CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY, ISLAMABAD

Effect of Enterprise Risk Management on Firm Value: Empirical Evidence from Non-Financial firms in Pakistan

by

Nouman Nasir

A thesis submitted in partial fulfillment for the degree of Master of Science

in the

Faculty of Management & Social Sciences
Department of Management Sciences

2018

Copyright © 2018 by Nouman Nasir

I dedicate my Thesis to My Parents, brother and sisters and respectful Teachers (Especially Dr Jaleel Ahmed) for having firm belief in my Abilities & Whom Prayers enabled me to accomplish This Thesis. I thank all of you for the interest in my studies and the motivation you gave me during those trying times when I had doubts about my abilities. This journey would not have been possible without your loving support and encouragement.

CAPITAL UNIVERSITY OF SCIENCE & TECHNOLOGY

ISLAMABAD

CERTIFICATE OF APPROVAL

Effect of Enterprise Risk Management on Firm Value: Empirical Evidence from Non-Financial Firms in Pakistan

by

Nouman Nasir

MMS161005

THESIS EXAMINING COMMITTEE

S. No.	Examiner	Name	Organization
(a)	External Examiner	Dr. M. Khalid Sohail	COMSATS, Islamabad
(b)	Internal Examiner	Dr. Ahmad Fraz	CUST, Islamabad
(c)	Supervisor	Dr. Jaleel Ahmed Malik	CUST, Islamabad

Dr. Jaleel Ahmed Malik

Thesis Supervisor

March, 2018

Dr. Sajid Bashir

Head

Dept. of Management Sciences

March, 2018

Dr. Arshad Hassan

Dean

Faculty of Management & Social Sciences

March, 2018

Author's Declaration

I, **Nouman Nasir** hereby state that my MS thesis titled "**Effect of Enterprise Risk Management on Firm Value: Empirical Evidence from Non-Financial firms in Pakistan**" is my own work and has not been submitted previously by me for taking any degree from Capital University of Science and Technology, Islamabad or anywhere else in the country/abroad.

At any time if my statement is found to be incorrect even after my graduation, the University has the right to withdraw my MS Degree.

(Nouman Nasir)

Registration No: MMS161005

Plagiarism Undertaking

I solemnly declare that research work presented in this thesis titled "**Effect of Enterprise Risk Management on Firm Value: Empirical Evidence from Non-Financial firms in Pakistan**" is solely my research work with no significant contribution from any other person. Small contribution/help wherever taken has been dully acknowledged and that complete thesis has been written by me.

I understand the zero tolerance policy of the HEC and Capital University of Science and Technology towards plagiarism. Therefore, I as an author of the above titled thesis declare that no portion of my thesis has been plagiarized and any material used as reference is properly referred/cited.

I undertake that if I am found guilty of any formal plagiarism in the above titled thesis even after award of MS Degree, the University reserves the right to withdraw/revoke my MS degree and that HEC and the University have the right to publish my name on the HEC/University website on which names of students are placed who submitted plagiarized work.

(Nouman Nasir)

Registration No: MMS161005

Acknowledgements

I thank ALMIGHTY ALLAH the most beneficent and the most merciful, for his kindness and His mighty to give us direction, energy, courage, strength and power to complete this Thesis.

I want to thank my dissertation supervisor Dr. Jaleel Ahmad for his continuous support in my MS study and research, for his patience, motivation, enthusiasm, and immense knowledge. His guidance and persuasion helped me in all the time of research.

I would like to thank my Parents and family who had motivated me continuously to achieve this milestone.

At last, I pay sincere regard to my classmates and friends who directly or indirectly helps me in the research.

Thank you all

Abstract

This research examines the effect of enterprise risk management on firm value in Pakistan. Further Study empirically examines company characteristics that establish the execution of an enterprise risk management system. Using a sample of final data set of 83 non financial firms located in Pakistan. The sample included non financial firms from the year 1999 to 2015 and so up to seventeen observation years per company. As in context of Pakistan, most of the organizations already implement an ERM programs and establish specialized ERM departments because the ERM is now a global term and has become increasingly relevant because of the growing difficulty of risk and an additional development of regulatory frameworks. For the empirical evidences data collected of non financial firms listed at the Pakistan Stock Exchange (PSX). Results of logistic regression shows that Capital Opacity, Profitability, Financial Leverage, Firm Size and Slack have positive impact on the implementation of an ERM system but Industrial diversification, Industry, Return on Equity are negatively related to ERM engagement. The results of ordinary least square regression finds positive relationship between use of ERM and firm value.

Keywords: Enterprise risk management, Firm characteristics, Firm's value (shareholder value).

