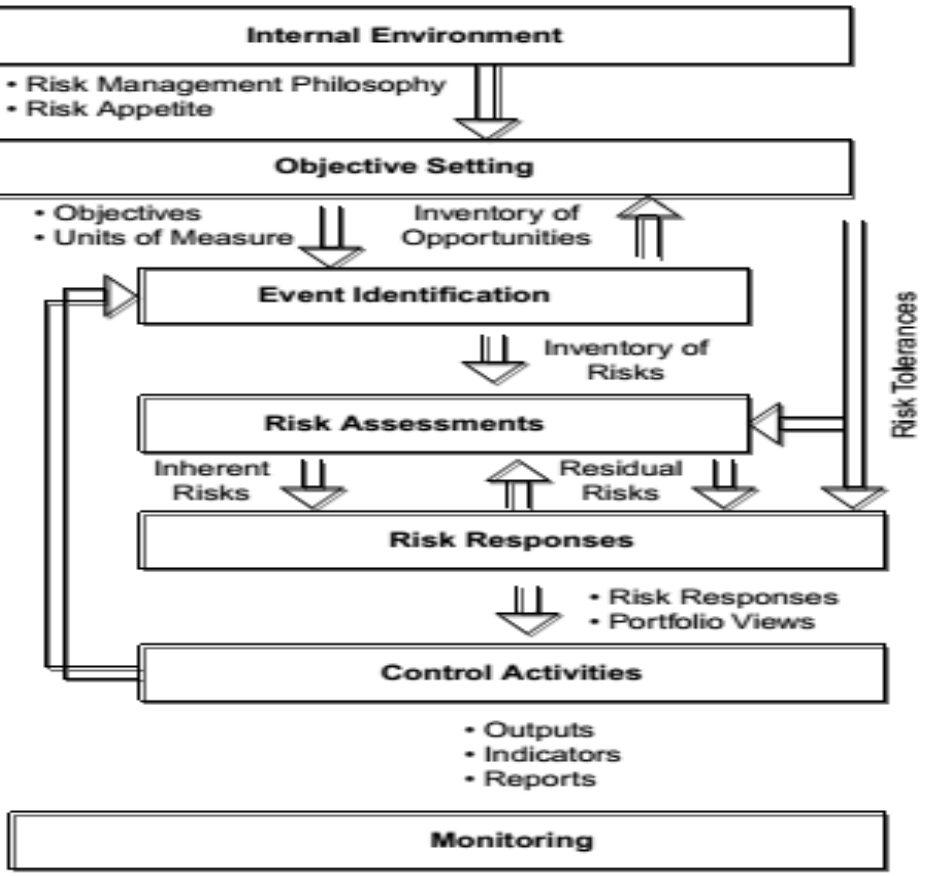


Figure 2. *COSO ERM Components*

Source: Moeller, 2011

2.5.3.7. Information and communication

The information and communication component of COSO ERM is the process which establishes the link between the other components. In the COSO ERM framework diagram below, it is defined as separate elements; however it rather can be considered as a set of tools and processes linking other COSO ERM components. For example, the risk response component receives residual and inherent risk inputs from the risk assessment component as well as risk tolerance support from the objective setting component. ERM risk response then delivers risk response and risk portfolio data to control activities as well as risk response feedback to the risk assessment component. Standing alone, the monitoring component does not have direct information connections, but has overall responsibility of revising these functions (R. R. Moeller, 2011).



Figer 3. *COSO ERM Components*

Source: Moeller, 2011

2.5.3.8. Monitoring

At the base of horizontal elements in the ERM framework models we see the monitoring elements, which are used to control that all elements of ERM work efficiently. People and supporting processes may change. ERM monitoring procedures should be established to ensure that ERM is working efficiently on a continuous basis. This can be accomplished by installing continuing monitoring processes or through a series of evaluations related with different aspects of the ERM process. Ongoing monitoring processes can be an effective method to identify violations in some of the overall ERM process.

In order to found an effective ERM framework, that monitoring should be extended to comprise ongoing review of the overall ERM process stretching from objectives to the ERM control activities. The COSO ERM Application Framework document provides the suggestions this monitoring could contain the following activities (R. R. Moeller, 2011):

- A strong management reporting mechanism such as cash position, unit sale, and other important financial and operational data. Reporting tools must be expanded to contain key ERM measures and reporting should be carried out at all levels of the firm.
- Periodic reporting procedures installed to specifically screen main aspects of established risk criteria, such as the expected error rate. Reporting must highlight statistical trends and comparisons with past data and industry data.
- Status of risk related findings and recommendations from internal and external audit reports.
- Updated risk related data from sources like industries trends and general economic news. They should be available to all managerial levels.

2.6. ERM and Strategic Management

Corporations can use ERM to achieve their strategic goals, as ERM guides companies in their path to recognize the most accurate plan toward their goals. Implementing

enterprise risk management system has become one of the main priorities of executive managers and directors especially after the shocking financial crisis in 2008. The biggest reason of the recent financial crisis is that risks allied with strategies were unnoticed or vainly managed. After the crisis, numerous firms focused on strategic risk management to improve the inclusive risk inaccuracy. The biggest challenge faced by firms to incorporate ERM and organization strategic planning is to ensure that the system is adding value. It is proved that the traditional risk management has no integration with strategic planning, so strategic risk may be ignored. This creates a big gap between strategy execution, risk management and it may lead to disaster. In ERM system, organizations have the opportunity to explicitly create a link between risk management and strategy execution process of the organization. This combined effect prevail the risk and strategy mindset within the organization (Fraser and Simkins, 2010).

2.6.1. Rising expectations for strategic risk management

The board of directors and senior executives can protect the firm against risks. The reason behind expectation shift was corporate scandals. In response of the crises different rules were introduced related to changes in corporate governance requirements, such as Sarbanes-Oxley Act of 2002 and in the revision of NYSE Corporate Governance Rules in 2004. After the crisis, debt- rating agencies such as Standard and Poor's Moody's and Fitch started to play an active role in the assessment of the firm wide risk management practices and rating firms according to a predefined rating system. These agencies monitor the overall strategic risk management processes and risk management culture (J. Fraser and Simkins, 2010).

After the 2008 crisis, most institutions drew attention to risk management processes which are run under the supervision of senior management. They also pointed out that overall risk management failed under the control of upper management, reliable sophisticated models get untrusted. Critics argue that some of strategic initiatives deliver great results, but management either do not understand risks or ignore them. Several demands are escalating after the crisis to place strategic initiatives as a top priority.

ERM is wide risk management processes which possess lot of complexities. Increasing demand for enterprise wide risk management makes it essential for firms to focus on

ERM, but it is not easy as defined by facts. Now businesses change sharply due to IT developments, globalization, outsourcing, market diversification and due to complexity of business transactions. Thus, risks are becoming more complex. It has become challenging for board and senior executives to constantly observe the sophisticated portfolio of risks. Due to the compounding and complex nature of risks, it is sometime difficult to see and manage them. However, many unseen risks have similar impacts. Management and board of directors are being held accountable for different risk scenarios and their impact on organization, even if they are very difficult to predict (Fraser and Simkins, 2010).

2.6.2. ERM positioned as value-adding

The difference between ERM approach and the traditional risk management (TRM) approach is integration and isolation. ERM manages risks in an integrated way, while TRM approach treats them as a "silo" or "stovepipe". The drawback of this approach is that business unit leaders with less understanding of risk try to manage risks. This drawback may affect the other risk phases of the organization comprising strategic risks. However, ERM strategically considers risk events with the goal of balancing the risk portfolio of the enterprise. ERM provides the platform to harmonize the goal of balancing enterprise's portfolio of risks with stakeholders' appetite for risk. The main objective is to increase the probability to appreciate and value the strategic objective in organization's overall procedures (Fraser and Simkins, 2010).

2.6.3. Strategic risk management processes

There are different approaches to structure a strategic risk management processes. Some of them are defined below.

2.6.3.1. Risk assessments

This is an approach to assess the strategic risk on a regular basis. Assessment is conducted under three perspectives:

1. Risk
2. Opportunities
3. Capabilities

When we think about risk, the first thing that comes to our mind is loss. This is the negative aspect of risk, like revenue losses, asset losses. Risk also has another aspect, namely opportunity, which is the positive aspect, such as revenue gain opportunities, shareholder value and profitability. The distinguishing asset of the firm is its capabilities, which the firm can use to manage risks and opportunities (Fraser and Simkins, 2010).

Different tools can be used to assess the strategic risk, such as:

- Brainstorming
- Analysis of loss data
- Self-assessments
- Facilitated workshops
- SWOT (strengths, weaknesses, opportunities, threats) analysis
- Risk questionnaires
- Surveys
- Scenario analysis

The most valuable part of strategic risk management is competitive intelligence (CI). The most essential component of fact-based strategic planning process is CI and it is also an essential part of ERM and strategic risk management.

The founding member of competitive intelligence professionals society and owner of Landmark group Gary Plaster explains that CI analysis and ethical collection can decrease the strategic decision making risk. The writer of “The Art of War” Sun-Tzu wrote around 400 BC: “Keep your friends close and your enemies closer”, which is great example of CI (Fraser and Simkins, 2010).