Contents

List of Tables

Abbreviations

ERM	Enterprise Risk Management
TRM	Traditional Risk Management
SBP	State Bank of Pakistan
PSX	Pakistan Stock Exchange
COSO	The Committee of Sponsoring Organizations
CRO	Chief Risk Officers
ROE	Return on Equity
ROA	Return on Assets
FLEV	Financial Leverage
IND	Industry
VIF	Variance inflationary factor
PROF	Profitability
CAPOPT	Capital Opacity
$\mathbf{R}^2$	McFadden R-squared
IND Div	Diversification of Industry
CAS	Casualty Actuarial Society
RIMS	Risk and Insurance Management Society
S&P	Standard and poor's

Chapter 1

Introduction

1.1 Introduction of Risk and Enterprise Risk Management

Risk varies from business to business. The fundamental of risk is about dealing with uncertainty. It is essentially anything that has some impact on the long-term success of your business concerned is a risk. There are different levels of the risk with the different result implications but face challenges and make best plans to handle them. James jam defines the risk as a broad and well organized structure for managing different kinds of risk like credit, market, operational, economical capital risks and risk transfer to maximize firm value.

Enterprise Risk Management comparatively is a fresh term in business and ultimately this approach is used to manage the risk. Now auditors include ERM approaches to examine the company audit. Now on many occasions, presentations are being made on ERM topic. Special seminars are conducted on this topic to explain the importance, detail about the procedure, present examples of purpose and advantages in this field. Now universities offer this course titled as Enterprise Risk Management (ERM), like Columbia University, Boston University's Metropolitan & John's University. New broad fields of risk management exits, the companies hire specialized expertise that helps the firm to manage the Risk.

Risk Management is procedure with the aim of examines uncertainties face by firms and allocates the efficient management in support of treating such experience. Especially in recent years awareness related to ERM has continued increasing. The large numbers of organizations already implemented ERM programs, specialized ERM units have established by consulting organization, in the foreign countries in ratings process have started to consider enterprise risk management by the rating agencies. The ERM associated courses or research centers developed in universities.

Unlike usual risk managing where single entity risk types were individually handle risk in 'silos', ERM allows companies to managed a broad collection of risks in an included, enterprise broad manner. Intellectual and industry observer argued that ERM settlement firms by increasing competence of capital and synergies among different risk management activities, declining stock price instability, earnings and dropping outside capital costs(Hoyt and Liebenberg).

From the different academic journals, the different definitions, descriptions, history, concept and origin of enterprise risk management are discussed and included in the introduction section for more clarification in this work.

CAS in 2001 defined "the procedure organized by the companies to identify, manage, develop and observed risks from the entire resources for the reason of raising companies short as well as long term value for its share holders".

In 2001 Dickinson defined ERM, as an organized and holistic system of the management of the whole risks an organization faces.

Meulbroek in 2002 said that, to recognize and evaluate integrated risk management of the portfolio of the risks that damage firm value and execute strong policy or strategy to manage those risks.

Liebenberg and Hoyt in 2003, not conventionally "Silo-Based" way for corporate risk management, ERM allows companies to get advantage from an incorporated way to organize risk that alter the interior of attention of the risk management functions from mainly protective to more and more disgusting and strategic. ERM allows companies to run a broad range of risks in an included, holistic fashion.

ISO 31000 also defined ERM in 2010 Risk management mean related actions to organize an organization which is facing.

Risk and Insurance Management Society (RIMS) in 2011 said that ERM is a planned business regulation so as to support the attainment of a company's purpose by addressing complete variety of its risks and running the collective effect of those risks as a consistent risk portfolio.

While there were allot of differences among definitions of ERM, the essential theme was that ERM mainly new technique of determining, controlling and understanding the risks in front of by an organization. In various cases ERM was analyses as management tools so as to can recognize gainful opportunities to improve share holder wealth.

That's why, ERM is considered to be different from conventional risk management concept. ERM defined as a method that join the company total risk management actions in one incorporated, comprehensive structure to attain a broad company perception. Conventional approaches, in difference, were usually found on a silo based risk concern and a department by department perception, where risks were calculated in separation(Liebenberg and Hoyt 2008).

ERM combined all the risks over the entire organization, thus allow for interdependencies among risks, which taking into account for a improved evaluation of the company's risk condition and additional get betters the decision procedure by way of considered and effective progress. Moreover, risk managing in regular approaches was commonly relatively protective in that it focused on the defense of the company beside difficult financial situation(Pagach and Warr 2011).

In ERM, focus was moved against an extra disgusting organization during the mixing of ERM keen on the company policy and decision procedure. It was clearly planned to contribute toward raise stake holder value. ERM therefore does not just effort to reduce risk but clearly accounts for possible opportunities.

Risk management was those approaches which make sure that even individual risk project has unfavorable outcome on the entire Organization. Therefore ERM gives

possible advantage of dropping the direct or indirect cost related through financial distress.

While focus on ERM concepts, these concepts were identical to each other even if these term has a little different. ERM highlight broad analysis regarding risk management, a change over "silo" way of running diverse risks surrounded by an organization specifically and an examination that risk management can do a value making exercise, further to risk explanatory procedure.

Hoyt and Liebenberg in 2006, they explained that ERM is a holistic way to controlling risk changes the center of risk management purpose from key protective to rising against disgusting and un-intentionally.

1.2 Theoretical Background

ERM is a broad process and in this process the managers examined the collection of all risks facing the enterprise. The main plan of ERM was to make sure about the risks taken by companies and within a company's risk desires and these risks are managed comprehensively. Those who support ERM argued if the implementation of ERM is proper, in return the Enterprise risk management can be benefited for shareholders through lower stock volatility and higher stock value.

Enterprise Risk Management (ERM) is an advanced technique that tries to dealing with to identify and controlled portfolio of the risks faced by the organization. Every kind of risk is not considered as good, but somehow those organizations used ERM want to decide which risks should be accepted and which should be avoided and moderated. In recent years, it can be seen a major increase related in professional awareness on ERM, minor research be presented on ERM and in specific effects of ERM regarding on firm performance(see Meulbroek 2002; Beasley, Clune, and Hermanson 2005).

A series of an organization for a failure, business scandals and deception were surrounded by the reasons for organizations to successfully apply risk management process. These firms collapse due to unfortunate risk management and business

control. Business power and risk management were consistent and mutually dependent. The constancy and development of the firm's performance were extremely reliant on the efficient function of equally mechanism.

Although it was a factual that large number of organizations started to use ERM as a strategic management tool. This tool was found by the Conference Board. Furthermore, in global corporate and credit rating process has introduced S and P in Enterprise risk management analysis (Gatzet and Martin 2015).

ERM was worked on the 4 pillars of management (Planning, Organizing, Leading and Controlling) directing the actions of a firm in taken to minimize the effect on a firm's capital and earnings.

The concept of ERM was introduced in mids-1990's and emerged in corporations as management function. ERM has an organized and incorporated in the way to the managing of the total risks that a company faces.

In 1940's and early 1950's, as a proper part in the decision making process within the organizations were origins of risk management. Under the broader concept of the ERM there were two previous strands of risk management practice that have more recently been integrated (Gerry Dickinson 2001).

Before twenty years risk management was not considered as a serious and necessary part of the organization. It was generally determined by an executive's approach of risk. Recently, handling risk was becoming a basic attention. The capability toward recognize risks or adapt to the increasingly varying company environment along with the significant achievement aspects for organizations. Management attention to finding risks with reacting to manage the diverse ways in controlling risk. Not any of these ways were immoral however their focuses were imperfect and split(Hoyt and Liebenberg).

Therefore, the demand to capably recognize and react to diverse risks emerged in an implementation of holistic risk management procedures by several companies. The proper concept of ERM was introduced in mid-1990s and emerged in corporations as management function. ERM has an organized and incorporated in the way to the managing of the total risks that a company faces.

Enterprise Risk Management was one of the ways that goes extreme away from the conventional base of risk, see Gordon, Loeb & Tseng, (2009). It was a comprehensive way in identifying potential risks that an organization would confrontation or choosing suitable reaction that equals organization's risk demand. Implementing an ERM can raise risk consciousness in a company and after improve decision making capability well-known to company value maximization, see Razali, Yazid and Tahir, (2011). In spite of the advantages of ERM execution, a lot of companies have yet to implement it according to Beasley, Clune and Hermanson,in (2005).

On the other hand, risk activities manage by the single individual may decrease earnings instability by reducing the chances of losses. There was possible dependence among risks beyond actions that may go unobserved in 'silo' risk organization form. While ERM gave an arrangement, that unites portfolio of risk management actions into one incorporated structure that facilitated the classification of such dependence(Lechner and Gatzert 2017).

Meanwhile, risk activities manage by individual was able to instable and decrease earnings as of a detailed source just like Interest Rate Risk (IRR) etc. But ERM policy decreases instability by avoiding aggregate of risk diagonally diverse sources. An additional cause of value as of ERM programs occurred due to improved information regarding an organization's risk profile(Nocco and Stulz)

Outsiders were also faces further complexity regarding to assessing the organizations risk profile and financial strength that were extremely financially or working in difficult. ERM allows these financially not clear organizations to enhance inform strangers of their risk summary and also provides as an indicator of their obligation to risk organization. Through bettering risk management exposures, ERM is expecting to decrease the predictable costs of narrow inspection and outside capital (Meulbroek, 2002).