2.6.3.2. Risk transfer and retention strategies

The main strategy most of entities use to mitigate and manage risk is retention and transfer strategy. The company identifies the potential effect of the risk on shareholder and assets and after that the company decides whether to retain or transfer the risk. The risk strategy of the company determines whether purchasing insurance, self-insuring or creating shields against corporate assets. Risk management requires great expertise to examine political trends, regulations, insurance coverage, emerging legal laws and options (Fraser and Simkins, 2010).

2.7. ERM and Corporate Social Responsibility

Corporate sustainability and corporate social responsibility (CSR) is also a focus area of risk management. The executive's biggest challenge is to build a relationship strategy and CSR. Globalization has changed the dimension of business practices. Risk management systems are now more complex than ever before and firms are facing more risks and opportunities in the area of corporate sustainability. To cope with this situation, senior executives, board members and managers are looking for superior methods (J. Fraser and Simkins, 2010).

2.8. ERM and Internal Control (Governance, Risk and Compliance Processes)

Enterprise governance is one of the main pillars in the implementation of ERM program from upper to lower management. This way, a company can encourage ethical behavior and integration. According to the SOx mandates, CFO of corporate audit committees must sign an ethics statement, but there is no check and balance whether he follows the mandates or not. In the light of SOx rules, CFO can be fined and even prisoned if found guilty. The position of CFO demands to do the right thing, even under unfavorable conditions. Sox deals with only senior management accountability, but if the organization lunches the same type of program for the entire organization, than its key

stockholders will surely benefit from increased value of the enterprise. Financial officers comply with specific ethical rules and code of conduct. If the enterprise generalizes these rules on all levels, the enterprise will get great benefit. The organization must develop a powerful mission statement including ethic function and a code of conduct (R. R. Moeller, 2011).

2.8.1. Role and responsibility of the board of directors

The organization's key players are board of directors whether it is public or private. Authority in the hand of board of directors gives an entity power to investigate or even hire and dismiss the CEO. However, the board of directors is responsible to protect the shareholders, assets and ensure the proper return on investment. The board of directors deals with day to day activities of the firm on behalf of shareholders. The board of directors is responsible to present the annual report to shareholders in the annual general meeting. They should give complete details of strategies and future plans and they are directly accountable to shareholders (R. R. Moeller, 2011).

2.8.2. Enterprise compliance issues

Enterprise governance has three key principles: Governance, risk, and compliance (GRC). As per dictionary definition, compliance is a state which follows established guidelines, procedures and legislation. For example, manufacturing processes of different products comply with some specifications which are developed by some standard body. The screw thread pattern should be created in compliance with bolt. Compliance is the process of following the defined standards and instructions develop by government agencies, standard groups or internal corporate policies. The process of compliance is also a challenge for an organization to follow due to different national and international scenarios, diverse laws, rules and standards. These challenges even can give birth to legal problems for a firm e.g. criminal penalties (R. R. Moeller, 2011).

Today multinational companies face compliance issues, which is one of the biggest risks for enterprises to operate in their territory. After the collapse of major corporations like Enron and WorldCom, compliance became one of the major risks for the corporation.

Sarbanes-Oxley Act (SOx) was introduced to put a check and balance on corporation's compliance process. It also introduced new rules on ignored areas. Updating of new rules and creation of new rules are challenges for corporations. For example, in 2010, the U.S congress passed the Dodd- Frank financial reform bill. According to this bill, new rules and regulations were formed for banks, credit unions and other financial institutions in the United States. It is necessary for enterprises to develop complete compliance programs against risks. That program helps the organization to tackle the problem of identification of new and existing rules and to identify and reduce the risk of breaching rules.

Compliance polices of corporations must contain the following:

(1) Commitment of senior management.

(2) Brief compliance policy.

(3) Development of compliance related operational procedure.

(4) Compliance maintain program.

Professionals mix up the characteristic of COSO and ERM; hence we need to understand both have different frameworks (R. R. Moeller, 2011).

2.8.3. COSO internal control

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) is a joint initiative of five private sector organizations, established in the United States, committed to delivering leadership to executive management and governance entities on critical aspects of organizational governance, business ethics, internal control, enterprise risk management, fraud, and financial reporting. COSO has established a common internal control model against which companies and organizations may assess their control systems. COSO is supported by five supporting organizations, including the Institute of Management Accountants (IMA), the American Accounting Association (AAA), the American Institute of Certified Public Accountants (AICPA), the Institute of Internal Auditors (IIA), and Financial Executives International (FEI) (R. R. Moeller, 2011).

The first definition of internal control was introduced by the American Institute of Certified Public Accountants (AICPA) and used by the Securities Exchange Act of 1934. Though there has been some amendments since then, AICPA's first standard is called the Statement of Auditing Standards (SAS No. 11).

United States and Canadian Institute of Chartered Accountants (CICA) developed their auditing practices on the base of these standards. SAS No. 1 is described as follows:

> "Internal control comprises the plan of organization and all of the coordinate methods and measures adopted with a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency, and encourage adherence to prescribed managerial policies".

Later on definition of American Institute of Certified Public Accountants (AICPA) Statements on Auditing Standards (SAS) No.1 was improved to enlarge the concepts of administration and accounting control. The decision making processes related to records and procedures requires administration's authorization to perform any transaction. This is the part of administration control. The main purpose of giving authority to management is achieving the goals of the enterprise efficiently and this is the first step to accounting control of transactions.

SOx rules require that every company should present its internal control reports which contain adequate system of internal controls as well as management's assessment. SOx section 404 describes that all organizations must document and describe their key internal control procedures and then they must check the feasibility of these rules. The common difference between SOx and COSO ERM framework is that SOx focuses on accuracy of financial reporting and corporate governance issues while COSO ERM focuses on all risks faced by enterprises. Risks nowadays require a more integrated approach to manage due to the volatile environment. Risk portfolio approach is more efficient and effective to survive in unpredictable situations. It is observed that risks are highly interdependent and cannot be managed through entirely independent units. Inefficient management of these risks separately may cause incompetent and potentially perilous results. For example, a company wants to launch a product in a new market. It requires coping with subsequent risks such as:

- Pricing and market entry strategy
- Interest rate and foreign exchange risk
- Information technology and operational function risks
- Compatibility risks

An integrated approach can effectively manage these risks. ERM provides a complete approach and system to senior management, through which they can do the overall risk monitoring effectively. ERM approach is responsible for direct management of certain risks and coordination of risk management activities. In the silo approach, diverse risks are handled with different methodologies and formats, so it is very hard to build up a proper monitoring system. For example, treasury risk is measured through value-at-risk methodology whereas credit function operates on the basis of outstanding balance methodology. The audit function uses the methodology of audit score. Accordingly, it is hard for senior management to get the clear picture of the scenario. ERM provides a complete integration system that centralizes reporting of risk management units to the chief executive and the board. ERM provides a system of risk transfer which is not possible with the silo approach. For example, most companies use insurance and financial derivatives to hedge market risk. However, individual or separate method of risk measurement may produce over hedging and excessive insurance coverage. Portfolio of risks shows the clear picture to the management and they can take more efficient decisions.

ERM provides integration in business processes instead of downsizing risks by using a control oriented approach. Enterprise risk management helps the organization to take effective decisions related to pricing, resource allocation and other business decisions. ERM increases firm value by improving risk reporting and improving business performance. Top-down coordination becomes more operative and proficient by appointing a chief risk officer, who offers a direct channel of communication between lower and upper management. Integrated teams can better address the interdependencies among risks. Timely risk reporting is very important for taking corrective actions and decisions. In the silo approach, no one takes responsibility for inclusive risk reporting, which may cause incongruous reporting. ERM defines the level and content of risk

reporting and provides a dashboard of risks, which is used by senior management for timely decisions (R. R. Moeller, 2011).

2.8.4. COSO internal control framework model

Internal control is a design system which is used to achieve the objectives of an organization under the supervision of the entity's board of directors, management, and other personnel. The main goals of the internal control framework of COSO are as follows:

- Operations effectiveness and efficiency
- Consistency of financial recording
- Compliance with valid regulations and guidelines

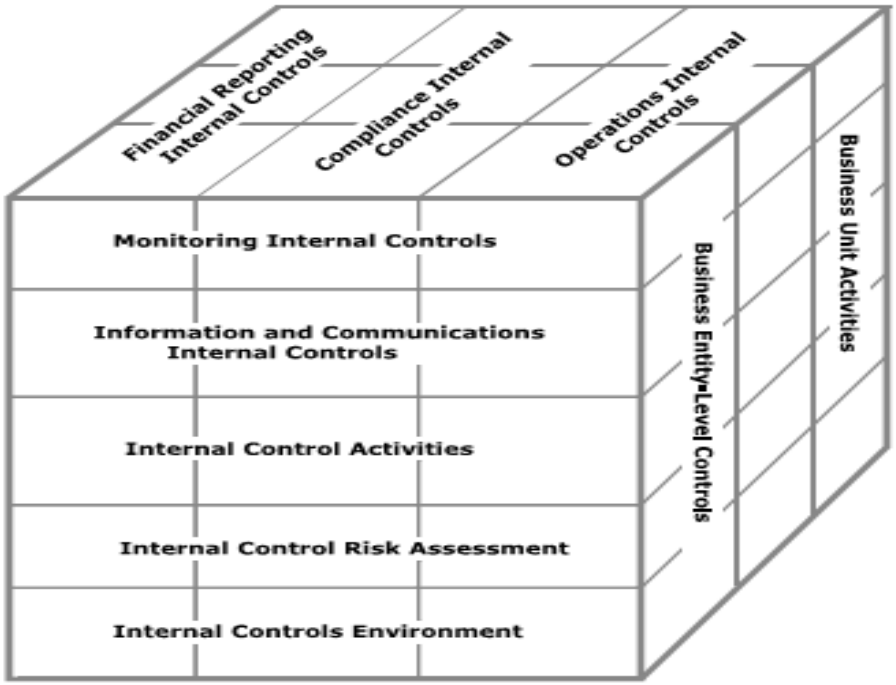


Figure 4. *COSO ERM Components.*

Source: Moeller, 2011

The organization develops a self-governing assessment and internal auditing function, which scrutinizes and evaluates its activities. Financial reporting control is the core topic of COSO and it covers the broader aspect of management to develop the internal auditing control system. (R. R. Moeller, 2011).

The COSO Internal Controls and COSO ERM model have few distinct points, such as their components. Both frameworks have a slightly different approach to achieve effective controls. The COSO ERM has a broader aspect in the area of risk responses and risk assessment assistance as compared to COSO internal controls. According to the cube dimension, the main difference between two models is in the second dimension on top of the cube. COSO internal controls place more emphasis on maneuvers, financial reporting, rules and guidelines and compliance. The COSO ERM has an identical framework, but it is slightly different in terms of its objectives and components. It is not possible for a firm to build both processes, it is but beneficial to study both of them (R. R. Moeller, 2011).

3. Literature Review

3.1. Scientific Research in ERM

As Fraser, Schoening-Thiessen, and Simkins (2008) state: “ERM is not a fad it is here to stay and is the natural evolution of risk management to view risk at the enterprise firm-wide level”. New external drivers are forcing risk authorities to know more about ERM and the interest in this topic has been increasing. However, research in this field is lagging behind the corporate interest. A primary hurdle to research of ERM is a lack of well-defined variables which measure company-level applications. Recent research has focused on the appointment of a chief risk officer (CRO) as a proxy, and this variable is promising as more firms appoint an executive who oversees the firm risk management procedures. Research in ERM suffers from lack of a fundamental framework. Thus, many of the case studies are not based upon prior research in ERM. This trend may change as the research is increasing and as CRO appointment is used as the main variable measuring ERM. On the other hand, ERM utilizes research related to different business fields, including accounting, finance, and insurance and operations management. Furthermore, ERM studies should also analyze legal aspects of the topic. In fact, research cases tend to emphasize the relation between good corporate governance and ERM, which can create future research opportunities. More case studies could help to learn from the experience and expertise of companies that successfully adopted ERM. Providers of ERM solutions should consider partnership with academicians interested in ERM to provide case studies of ERM implementation that are written more for teaching purposes (J. Fraser and Simkins, 2010).

3.2. Risk Management and Firm Value

A group of researchers believe that hedging decreases the firm value because of market efficiency. Another group of researchers believes that it negatively affects net present value because of costly processes. The third group believes that risk management

increases firm value because it reduces the cost of capital due to measurement of threats (Nelson et al, (2005) transfer of Kahramanoğlu and Demirel, 2010, s. 1).

Smithson and Simkins (2005) indicated that there is a positive relationship between higher share values and the use of derivatives to manage foreign exchange rate risk and interest rate risk. He also explained that there is clear evidence that commodity price derivatives increase share values.

George Allayannis, Ihrig, and Weston (2001) investigated the companies' use of derivatives in currency exchange risk, tools commonly used in the financial markets to hedge risk. He found that those firms which are using foreign currency derivatives had almost a 5% higher firm value averagely than nonusers.

3.3. ERM and Firm Value

There are different proxies used by researchers to find out the effect of ERM on firm values. The common proxies are Chief Risk Officer and Standard agency rating. Organizations which use advanced ERM framework mostly use CRO as key player in risk management. It is also observed that most firms use senior designation like senior manager to administer the risk management system (Lundqvist, 2014).

ERM enhances company performance by reducing the cost of capital, improving confidence of investors and also improving rating of the firm, which shows that the firm has ability to service debt under conceivable conditions (J. R. S. Fraser and Simkins, 2007).

Dabari and Saidin (2014) conducted a study on Nigerian banks. They proposed that risk management implementation increases performance and shareholder value through identification, estimation, observing and control of all risks. They conducted a study by collecting data from 278 banks. They conducted questionnaires at banks' respective headquarter with chief risk officers and chief audit executives. They find out that implementation of ERM in banking sector is inevitable, which is still at initial stage in Nigeria. They explained that familiarity to risk management becomes beneficial and useful for banks, government, board of directors, top management, and external auditors

and inter auditors because ERM supports them in the implementation and evaluation of corporate policies. Effectiveness of ERM depends on the proper match between firm and ERM.

Gordon, Loeb, and Tseng (2009) suggest that ERM system provides value to firm upon proper match. They used a sample of 112 US firms which actively used ERM approach. They stated that the relationship between ERM and firm performance depends on environmental uncertainty, industry competition, firm size, firm complexity and monitoring by the board of directors. This implies that firms should evaluate the ERM implementation on the basis of contextual variables around the firm.

Research conducted on 500 companies operating in Malaysia sought to find out if quality of board of directors increases companies' interest and the level of ERM adoption. Results showed that companies are now focusing on ERM practices to manage their operations more professionally. The study also found out that there is a positive correlation between quality of board of directors and adoption of ERM (Wan Daud, Haron, and Nasir Ibrahim, 2011).

McShane, Nair, and Rustambekov (2011) indicated that dealing with each risk indecently is a difficult task, so the tenacity of ERM is to achieve a systematic understanding of the interdependencies and associations among risks. ERM can increase firm value. According to the portfolio theory, if natural hedges exist, aggregate portfolio risk should be less than the sum of the individual risks.

Stulz (1996) proposed that the goal of risk management to distribute risk in equal parts, try to convert the weaknesses of the firms into strengths. The goal of risk management should not be to reduce total risks but divide them in simple way to solve them easily. Firm should not exhaust its resources on areas where it has no comparative advantage and take advantage in areas where it has comparative advantage. ERM risk allocation can possibly increase total risk fortuitously.

Hoyt and Lienberg (2011) found a significant positive and linear correlation between the business value (Tobin's Q) and ERM. In their study they used 117 companies' data and attempted to measure the influence of ERM on business value. Their study indicates that ERM has a positive correlation with company size and institutional ownership while it

has a negative correlation with leverage and reassurance use. It is also levied ERM and business value has positive correlation.

McShane, Nair, and Rustambekov (2011) investigate effect of ERM on firm value by using Standard and Poor's rating as a proxy of ERM. They conducted a study on the insurance sector due to availability of data. They used control variable size, leverage, profitability, cash flow volatility and growth opportunities to investigate the relationship between ERM and firm value. They found evidence of a positive relationship between increasing level of TRM capability and firm value, but no additional firm value for firms achieving a high ERM rating. Result shows that under a certain level ERM has positive relationship with firm value, but beyond that level there is no apparent increase in firm value.

Baxter, Bedard, Hoitash, and Yezegel (2013) studied financial service companies to determine the effect of ERM on business value and determinants of ERM program quality. The results suggest that high-quality ERM programs enhance operating performance and add value to companies.

Gatzert and Martin (2015) compare different studies and find out that company size and the level of institutional ownership are positively related to the implementation of ERM system, while financial leverage has no relationship. They also find out that there is a positive relationship between ERM and firm value or performance.

According to Walker, Shenkir, and Barton (2002), ERM system not only educates the management but also makes them focus on the same page. It also helps the employees and associates to understand their main focus area.

Miccolis, Hively, Merkley, and Perrin (2001) suggested that a business unified system may enhance firm value by escalating more efficient channels of communication between divisions, cultivating capital proficiency, alleviating earnings and reducing projected expenditures of peripheral capital and regulatory.

Lin, Wen, and Yu (2011) conducted a theoretical research to find out determinants of ERM and also examined the effect of ERM on firm value with a sample that consists of US property and casualty insurance industry. Results show that firms with greater geographic diversification, insurers with more reinsurance purchase and high derivative

usage tend to adopt ERM while others use traditional risk management practices. ERM implementation exhibited a significant negative correlation with firm value in terms of Tobin's Q. Organizations implementing ERM system can recover from financial crisis more smoothly. For example ANZ, Goldman Sach and Barclays had a well-developed program of ERM, which helped them to cope up more easily as compared to their peers in time of financial crisis.

Hillson (2002) argues that adverse effects are curtailed with exploring unexpected positive effects. It is feasible to manage threats and opportunities when organizations use the integrated risk management approach. Proper risk management system requires integrating the process of identification of threats and examination of opportunities. The process includes planning, identification, qualitative analysis, quantitative risk response planning and monitor and control. Management should manage threats and opportunities proactively. He suggests that an integrated risk management system effectively handles opportunities and threats (Hillson, 2002).

Gates, Nicolas, and Walker (2012) stated that companies take better decisions by implementing ERM process. ERM process requires time to provide positive results, so companies should be patient with instant value outcome.