ERM has turn into a basic anxiety in today's global environment. Risk management was the process in which an association identifies threats and in future analysis those threats, to examine alternatives of threats or reduces those threats. Nowadays ERM has been associated with the most important key feature of successful organizations which allows the companies to observe portfolio risks facing

an organization during several varieties of ordinary plans. ERM has appeared as assemble that apparently defeated limitations of silo-based traditional risk management (TRM).

If this study defines the ERM, it is defined like this:

"ERM process is not only used to manage the risk, it's also used to identify, assess and monitor the risk. So that the organization can establishes the strong internal control by these factors. Due to strong internal control, the risk management was coordinated well; as a result an organization achieves its objectives in order to maximize the effect on firm's capital earnings by minimizing the risk " (Nasir N 2018).

The Company's Board of Directors is ultimately responsible for managing the risks faces by a company because of its basic duty to protect the company's assets and people from the risk. Hence, risk management is very much a governance issue. While the actual process of ERM will be carried out by the management, it must be overseen by the board. The board has to ensure that its management team has adequate expertise, chief risk officers and holistic risk managers are managing risks so that it could run the company effectively and earn maximum profit. The size and organizational form of the company itself can also be affected by risk. Juicing firms come in many different types and sizes(Butt SA 2014).

In current years, ERM has received extraordinary international concentration by companies especially after the financial crunch that proved no business units its assets or customer base resistant toward risk. In reaction to this increasing expectation for risk management by the entire enterprise, most important organizations are dumping their established approaches to manage the risk by silo in where things were controlled in separation from one another by accepting an enterprise risk management approach (Lienberge and Hoyt, (2003).

Senior manager such as Chief Risk Officer (CRO) and a committee of specialists are responsible of risk management process and make sure about the suitable management and operationally of ERM system. Furthermore, ERM is now as strategic part of the overall business to transfers risk management in better decision process that also responsible for emerging and strategic opportunities rather

than annoying role with regard to functional and considered decisions in order to ultimately boost shareholder value. However, an increasing significance of integrated risk management system, conversely, but ERM has only been adopted by some organizations, see Lin, Wen and Yu,(2012).

Hence in many of the organizations, risk management has evolved into ERM where the enterprise risk is managed collectively rather than separately. The organizational risk management exercise revolves around maintaining or even improving shareholders value, in an uncertain environment (Beasley et al., 2008).

In Pakistan, enterprise risk management programes are now becoming more attractive, specially contained by the fast-developing industries. In 2013, following to the structure of Board Risk Management Committee in compliance (BRMC) with the Public Sector Companies Governance Rule which was charged by the team recommendation to have an ERM operational in place. These statements were following in 2013 by publication of a structure for evaluating ERM execution with non-financial firms.

In view of the reality that the Pakistani non financial-firms currently stand at a critical moment in its development, we deemed it appropriate for this study to explore how ERM can help to add value. This research started with a concise academic investigation planned to maintain our observed research, which we assumed to establish whether there was a rising statistical association among ERM and firm value within the Pakistan non financial firms.

1.3 Problem Statement

The Pakistani industry has grown nationally as well as internationally. Due to new entrants of local and foreign industries, businesses and organizations face strong and tight scrutiny from the regulatory authorities, specially the Security Exchange Commission of Pakistan (SECP) and State Bank of Pakistan (SBP). This change in the Pakistani industry is new and an increased implementation of information technology and improved business environment can be attributed to the liberalization of the firms. With the adoption of information technology and

new systems of operation, the level of risk faced by these industries has reached a worrying level and there is need of adopting company-wide ERM policies.

Controlling risks developed into an important task for CEOs as managerial atmosphere come more and more unstable and difficult. Conventionally, companies included controlled risk in silos, and researchers have study constricted piece of the company risk managing range. Earlier observation regarding risk management, research has examined the association among the hedging of financial risk via derivatives and company value. In current years, a few companies have to implement a more holistic approach, known as ERM; however study on the association among ERM with firm value has been light.

It is obvious from the previous literature or studies that the concept of enterprise risk management has been covered, both locally and internationally. However, there has been no study conducted in Pakistan on the effect of enterprise risk management on the firms value in Pakistan. It is on the basis of this problem that the present study will wish to establish the impact that the implementation of ERM and its effect on the firm value of non financial firm in Pakistan.

ERM has become a burning topic in the world. Its plays a vital role for ensuring that risks is well controlled and manages the entire organization from risk. Because of the conditions of rising difficulty of the risk and increasing dependencies on the risk source so that's why ERM has develop into even more associated system.

The most important aim of this work is to see the effect of enterprise risk management on firm value. To find outcomes of enterprise risk management on firm value first finds the determinants of ERM engagement. This study focuses on the estimate determinants of ERM engagement and then the effect of ERM on a firm value. The samples were based on companies that functioning in different industries and listed in Pakistan Stock Exchange (PSX) market.