ERM can provide benefits beyond traditional risk management. Some researchers find out that ERM can reduce financial distress costs, enhance managerial risk aversion, mitigate expected tax payments, solve underinvestment problem and provide confidence for the organization to carry out new investment projects.

Nocco and Stulz (2006) find out that ERM provides additional benefits as compared to TRM. Through ERM, firms can gain long term competitive advantage. ERM enables corporation to transfer its non-core risks through derivatives and hedging in the long run. If a company can handle its non-core risks more effectively, it can give more attention to core risks. This way, corporations can create long run competitive advantage. ERM provides micro level benefits to firms by determining the responsibility risk taking on a lower level. E.g. how and by whom risk is owned. We can also say that trade off analyses of risk return becomes the basis of capital allocation. Business units which understand and experience the risk are responsible for risk management, so no centralized decision making is needed. In ERM system, CRO is responsible for all types

of risks. CRO works as a channel to communicate between upper and lower level management to decrease communication gap. This framework provides corporation a device to evaluate business managers according to their performance. This strategy involves managers in the risk management process and helps to improve capital allocation.

Lam (2001) argues that return on equity and shareholder value can be improved with the help of CRO. ERM approach provides understanding to firm manage risk across business units. These approaches help out firm to improve equity returns and capital efficiency (Meulbroek, 2002).

3.4. Role of CRO in ERM Studies

Liebenberg and Hoyt (2003) use CRO as proxy of ERM implementation in their study. According to their study CRO is one of the factors that engage themselves in ERM. If companies don't determine the CRO position, it doesn't mean they are not practicing the ERM. Other positions like chief financial officer and chief executive officer can also be mentioned as an alternative of CRO. Organization with high leverage, high earning volatility and stock price volatility gives more preference to the ERM and CRO appoint show their seriousness in matter. R. Moeller (2007) explains the responsibilities of CRO. He describes that CRO should monitor the risk environment inclusively within the enterprise and also provide recommendations for remedial actions. CRO should be directly reporting to the CEO or at least one level down, such as to the CFO or chief operating officer. The responsibilities of CRO include minimizing financial, operation, IT related and environmental risks. Under the umbrella of responsibilities he needs to set the risk management function at corporate headquarters units and domestic operation.

Risk manager is a driving force to implement ERM practices in the company and involvement of border of director increase observed, implementation of risk management process (Kleffner, Lee, and McGannon, 2003). The further study of Yazid, Razali and Hussin (2011) also explain that presence of CRO stimulates the ultimate ERM implementation. M. S. Beasley, Clune, and Hermanson (2005) find out that ERM

implementation is positively related to the presence of a chief risk officer, board independence, apparent support of CEO and CFO for ERM. They suggest that in ERM implementation tone at the top towards ERM coming from the board and senior management is valuable. According to Pagach and Warr (2007), hiring of CRO depends on firms financial distress like more leverage, less financial slack and more volatile earnings. They also find that companies with more growth opportunity and more impervious assets are less in favor to hire a CRO. It has been seen that firms with high volatile stock prices and poor stock price performance show more concern to hire CROs. CEO's incentive package increases the likelihood of hiring CRO.

3.5. ERM Studies in Turkey

Önder and Ergin (2012) studied the determinants of ERM implementation in Turkey and investigated the level of ERM application on companies listed in Istanbul Stock Exchange (ISE). The study found that half of the financial sector companies within the ISE employed a CRO. The results indicated that profitability of companies does not have any significant effect on ERM adoption whereas leverage and company size have a significant effect on ERM adoption.

Kahramanoğlu and Demirel (2010) conducted a research on banks in Turkey in 2010. They tried to conduct research in 28 banks but only reached 22 banks. Their research is based on how much budget banks allocated for ERM. Results show that 54.5 percent of banks allocate separate budget for ERM. 18% plan to allocate budget for ERM. 22.7 percent of banks do not allocate budget and one percent still do not have any plans related to ERM. These results show Turkish banks have a serious attitude toward ERM.

4. Data and Methodology

In our attempt to investigate the relationship between firm value and ERM, we explain the data and methodology.

4.1. Data

We conducted the study on manufacturing companies operating in Turkey, which are listed in Borsa Istanbul (Istanbul Stock Exchange). The data was collected from "Public Disclosure Platform (Kamuyu Aydınlatma Platformu)" web page for the period of 2008 to 2013. The population of the study consists of 130 companies.

4.1.1. ERM engagement

As explained earlier, it was challenging to find out whether companies actively undertake ERM or not. To determine if a firm that operates in the manufacturing industry in Turkey actively implements ERM, we consulted Marsh Risk Consulting (Turkey), which provides consulting services in the field of ERM implementation. Although public companies in Turkey are obliged to adopt ERM, only a small percentage of public companies are considered to be actively implementing ERM, according to expert views we received from Marsh Risk Consulting (Turkey).

4.1.2. Tobin's Q

Most studies use Tobin's Q as proxy of firm value (Smithson and Simkins, 2005). Tobin's Q is a ratio that compares the market value of a firm's assets to their replacement cost (Hoyt and Lienberg, 2011). Board size effect has been measured by using Tobin's Q (Yermack, 1996). It is also used to measure the value effect of industrial diversification (Servaes, 1996). Tobin's Q has domination on other measures like stock returns and accounting measures because it does not require risk adjustment or normalization (Lang and Stulz, 1994). Lindenberg and Ross, (1981) explain that due

to free of managerial manipulation Tobin's Q reflects true market expectation. Cummins, Lewis, and Wei, (2006) define Tobin's Q as the market value of equity plus the book value of liabilities divided by the book value of assets. In our case we use Tobin's Q as value measure because it is a prospective performance measure. ROA and Tobin's Q historical in response of accounting performance measure proved to reflect the future expectations of investors.

4.1.3. Size

ERM program is mostly used by large firms according to literature evidence (M. S. Beasley et al., 2005; Colquitt, Hoyt, and Lee, 1999; Hoyt, 2003). Organization theory literature explains relationship between firm size and organizational structure. Firm size also consider important factor of management control system (Gordon et al., 2009). There is positive relationship between firm size and adoption of ERM (Gordon et al., 2009; Hoyt and Lienberg, 2011). Firm size also get attention in COSO (2004) for designing an ERM system. There is a significant negative relationship between firm size and firm value (George Allayannis et al., 2001; Lang and Stulz, 1994). We use firm size as control variable to control Tobin's Q variation by using log of the book value of assets. Company size measure by taking natural log of the firm's (book value of) assets (M. S. Beasley et al., 2005). ERM process is less costly for large form as compare to small firms due to economies of scale (M. Beasley, Pagach, and Warr, 2008).

4.1.4. Leverage

High leverage value may affect the position of firm because it increases the chances of bankruptcy. Capital structure and firm value relationship can be controlled by introducing leverage variable. We use short term debt to total asset ratio and long term debt to total asset for the calculation of Leverage. Leverage enhances firm value to some extend by reducing free cash flow through enhancing control on management. It also helps to block the money spending on sub-optimal projects (Jensen, 1999). The relationship between leverage and adaptation of an ERM system is unclear (Hoyt and Lienberg, 2011). Adaptation of ERM system has been positively affected by financial leverage (Liebenberg and Hoyt, 2003).

4.1.5. Return on assets (ROA)

Profitable firms are likely to trade at premium (G Allayannis and Weston, 2001). We use it as control variable for Tobin's Q. Net income divided by total assets is used to calculate the return on assets. Most of research considers positive relationship between ROA and Tobin's Q.

4.2. Methodology

The purpose of this study is to examine the impact of ERM on firm value for firms operating in the manufacturing industry and listed in Borsa Istanbul (stock exchange). To investigate the relationship between ERM and firm value, we utilize regression models. The dependent variable is Tobin's Q, which is used as a proxy of firm value similar to other studies in this field (Baxter et al., 2013; Hoyt and Lienberg, 2011; Lin et al., 2011; McShane et al., 2011). The independent variable is ERM implementation, whereas the control variables are firm size, leverage, ROA (Return on asset) and ROE (Return on equity). We test the hypothesis that there is a relationship between ERM and firm value.

Linear regression analysis, specifically panel data modelling was performed to analyze the data. We used Stata 13 software to examine the data and build regression models. Regression analysis method is used to find out the effect of independent variables on dependent variable (Song and Kemp, 2013). We employed panel data regression analysis as our data set comprises both time series and cross sectional data.

We also utilized a survey to explore how firms implement ERM and obtain information about motivation behind adoption of ERM, challenges of ERM implementation, effects of ERM adoption etc.

4.2.1. Panel data analysis

Panel data analysis provides competent result for studies which consider time and space dimensions of data. It allows social science researchers to conduct longitudinal analysis

in a vast variety of fields. In the field of political science, panel data analysis can be used to examine the relationship political party behavior over time (Yaffee, 2003).

There are some benefits and limitations of panel data analysis. Panel data analysis proposes that subjects (individuals, firms, and countries) are heterogeneous. If research does not control heterogeneity for time series and cross sectional data, the results may be biased. The study of B. H. Baltagi and Levin (1986) explains it more explicitly. They observed the demand of cigarette across 46 American states from year of 1963 to 1988. Price and income were functions of consumption. These variables are different with respect to their states and time, but there are also other invariant variables, which may affect the consumption. In this study, religion, education and advertisement were invariant variables. Omission of these variables makes results biased. Hence, in this case panel data is effective, but time series and cross sectional analysis cannot deal with invariant variables. Panel data can deal with variability and also provides more informative data. There is less collinearity and more degrees of freedom and efficiency among variables when panel data analysis is utilized (B. Baltagi, 1998).