The effect of ERM on firm value in the Pakistan has been explained through this study. This research work used financial data of 100 non financial firm's samples including firms from 1999 to 2015 and therefore up to seventeen observation years for every company. This study compiles the data to conduct the two regression types, a static logistic regression as well as a linear regression.

1.4   Research Gap

Most empirically studies concluded with the intention of performance of an ERM structure had an important positive effect on organization value, however evidence was also mixed. In previous researches empirically examined on ERM and give attention to one particular industries and geographic areas, see Hoyt and Libenberg in multi per years (2003, 2008 and 2011) just focused on the insurance industry.

Some researchers just worked on specific area like Hoyt and Libenberg in (2008, 2011) and Pagach and Warr in (2011) worked on US data, Yazid ,Razali and Tahir in (2011) and Raid and Golshan in (2012) worked on Malaysian data and Qiuying Li, Yue Wu, Udechukwu Ojiako, Alasdai in (2014) worked on Chinese data. Philipp Lechner & Nadine Gatzert in (2017) worked on Germany data.

However, from the previous research was limited because of the geographical area and industrial specification regarding the original data-set so the empirical results were also generalization. Due to differences in regulation in different continents, consequences that were appropriate for US or European data and could not essentially be transferrable to Asian countries. There has been no any study conducted locally on the determinants or effect of enterprise risk management on firm value. It is on the basis of this gap that the present study will wish to establish the effect that the implementation of ERM and its result on the firm value of non financial firm in Pakistan.

The significance of elements or value of ERM beside the conditions of regulatory requirement in Pakistan is (following to the structure of the BRMC in obedience by Public Sector companies Governance Rules 2013 the team recommendation to have an ERM operation in place). So there has not been any study conducted to data with focus on the Pakistani market sample of firms that operate in several industries, which allows identify cross-industry difference regarding ERM implementations.

Subhani, M.I., and Osman A., worked in 2011 on "The Essence of ERM in Today's Business Enterprises in Developed and Developing Nations" They just explained that when the corporations view risk they were change accordingly, as of a silo way

to an organization broad approach specially in developed countries. They were also provided the evidence of achieves of ERM for selected developed or developing countries.

On the basis of above literature it is obvious from the previous literature or studies that the concept of enterprise risk management has been covered, both locally and internationally. Hence, the small group of firms is known regarding ERM implementation in Pakistan. A current assessment of ERM literature verifies the absence of studies on ERM in Pakistan. On the other hand, only one theoretical research studies on ERM in Pakistan (Subhani, M.I., and Osman A., 2011). Therefore, it was appropriate time to have a research that particularly focuses on exploratory the effect of ERM implementation on Pakistan companies. This study plans toward shed light on ERM implementation among Top 100 Pakistan listed companies.

1.5 Research Questions

This research focuses on the following questions. First, which variables determined the ERM engagement? This research question examines those variables which determined the ERM engagement and which variables help companies for adopting ERM.

Whether the second question was that what is the effect of enterprise risk management on firm value? It's actually depends upon the respective industries and their regulatory bodies. Basically the strong regulation is influencing companies to implement an ERM system. Their regulatory framework in the country and also for international regulations is influencing to implement an ERM system.

The main questions of the study were related to ERM following:

- Which variables determined the ERM engagement?

- What is the effect of Enterprise risk management on firm value?

1.6   Objectives of the Study

The objectives of this study were to identify firm characteristics that determine ERM engagement and some amount to which particular companies have executed ERM programs and then assess to examine the effects of ERM on firm value. Even as activities of ERM by an organizations would be of concern commonly, this study focus on non financial firms of Pakistan in organize to manage for differences that may occur from regulatory body or across industries differences of market. This study focus on that non financial firms which publicly-traded in Stock Exchange of Pakistan (PSX) so that can easily access to market-based measures of value.

And also for the reason that this study was further expected to examine public confession of ERM activity between public traded firms. The major source of information was on the scope of ERM implementation by non-financial firms come from a search of Annual report of the company for the existence of a Risk Management Committee, Chief Risk Officers and evidence of COSO of an ERM framework.

The main objectives of the study were the following:

- To identify firm characteristics that determines ERM engagement.

- To examine the effects of ERM on firm value.

1.7   Significance of the Study

Thus, the aim of this research work has to fill this research gap by the contribution for the future research. So this study empirically studying company's characteristics and value of ERM based through data collection from the Pakistan Stock Exchange (PSX). This research used two analysis first was logistic regression analysis and second was linear regression analysis.