The effects which are hardly measured with cross sectional and pure time series data, can easily be identified with panel data. Ben-Porath (1973) explained it further through an example. Say we consider annual women labor force participation rate is one percent. This will be possible (a) if every woman has a 50 percent chance yearly to being a part of labor force or, (b) half portion of the woman work all the time and others do not. First case has high turnover, while second case has no turnover. Panel data methodology is competent to distinguish between these two cases.

The data collected in panel data analysis is generally on micro unit level, e.g. individuals, firms and households. Micro level data collection omits biases and variables can be measured with more accuracy. Cheng Hsiao et al. explained that panel data provides more advantage as it merges the inter-individual differences and intra-individual dynamics.

4.2.1.1. Random effects model

The logic behind random effects model is that the variation across units is assumed to be random and uncorrelated with the independent variables in the model (Torres-Reyna, 2007). When the researcher is accumulating data from a series of studies performed by researchers operating independently, it would be questionable that all the studies were functionally equivalent. Usually, the subjects or interventions in these studies would have differed in ways that would have influenced the results, and therefore we should not assume a common effect size. Therefore, in these cases the random-effects model is more easily justified than the fixed-effect model (Borenstein, Hedges, Higgins, and R., 2009)

4.2.1.2. Fixed effects model

We can use the fixed effects model when we suspect that something related to the observation units may affect the predictor or outcome variable. Fixed effects model eliminates the impact of time-invariant characteristics. By controlling these characteristics, we can observe the net effect of predictor variables on the outcome variable (Torres-Reyna, 2007).

4.2.1.3. Model Selection

In the random effects model we can include time invariant variables such as gender in the model. However, in the fixed effects model these variables are absorbed by the intercept (Torres-Reyna, 2007).

Since ERM adoption is a time invariant variable in our study we selected the random effects model for our analysis.

4.2.1.4. Variables of the model

The table below summarizes the variables included in the model.

Table 1. *Variables of the model*

Variable	Variable Type	Description of the Variable
Tobin's Q	Dependent	Market value of equity plus the book value of liabilities divided by the book value of assets
ERM	Independent	The adoption of ERM program; 1 for adoption, otherwise 0
ROA	Control	Return on Asset
STDA	Control	Short term debt to Assets
LTDA	Control	Long term debt to Assets
Size	Control	Log of asset value

The equation of the random effects model in our study is as follows:

$$\text{Tobin's } Q_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 ROA_{it} + \beta_3 STDAit + \beta_4 LTDAit + \beta_5 Size_{it} + u_{it} + \varepsilon_{it}$$

Where:

β_i : Beta coefficients of the model (i=1,2,…..5)

u_{it} : Between-entity error

ε_{it} : Within-entity error

4.2.1. Survey

We developed a survey questionnaire on the basis of the questionnaire used by Anne E. Kleffne, Ryan B. Lee and Bill McGannon in 2003 (University of Calgary Study) to find out if firms adopted ERM or not and obtain information about motivation to implement ERM, challenges of ERM implementation, effects of ERM adoption etc. We translated the questions of the University of Calgary Study into Turkish and to increase the scope of questionnaire added some new questions based on new developments in research studies. We shared our questionnaire with the Risk Manager of Marsh Company, which

provides consultation services in ERM implementation to a number of firms in Turkey and the head of the Enterprise Risk Management Association to make questionnaire more reasonable and valid. We updated our questionnaire by their views. We also revised the questions according to the opinion of field experts, namely ERM management team of a big company in the population. The company was chosen because it is one of the leading companies in ERM implementation in Turkey, which is well known for its experience in this field. We sent the questionnaire to all the companies (risk managers in general) in the population through an online survey platform. Out of 130 companies, we received 29 valid responses, which correspond to a respond rate of around 22 %.

5. Findings

In this section we present the findings of the questionnaire as well as descriptive statistics and regression analysis.

5.1. Panel Data Analysis Findings

It appears that only 9.2% of the firms analyzed are practicing ERM as we do not find any evidence that the remaining firms are practicing ERM. We used dummy variable to identify the adoption of ERM (1 yes, 0 no).

The table below displays some statistics of the variables analyzed for firms which do not adopt ERM (ERM=0).

Table 2. *Descriptive Statistics for ERM =0*

Variable	Obs.	Mean	Std. Dev.	Min	Max
Tobin's Q	708	.9090395	1.401731	0	14.63
ROA	708	.0276977	.2855198	-1.11	6.8
SDA	708	.3736017	.492509	0	8.62
LDA	708	.1333757	.1909251	0	2.47
SIZE	708	8.203376	.7311024	.69	9.84

The table below displays some statistics of the variables analyzed for firms which implement ERM (ERM=1).

Table 3. *Descriptive Statistics for ERM =1*

Variable	Obs.	Mean	Std. Dev.	Min	Max
Tobin's Q	72	.6183333	.5260429	.01	2.27
ROA	72	.05125	.0779841	-.16	.41
SDA	72	.3770833	.1716239	.08	.88
LDA	72	.16375	.1080094	0	.42
SIZE	72	7.804444	1.130184	6.39	9.5

Table 2 overts the descriptive statistics of firms which are not practicing ERM (Group A). Table 3 shows the descriptive statistics of firms, which are practicing ERM (Group B). The study shows that Tobin's Q of Group A is higher compared to Tobin's Q of "B" firms. The Standard deviation of Group A (1.40) is higher than of Group B (.52).

The mean value of profitability, measured by ROA ratio, for Group A is (.027) and standard deviation is (.28) while these values are (.051) and (.077) for Group B. Similarly, profitability ratios of firms in Group B seem to be higher and less volatile or dispersed.

Leverage is measured by SDA (Short term debt to asset ratio) and LDA (Long term debt to asset ratio). The mean of SDA for Group A is .373 and standard deviation is .17. The mean of SDA for Group B is .377 and the standard deviation is .49. Though the mean values are almost the same, Group B has a lower variation compared to Group A. For Group A, the mean value of LDA is .133 and the standard deviation is .190, whereas for Group B these values are .163 and .108 respectively. The results show that firms implementing ERM tend to have a higher LDA.

The mean of Group B for size variable is 7.80 and the standard deviation is 1.13 and for Group A, these values are 8.20 and .73. ERM practicing firms appear to be relatively smaller in size. The findings imply that ERM practicing firms can enjoy more long term leverage as they have a higher LDA; despite they are smaller in size.

We present the findings of the random effects regression model in the table below.

Table 4. *Findings of the Regression Model*

Tobin Q	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
ERM	-.2867409	.3204841	-0.89	0.371	-.9148783	.3413964
ROA	.234278	.1306779	1.79	0.073	-.021846	.4904019
SDA	-.255888	.1284421	-1.99	0.046	-.5076299	-.0041461
LDA	-.8386488	.2861903	-2.93	0.003	-1.399571	-.2777262
SIZE	-.0423161	.0752938	-0.56	0.574	-.189889	.105257
cons	1.457141	.630852	2.31	0.021	.2206939	2.693588

The overall model seems significant (Wald chi^2=11.74; p=0.0385). Yet, there seems to be no statistically significant relationship between firm value and ERM (z=-0.89, p=0.371). This finding suggests that firm value is not affected by the practice of ERM. There seems to be a negative significant relationship between leverage (STDA and LTDA) and firm value. This finding suggests that firms with high leverage tend to have low firm value and vice versa. We observe no significant relationship between ROA and Tobin's Q. In most of research ROA and Tobin's Q have positive relationship. We also observe no relationship between firm size and Tobin's Q.

5.2. Survey Findings

As indicated before, 29 companies participated in the survey. Below we present the number of responding firms by industry.

Industry	Number of Responding Firms
Construction	5
Energy	5
Other	10
Food	2

Telecommunication	2
Media	1
Petrochemical	1
No response	3
Total	29

26 of the respondents replied “Yes” when asked if their firm is using an Enterprise Risk Management (ERM) approach to managing risk, while 3 of them replied “No”. 15 of the firms indicated that they have adopted ERM before 2011 whereas 8 of them stated they adopted it after 2011. 23 out of 29 respondents stated they also have a written risk management philosophy or policy. Moreover, 24 of the 29 respondents indicated that they already have risk identification processes and 23 stated they present an annual risk management report to the board of directors.

The driving forces behind adoption ERM or consideration of ERM approach are indicated as follows:

Request of the Board of Directors	18
Competition or other industry-related pressures	10
Stakeholder pressure	5
Compliance with the corporate governance principles	12
Pressure of the international parent company:	4
Other:	2

To the question “In your opinion, which of the following problems, if any, did you encounter or would you anticipate encountering in the decision on whether to implement an Enterprise Risk Management strategy?