For study the determinants of ERM in this research, the dependents variables was ERM with focusing on Capital Opacity, industrial diversification, industry,

profitability, return on equity, financial leverage, firm size and slack. Second, by using Tobin's Q to find firm's value through a simple linear regression to examine the value of ERM. The results for determinants of ERM provide insight regarding.

Whether the question was that the ERM be able to create value with focus on the Pakistan stock Market? It's actually depends upon the respective industries and their regulatory bodies. Basically the strong regulation is influencing companies to implement an ERM system. Their regulatory framework in the country and also for international regulations is influencing to implement an ERM system.

Actually the main finding for this research work was that Capital Opacity, industry, profitability, return on equity, firm size, financial leverage and dividend were more comforting to implement ERM systems and also match with previous work. This research find a statistically important relation among an ERM on firm value. On the basis of previous results this research confirmed the value relevance of ERM its shows significant positive effect of Enterprise risk management and firm value.

If the firms can't prevent them from the risk, the acceleration of such firms to default their obligation and leading to liquidation. So firms should adopt the procedure of risk management in organizations. This ERM impementation will help governments, strategy makers and further stake holders to design good and strong policies and program in result of this policy and program the firm prevent from the risk and also prevent the acceleration of such organization to defaulting in their obligations and as a result leading to liquidation. The implementation of an ERM will help policymakers to carry, support and promote the establishment of similar institutions having had adequate information managing risk locally.

This research work will also generate a monograph which might be reflected in other sectors of the economy as well. Most significantly, this study will add to the literature on the corporate management and risk management topics. This study expect that the end result might be important to the academicians, if someone find useful research gaps that may arouse interest in further research in future.

Recommendations will be made on possible areas of future studies. This study is further justified since it will be of value to those interested in setting up firms in

the country since they will be able to understand what to do right to succeed and what if done wrong would bring the business down.

1.8   Organization of the Study

First, this study provided a brief introduction of the enterprise risk management. The remaining structured of the study planned as like this. Chapter 2 related to a brief summary of the literature review of ERM and hypotheses development. Chapters 3 describe the data and methodology design. Chapter 4 presented the results and discussion related to the results. Chapter 5 conclusion related to the work and future recommendations.

Chapter 2

Literature Review

To identify the ERM importance, objectives and implementation, this research started with an assessment of the brief history and concept of ERM in the introduction section and now in second part the academic literature was discussed. Historically, Risks are of different kinds so different kinds of risk can separately managed by the organization. Risk is an event that cannot be eliminated by the definition and by nature. Even though risk and uncertainty are used as reciprocally but there is a difference between them.

Whenever, one does not know about what will occur in the future then the uncertainty exits. Risk is uncertainty that has a potential of a loss. Conventionally when any one talked related to risk management, what approaches in mind was rather insurance, broker or auditor. Job related to the risk expert was not only to minimize the negative impact to its lower level. It's also worried about the negative collisions of risk exposures(Butt S.A., 2014).

While, the dynamics of market & organization environment are increasingly varying approximately in every industries, it turns into tough for firms to design the correct way for their constant achievement. One basic worry in today's energetic environment for firms is risk management. TRM paying attention on entity risks accessible in the companies along a silo-based angle. On the other hand, nowadays this point of view has undergone an excessive development and companies examine risk management as of a comprehensive perspective (Hoyt and Liebenberg).

This comprehensive perspective almost controlling risk in firms is generally referred as ERM. Now organization environment and companies have turned into more risk conscious. This might be an effect of business authority indignity and inappropriate financial administration cases and as well terrorist attacks danger for companies. Therefore the concept of ERM has emerged in recent years. The ERM focused in on both sides of risk maybe positive and negative. While it is beginning, ERM has increase a huge drive in the literature and a lot of researchers have provided on the way of factors manipulating firms to implement ERM(Farrell and Gallagher).

Risk managing is associated with main interest of any company's deliberate management. Related to the entire activities available in the firms risks were obtained for achieving the activities or their objectives helpfully in every portfolio.

Appropriate increase of risk organization was the finding of the risks and its explanation. The final outcome must be increasing the firm's value. It improves the probability of achievement than failure through on time of risk identification.

It was the element of the strategy of several firms for maintenance the way of the history, current and future actions for risk involvements and its avoidance. For association not in risk management must investigate it into their managerial way of life via senior management. This management determination assists the policy that explains into functional and strategic objectives, managing over responsibility firm broad and employees accountable for the management of risk as part of their job description (Pagach and Warr, 2011).

Hence, a most important challenge for that firm implemented ERM was to establish that management decision just not via senior managers, other than business managers around an organization, obtains accurate risk-return tradeoff. To cause this occur, the risk estimation of fresh projects should be executed, at slightest originally, on a decentralized center by the project planners in the business units. A totally centralized assessment of the risk-return tradeoff of individual projects would lead to corporate gridlock (Gordon, Loeb and Tseng, 2009).