Resistance from the Board of Directors	2

Lack of qualified personnel to implement the program	4
Need for internal control and review systems	7
Organizational structure or a corporate culture that discourages ERM	10
Resistance to change	21

Regarding the changes that have been observed since the firm adopted ERM, the replies are as follows:

Development of company-wide guidelines for risk management	13
More coordination with different areas responsible for risk management	13
More interaction and involvement in the decision making of other departments	7
More direct interaction with the Board or committees of the Board	9
More requests from the Board for information	4
Increased sense of responsibility to provide information to Senior Officers, the Board, or committees of the Board	10
Increased awareness of nonoperational risks by operational risk management personnel	8
Increased awareness of operational risks by nonoperational risk management personnel	7
An increase in the proportion of external directors on the Board	1

With respect to the factors which are influential in causing the changes observed with the adoption of ERM, the following factors were emphasized:

Competition or other industry-related pressures	3
Compliance with the corporate governance principles	25
Increased concern regarding Directors' and Officers' liability exposures	3
Adoption of an enterprise risk management strategy by the firm	10
Recently being listed on an exchange (going public)	8
Pressure from a majority shareholder	2

Out of the 29 responding firms, 23 indicated that there is Board member or top manager responsible for the supervision of risk management activities. Furthermore, 26 of the 29 firms stated that they have a distinct Risk Management Committee as well as other specific committees. 21 of the respondents indicated that they state the risk management related responsibilities in the job definitions of top managers.

Regarding the opinion of the respondents if the risk appetite of the managers comply with the strategies and objectives of the firm, 26 of the respondents stated they think they match, whereas 3 mentioned that they do no match.

23 of the managers who replied indicated that risk management is the primary function of their job.

With respect to their title, titles of 8 of 23 respondents correspond to Chief Risk Officer (Corporate Risk Management Coordinator or Corporate Risk Manager), while 9 of them indicated they had a title of Risk Expert or Risk Committee Member. The remaining hold the title of accountant or Finance or Investment Relations Manager.

The participants in the survey are categorized according to their experience as follows: 16 managers have more than 7 years of experience, 8 managers have not more than 6 years of experience and 2 managers are totally new in the risk mangement field. 17 respondents have a master or doctorate degree while others have a bachelor's degree.

19 managers indicated that they had experience in the field of risk management, whereas 4 managers indicated they had experience in field of finance or accounting and 2 managers in the field of insurance. The remaining 4 have experience in general management or other fields.

In terms of to whom the risk manager reports, 14 managers said they reported to the Finance Manager (11 of 14) or Accounting Manager (3 of 14), while only 6 managers said they reported to the General Manager.

To the question "Does your firm have a "Chief Risk Officer" or an equivalent position? (A Chief Risk Officer is a corporate executive in charge of assessing and planning for

all potential risks (both operational and nonoperational) faced by the company), 23 of the respondents replied “Yes”, while only 6 replied “No”.

To the question regarding which "nonoperational" or "financial" risks are actively monitored by the department that handles operational risk management, here are the number of responses received.

Asset Value Risk	4
Commodity Price Risk	6
Exchange Rate Risk	12
Interest Rate Risk	7
Political Risk	8
Third-party Credit Risk	7
Other	11

6. CONCLUSION

Enterprise Risk Management (ERM) is an integrated risk management approach, which considers risks in the context of business strategy and manages them with a portfolio perspective focusing on critical risks, through defined risk responsibilities and strong risk monitoring. Importance of ERM has increased especially after 2008 financial crisis. ERM enhances company performance by reducing the cost of capital, improving confidence of investors and also improving rating of the firm. However, our findings suggest that there seems to be no significant relationship between firm value and ERM for 130 manufacturing firms in Turkey using data of 2008-2013 periods. An explanation could be that the effect of ERM is not reflected on firm value yet, since most firms have been implementing it for a short period of time and also it takes a long time for ERM practices to be reflected on company performance and firm value. Furthermore, the firms which adopted ERM comprise only 9.2% of the population, which is one of the most important limitations of our study. Another important limitation is that the year which ERM was adopted is different at the firm level. However, when we confirmed that a firm implements ERM, we included all data of those firms implementing ERM, starting from 2008 as data belonging to an ERM implementing firm, although some of them adopted it in later years.

With respect to the ERM practices of manufacturing companies in Turkey, responses of participants imply that most companies which adopted ERM have a board member or top manager responsible for supervision of risk management activities. Moreover, most of them have a written risk management philosophy or policy, risk identification processes and an annual risk management report presented to the board of directors. They also have CRO post with experience in the field of risk management, who usually reports to the Finance or Accounting Manager. The key driving forces for ERM adoption seem to be request of Board of Directors and compliance with corporate governance principles. The most important changes observed with the implementation of ERM are compliance with corporate governance principles, more coordination with different areas responsible for risk management and development of company wide guidelines for risk management. The most important problems encountered in the implementation of ERM seems to be resistance to change and organizational structure or

corporate culture discouraging ERM. Yet, the implications derived from the survey responses can not be generalized as the participants include only 26 firms that implement ERM.

Future research on this topic can utilize a more comprehensive dataset which includes data of ERM implementing firms to account for ERM engagement starting from the date ERM was adopted. We also suggest that researchers can undertake in-depth interviews with firms that have a long experience of ERM engagement to obtain detailed information about basic motives of adoption of ERM, effects of ERM practices and ERM implementation challenges.

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Ek 1: Kurumsal Risk Yönetimi Soru Formu

Anadolu Üniversitesi (Sosyal Bilimler Enstitüsü)

Açıklama: ……

Şirket adı: .....

1. İşletmenizin yıllık satışları ne kadardır?

 250,000,000 TL veya daha az

 250,000,000 TL ’den fazla 500,000,000 TL’den az

 500,000,000 TL ’den fazla 1,000,000,000 TL’den az

 1,000,000,000 TL’den fazla 2,500,000,000 TL’den az

 2,500,000,000’den fazla

2. İşletmenizin faaliyet gösterdiği sektör ……..

3. Risk yönetimi birincil göreviniz midir?

 Evet

 Hayır

4.Ünvanınız: ……..

5. Risk yönetimi alanında kaç yıllık tecrübeniz bulunmaktadır? ……..

6. Mezuniyet durumunuz

 Lise

 Üniversite

 Y.Lisans/Doktora

7. Sahip olduğunuz profesyonel bir ünvan varsa belirtiniz. (Mali Müşavir, Yeminli Mali Müşavir vb.) ……

8. İş deneyiminiz daha çok alanda yoğunlaşmaktadır?

- Risk Yönetimi
- Genel yönetim
- Finans
- Muhasebe
- Sigorta
- Hukuk
- Diğer:

9. Pozisyonunuz itibarı ile kime bağlı çalışmaktasınız? (Bağlı olduğunuz kişi birden fazla pozsiyona sahipse ilgili pozisyonları işaretleyin)

- Genel Müdür
- Finans Müdürü
- Muhasebe Müdürü
- Diğer: ……..

10. İşletmenizde tüm risklerin değerlendirilip planlanmasından sorumlu bir Risk Yöneticisi pozisyonu veya eşdeğer bir pozisyon var mıdır

- Evet
- Hayır

11. Aşağıdaki operasyonel olmayan yani finansal risklerden hangileri operasyonel riskleri yöneten departman tarafından aktif olarak yönetilmektedir?

- Menkul kıymet fiyat riski
- Emtia fiyat riski
- Kur riski
- Faiz oranı riski
- Siyasi (politik) risk

- Üçüncü şahısların kredi riski (batma riski)
- Diğer: ……

12. İşletmenizin risk yönetiminde Kurumsal Risk Yönetimi yaklaşımı kullanılmakta mıdır?

(Kurumsal Risk Yönetimi, örgütün risk iştahı dikkate alınarak risk yönetiminin maliyet etkinliğini maksimize etmek için operasyonel ve finansal risklerin birlikte yönetilmesi olarak tanımlanabilir)

- Evet
- Hayır

13. Kurumsal Risk Yönetimi kullanılmıyorsa bu yaklaşımın ileride benimsenmesi düşünülmekte midir?

- Evet
- Hayır

14. Kurumsal Risk Yönetimi'ni uygulamaya koymanız veya gelecekte uygulamaya koymayı düşünmenizin arkasındaki nedenler aşağıdakilerden hangileridir? Geçerli bütün seçenekleri işaretleyin lütfen.

- Yönetim Kurulu'nun teşviği
- Rekabet ve sektörel baskılar
- Paydaşlardan gelen baskı
- Kurumsal Yönetişim ilkelerine uyum
- Risk Yöneticisinin etkisi
- Yabancı ana şirketin baskısı (Ana şirket merkezinin bulunduğu ülke: ……)
- Diğer(lütfen belirtiniz):……..

15. Kurumsal Risk Yönetimi stratejisini uygulamayı düşünüyorsanız bu kararı alırken aşağıdaki sorunlardan hangileri ile karşılaştınız veya sizce hangileri ile

karşılaşabilirsiniz?

- Yönetim Kurulu'nun karşı çıkması
- Programı yürütmek için gereken nitelikli personelin olmaması
- İç denetim sistemlerine olan ihtiyaç
- Kurumsal Risk Yönetiminin uygulanmasını zorlaştıran örgüt yapısı veya kurum kültürü
- Değişime karşı direnç oluşması
- Diğer sorunlar (Lütfen kısaca belirtin):

16. Son 3 yılda aşağıdaki değişimlerden hangilerini şirketinizde gözlemektesiniz?.Geçerli bütün seçenekleri işaretleyin lütfen.

- Kurumsal açıklama/bilgilendirmelerde artış
- İnternet aracılığıyla bilgilerin zamanında yayılması
- Şirket genelinde Risk Yönetimi ile ilgili kılavuzların geliştirilmesi
- Risk yönetiminden sorumlu farklı alanlarla daha fazla koordinasyon
- Diğer departmanların karar verme süreçlerinde daha fazla etkileşim
- Yönetim Kurulu'yla ve komiteleriyle daha fazla doğrudan etkileşim
- Yönetim Kurulu'ndan gelen bilgi taleplerinde artış
- Üst yönetim ve Yönetim Kurulu'na ve komitelerine bilgi sağlama sorumluluğunun artması
- Operasyonel risklerin yönetiminden sorumlu personelinin operasyonel olmayan risklerle iligli farkındalığında artış
- Operasyonel olmayan risklerin yönetiminden sorumlu personelinin operasyonel risklerle iligli farkındalığında artış
- Yönetim Kurulu'nda profesyonel yöneticilerin oranının artması

17.Bir önceki soruda belirtilen değişimlerde aşağıdakilerden hangilerinin etkili

olduğunu düşünüyorsunuz? Geçerli bütün seçenekleri işaretleyin lütfen.

- Rekabet ve sektörel baskılar
- Kurumsal Yönetişim ilkelerine uyum
- Yöneticilerin yükümlülüklerinin artışına ilişkin kaygılar
- Kurumsal Risk Yönetimi Stratejisinin benimsenmesi
- Halka arz olmak
- Büyük hissedarlardan (pay sahiplerinden) gelen baskı
- Çoğunluk hissedarların (pay sahiplerinin) değişmesi
- Diğer: Lütfen kısaca açıklayın……

18. Şirketinizde Risk Yönetimi etkinliklerinin denetlenmesinden sorumlu bir Yönetim Kurulu Üyesi veya Üst Düzey Yönetici bulunmakta mıdır?

- Evet
- Hayır

19. Şirketinizde risk yönetiminden sorumlu daimi bir Risk Yönetimi Komitesi bulunmakta mıdır? (Sağlık, Güvenlik veya Çevre gibi konulardan sorumlu özel Komitelerin yanı sıra)

- Evet
- Hayır

20.Üst Düzey Yöneticilerin iş tanımlarında risk yönetimi ile ilgili sorumluluklarına yer verilmekte midir?

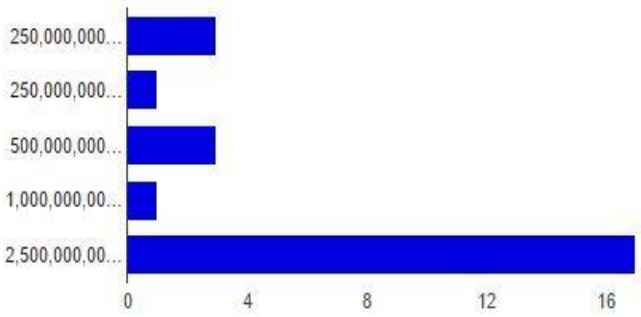
- Evet
- Hayır

21. Sizce Yöneticilerinizin risk iştahı şirketinizin strateji ve hedefleriyle uyumlu mudur?

- Evet
- Hayır

Ek 2: Anket Çalışmasının Özeti

İşletmenizin yıllık satışları ne kadardır?

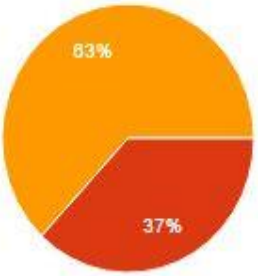


250,000,000 TL veya daha az	3	12%
250,000,000 TL 'den fazla 500,000,000 TL'den az	1	4%
500,000,000 TL 'den fazla 1,000,000,000 TL'den az	3	12%
1,000,000,000 TL'den fazla 2,500,000,000 TL'den az	1	4%
2,500,000,000'den fazla	17	68%

Risk yönetimi birincil göreviniz midir?

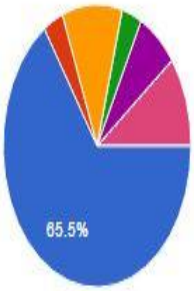
Evet	23	79.3%
Hayır	6	20.7%

Mezuniyet durumunuz?



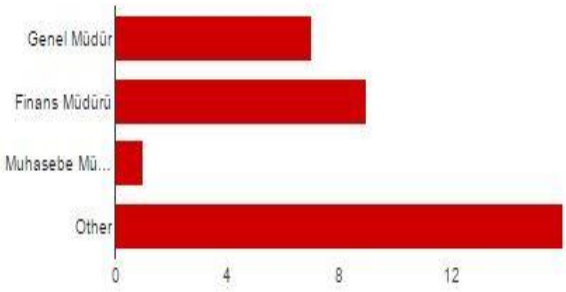
Lise	0	0%
Üniversite	10	37%
Y.Lisans/Doktora	17	63%

İş deneyiminiz daha çok alanda yoğunlaşmaktadır?



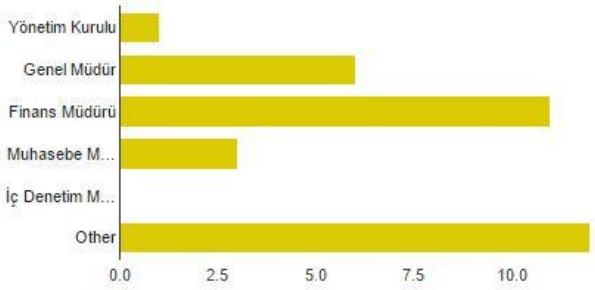
Risk Yönetimi	19	65.5%
Genel yönetim	1	3.4%
Finans	3	10.3%
Muhasebe	1	3.4%
Sigorta	2	6.9%
Hukuk	0	0%
Other	3	10.3%

Pozisyonunuz itibarı ile kime bağlı çalışmaktasınız? (Bağlı olduğunuz kişi birden fazla pozisyona sahipse ilgili pozisyonları işaretleyin)



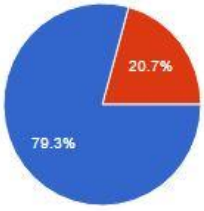
Genel Müdür	7	24.1%
Finans Müdürü	9	31%
Muhasebe Müdürü	1	3.4%
Other	16	55.2%

Pozisyonunuz itibarı ile kime bağlı çalışmaktasınız? (Bağlı olduğunuz kişi birden fazla pozisyona sahipse ilgili pozisyonları işaretleyin)



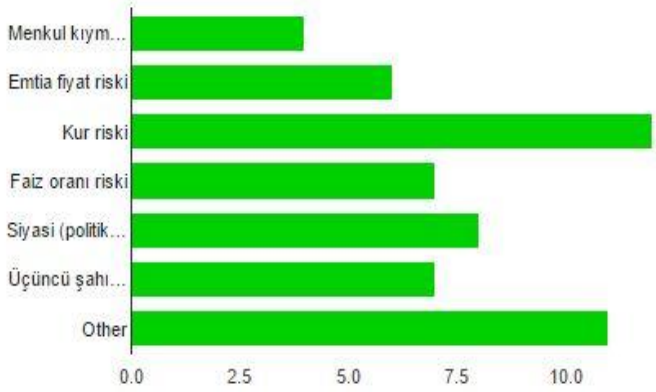
Yönetim Kurulu	1	3.8%
Genel Müdür	6	23.1%
Finans Müdürü	11	42.3%
Muhasebe Müdürü	3	11.5%
İç Denetim Müdürü	0	0%
Other	12	46.2%

İşletmenizde tüm risklerin değerlendirilip planlanmasından sorumlu bir Risk Yöneticisi pozisyonu veya eşdeğer bir pozisyon var mıdır?



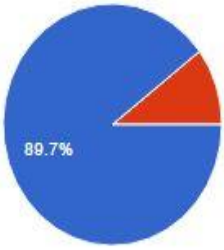
Evet	23	79.3%
Hayır	6	20.7%

Aşağıdaki finansal risklerden hangileri operasyonel riskleri yöneten departman tarafından aktif olarak yönetilmektedir?



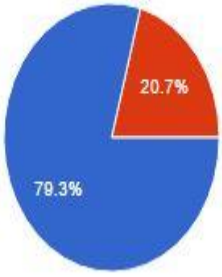
Menkul kıymet fiyat riski	4	13.8%
Emtia fiyat riski	6	20.7%
Kur riski	12	41.4%
Faiz oranı riski	7	24.1%
Siyasi (politik) risk	8	27.6%
Üçüncü şahısların kredi riski (batma riski)	7	24.1%
Other	11	37.9%

İşletmenizin risk yönetiminde Kurumsal Risk Yönetimi yaklaşımı kullanılmakta mıdır?



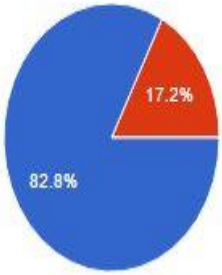
Evet	26	89.7%
Hayır	3	10.3%

Kurumsal Risk Yönetimi yaklaşımı kullanılmaktaysa,yazılı bir risk yönetimi felsefesi veya politikası bulunmakta mıdır?