By following the Nocco and Stulz (2006) the theory related to this research was risk-return theory. The broad feature on the firm's risk collection was planned

toward make value for organizations by enhancing their risk/return tradeoff. As a result, produces long term competitive advantages by those corporations which identify, manage and monitor risks individually.

Risk-return tradeoff might with no trouble know "ability to sleep at night test". As a few groups can managed the same of financial skydiving with no batting an eye, further were scared to go up the financial steps lacking a protected control. Making a decision what quantity of risk you are able to obtain through others comfortable and your investments is very important.

Thus, it is an essential for the firm to choose a good management panel that fits in existing business. After that, in choosing among the various members of board to be selected, stake holders must consider the current business situation, ERM leadership, which highlights features of major risks that have need of active initiative.

A detailed literature review from earlier studies was collected. The literature review was paying attention on the definitions, effects, the implementations and their relation for the adoption of ERM process in the firm. Specially control variables relationship among implementation of ERM.

In mid-1990's, an ERM proper concept was introduced and emerged in an organization as management function. ERM has an efficient and combined way to the management of the total risk an organization faces. Moreover, Committee of Sponsoring Organization in (2004) suggested the basic of ERM, which was related to the internal environment, also provided discipline or structure. It was the based on the further 7 components of the framework, included the tasks of the board of the directors (BOD) and the role plays by the organizational culture.

COSO defined ERM as:

"A procedure exaggerated by a person, panel of executive, management or further workforce, useful in policy making and around an activity, intended to recognize possible actions that could change the entity, and control risk to inside its risk desire, to give logical declaration concerning the success of entity goals".

As small was known regarding the phases of ERM implementation and the aspects related with the hold or elimination of ERM in a firm, this study specially focuses on implementation of determinants of ERM engagement factors(McShane,Nair and Rustambekov). Companies in the Pakistan have unsuccessful and far away from rest of the developed world in ERM development. Aggravated by many companies' financial exposure of indignity organization and shareholders require for better omission of main risks, there was rising significance on the amount that a firm execute ERM.

G.Dickinson (2001) in his paper: The concept of ERM its origins and conceptual foundation was introduced in his paper. Enterprise risk management is core and the fresh term for portfolio of the risk management access to business risks. As a comparatively fresh field of system, ERM has rapidly in use on a figure of diverse terms. This might guides to uncertainty regarding ERM and it might emerge that they were talked regarding diverse things apparently. Some texts or publications have initiated and discussed like corporate risk management, strategic risk management, business risk management, incorporated risk management, comprehensive risk management and enterprise-broad risk management.

His findings also said that the role of ERM will continue to make stronger as in the strategic planning process within the organization. He concluded in his paper that in the corporate governance agenda. ERM has become strong part because the reason behind that if company takes any kind of risk so now directly accountable for the risks specially were boards of directors and senior managers of the company (See Dickinson 2001).

Profit-maximizing organizations were supposed to believe executing an ERM procedure merely if enhanced estimated shareholder wealth. Even as particular advantages of diverse risk management actions were apparent, there were disadvantages to the conventional "silo" way to risk management. Controlling every risk group in a part of silo created inabilities due to short of coordination between the difference risk management sections (Gatzert and Martin, 2015).

By included all risk classes across in decision making, companies were keep away from repetition risk management expenses by using natural hedges. Companies

that employed in ERM were capable to improve the value and combined risk naturally in diverse company actions. This gave them extra purpose of beginning for resource allotment, hence increasing capital efficiency or ROE. Companies with a broad variety of investment chances were probably to advantage from being capable to choose investments based on a more correct risk familiar rate than accessible under the established risk management activity (Golshan and Rasid, 2012).

ERM had incarcerated the concentration of risk board experts and academic worldwide. Not like the conventional "silo-based" moves toward to business risk management, ERM facilitates companies to advantage from a holistic way to controlling risk that shifts the target of the risk management purpose from mainly protective to gradually more offensive and considered. According to them, in spite of the sensitive attention in ERM, modest empirical research had been conducted on this topic.

There study provided an early effort at recognizing the determinants of ERM implementation. They constructed sample of companies that had indication regarding the use of ERM by appointed a Chief Risk Officer (CRO) who was charged with the responsibility of adopting and controlling the ERM program. They used a logistic regression structure to contrast these companies in the direction of a size or industry coordinated through control sample. While their results suggested a common lack of dissimilarity in financial or ownership features of sample plus control companies. They also found that companies with higher financial leverage were more probably assign a CRO. Their finding was reliable with hypothesis that companies assign CRO's to minimize information irregularity about the company's recent and predictable risk summary (Hoyt and Liebenberg, 2003).