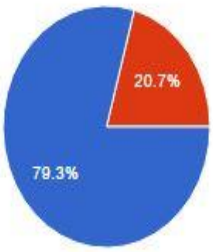
Evet	23	79.3%
Hayır	6	20.7%

Kurumsal Risk Yönetimi yaklaşımı kullanılmaktaysa, risklerle ilgili bilgilerin toplanmasına yönelik süreçler belirlenmiş midir?



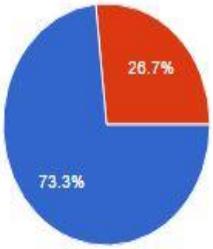
Evet	24	82.8%
Hayır	5	17.2%

Kurumsal Risk Yönetimi yaklaşımı kullanılmaktaysa, yönetim kuruluna yılık risk yönetim reporu sunulmakta mıdır?



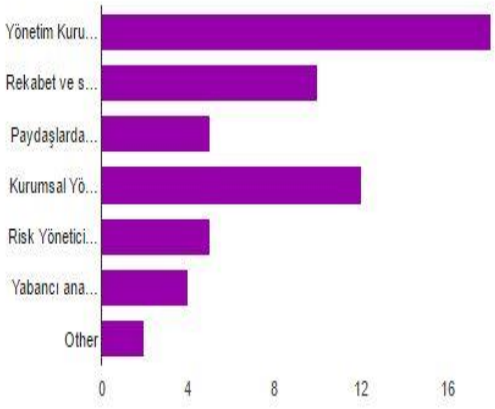
Evet	23	79.3%
Hayır	6	20.7%

Kurumsal Risk Yönetimi kullanılmıyorsa bu yaklaşımın ileride benimsenmesi düşünülmekte midir?



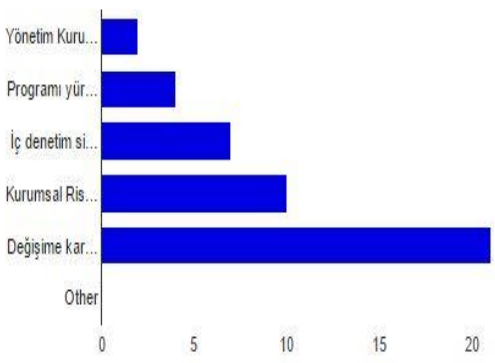
Evet	11	73.3%
Hayır	4	26.7%

Kurumsal Risk Yönetimi'ni uygulamaya koymanız veya gelecekte uygulamaya koymayı düşünmenizin arkasındaki nedenler aşağıdakilerden hangileridir ?



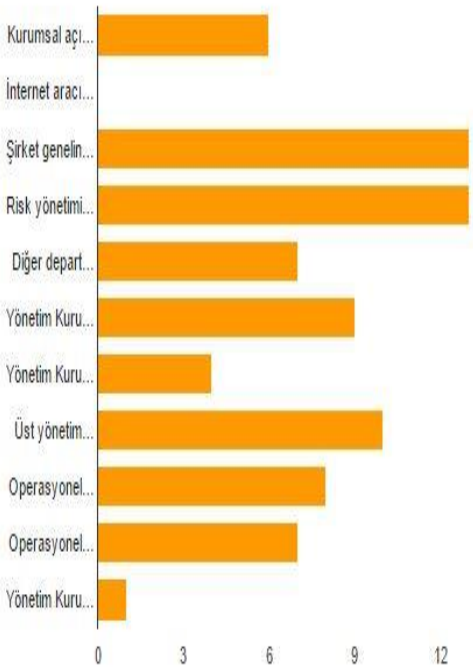
Yönetim Kurulu'nun talebi	18	62.1%
Rekabet ve sektörel baskılar	10	34.5%
Paydaşlardan gelen baskı	5	17.2%
Kurumsal Yönetişim ilkelerine uyum	12	41.4%
Risk Yöneticisinin etkisi	5	17.2%
Yabancı ana şirketin baskısı	4	13.8%
Other	2	6.9%

Kurumsal Risk Yönetimi stratejisini uygulamayı düşünüyorsanız bu kararı alırken aşağıdaki sorunlardan hangileri ile karşılaştınız veya sizce hangileri ile karşılaşabilirsiniz?



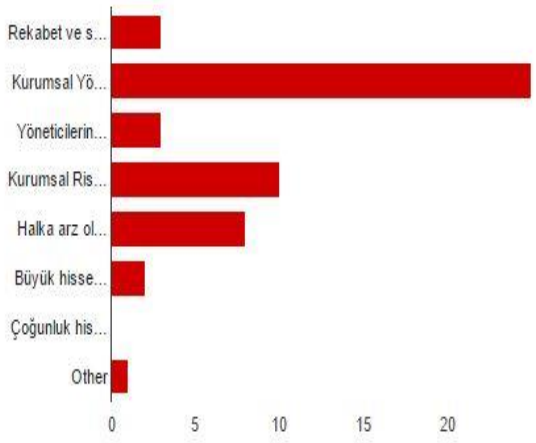
Yönetim Kurulu'nun karşı çıkması	2	6.9%
Programı yürütmek için gereken nitelikli personelin olmaması	4	13.8%
İç denetim sistemlerine olan ihtiyaç	7	24.1%
Kurumsal Risk Yönetiminin uygulanmasını zorlaştıran örgüt yapısı veya kurum kültürü	10	34.5%
Değişime karşı direnç oluşması	21	72.4%
Other	0	0%

Kurumsal risk yönetimi uyguluyorsanız, uygulamalara başladıktan itibaren aşağıdaki değişimlerden hangilerini şirketinizde gözlemektesiniz?



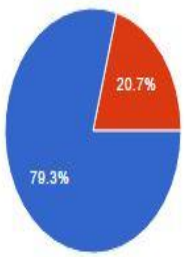
Kurumsal açıklama/bilgilendirmelerde artış	6	20.7%
İnternet aracılığıyla bilgilerin zamanında yayılması	0	0%
Şirket genelinde Risk Yönetimi ile ilgili kılavuzların geliştirilmesi	13	44.8%
Risk yönetiminden sorumlu farklı alanlarla daha fazla koordinasyon	13	44.8%
Diğer departmanların karar verme süreçlerinde daha fazla etkileşim	7	24.1%
Yönetim Kurulu'yla ve komiteleriyle daha fazla doğrudan etkileşim	9	31%
Yönetim Kurulu'ndan gelen bilgi taleplerinde artış	4	13.8%
Üst yönetim ve Yönetim Kurulu'na ve komitelerine bilgi sağlama sorumluluğunun artması	10	34.5%
Operasyonel risklerin yönetiminden sorumlu personelinin operasyonel olmayan risklerle ilgili farkındalığında artış	8	27.6%
Operasyonel olmayan risklerin yönetiminden sorumlu personelinin operasyonel risklerle ilgili farkındalığında artış	7	24.1%
Yönetim Kurulu'nda profesyonel yöneticilerin oranının artması	1	3.4%

Bir önceki soruda belirtilen değişimlerde aşağıdakilerden hangilerinin etkili olduğunu düşünüyorsunuz? Geçerli bütün seçenekleri işaretleyin lütfen.



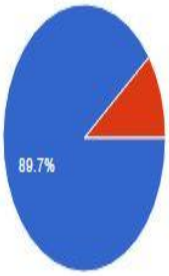
Rekabet ve sektörel baskılar	3	10.3%
Kurumsal Yönetişim ilkelerine uyum	25	86.2%
Yöneticilerin yükümlülüklerinin artışına ilişkin kaygılar	3	10.3%
Kurumsal Risk Yönetimi Stratejisinin benimsenmesi	10	34.5%
Halka arz olmak	8	27.6%
Büyük hissedarlardan (pay sahiplerinden) gelen baskı	2	6.9%
Çoğunluk hissedarların (pay sahiplerinin) değişmesi	0	0%
Other	1	3.4%

Şirketinizde Risk Yönetimi etkinliklerinin denetlenmesinden sorumlu bir Yönetim Kurulu Üyesi veya Üst Düzey Yönetici bulunmakta mıdır?



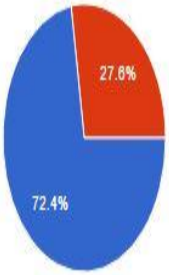
Evet	23	79.3%
Hayır	6	20.7%

Şirketinizde risk yönetiminden sorumlu daimi bir Risk Yönetimi Komitesi bulunmakta mıdır? (Sağlık, Güvenlik veya Çevre gibi konulardan sorumlu özel Komitelerin yanı sıra)



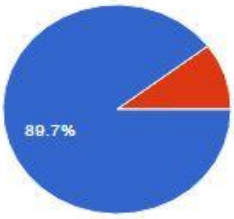
Evet	26	89.7%
Hayır	3	10.3%

Üst Düzey Yöneticilerin iş tanımlarında risk yönetimi ile ilgili sorumluluklarına yer verilmekte midir?



Evet	21	72.4%
Hayır	8	27.6%

Sizce Yöneticilerinizin risk iştahı şirketinizin strateji ve hedefleriyle uyumlu mudur?



Evet	26	89.7%
Hayır	3	10.3%