Beasley, Clune, and Hermanson (2005), examined the implementation of enterprise risk management (ERM) as a form for handling many risks that companies tackle onward with the analysis after a firm's adoption of ERM. The amount of ERM adoption within a company was calculated on a 1 to 5 range based upon respondent's answer to a study question regarding quantity of ERM employment. They focused mutually on the implementation of ERM, which was developed into

the standard in large public companies and also on how superior organizations were in ERM implementation.

Their study found that ERM adoption was significantly correlated to the occurrence of a CRO, board governance, CEO and CFO, occurrence of Big Four auditor and organization size. Although the study provided a wide idea regarding the causes behind ERM progress in organizations and it leaves some gap for further studies to be through on how ERM improves and defend stakeholder value and what hostility organizations face in ERM employment (Beasley, Clune, and Hermanson, 2005).

According to Genrikh Lukianchuk in current's competitive and extremely unsettled organization environment, risk management was an uncertain section for every organization in every segment. So far slight was known regarding ERM's efficiency and yet fewer research articles have targeted on the study of relation among ERM and firm performance in small to medium enterprises. Thus, their research articles focuses on the study of Enterprise Risk Management (ERM) in SMEs. The author used the data obtained from UK and Northern Ireland. The total numbers of 208 small to medium enterprise were selected.

Independent variables such as the quantity of auditor cost, quality score, and the male and female board of director's proportion, board arrangement were chosen as they might give details the instability of cash flow and return on assets, correspondingly. Seemingly unrelated regression was selected as a technique to let for at the same time correlation among errors in these two regression models. The outcome illustrated a variety of conclusions, number of executive and senior manager had significant effect on performance but as well increase the rank of cash flow instability. On the other hand, no positive relation was found between ERM and ROA by this set of variables.

Finally, they concluded presented an excess of helpful convenient adoptions for main shareholders who were paying attention in the growth of small to medium entities such as banks, shareholders, government controller etc (Lukianchuk, 2015).

Nocco & Stulz in their article, they were discussed that how ERM constructs value for shareholders as well as they also examined the realistic matters that occur in

the implementation of ERM. They concluded there was small study that helped specialist in evaluating the particular risks, but much to expand from having an enhanced considerate of these risks even if they cannot be measured consistently. There was significant growth in the execution of ERM, with the guarantee of main profit for corporate stakeholders. And, as these executions improve with the assist of scholarly research, these advantages can be estimated to develop.

Organizations can achieve long term competitive advantages through when ERM given micro level advantages to organizations by determined the liability of risk taking on a inferior level. In ERM process CRO means Chief Risk Officers, which plays a role of middle manager by as a medium to converse among higher and lower level management and liable for managing all kinds of risks. This approach also engaged managers in the risk management procedure by helping to reduce risk and get better capital shares value (Nocco & Stulz, 2006).

Simkins and Fraser concluded that a proper and well made implemented an ERM plan can boost organization value via rise morale of investors within administration's capability to bear out its company plan. Possibly it's important for rating agencies confidence in the organizations capability to gather its obligation service under the predictable conditions. They also concluded that ERM was simple category and helped the senior management to maximize value. For this reason, the majority dependable path toward a booming execution was to got senior management and board stage obtain in achieve agreement on firm objectives and risk tolerances. Assign resources during the business planning procedure to control identified risks from all sources that could pose a threat to those objectives. s Some researcher argued in favor of ERM, that ERM provided assurance for businesses to take out latest investment projects by reduces financial distress costs, expected tax payments, enhance managerial risk aversion and solve under investment problems. Improve confidence of shareholders with rating of the company and reduces the cost of capital, which illustrates that the organization has capability to examine debt under possible conditions through ERM process and enhancing companies performance (Simkins and Fraser, 2007).

In recent years, a trend has been change regarding the view of risk management by an organization. Rather of viewing towards risk management against silo based perception, the trend was to taken a comprehensive observation of risk management. This comprehensive approach toward controlling the company's risk is frequently indicated to as (ERM) enterprise risk management. Definitely, there is an increasing hold for the common argument that firms will get better their performance by using the ERM idea.

Concept was introduced by Gordon, Loeb and Tseng. According to them the board of directors monitors the relationship between Enterprise Risk Management as well as company performance depends on industrial competition, firm size, environment uncertainty and firm complexity. This involve that companies should estimate the ERM execution on the basis of appropriate variables about the firm (Tseng, Loeb and Gordon, 2009).

Pagach and Warr (2010) in their paper, their study regarding the outcome of implementation of ERM principles on organization's long-term performance by investigating how financial, and asset and market personality vary about the time of ERM implementation. For this reason they examined data from 1992 to 2004 about 106 firms that made adoption of ERM announcements of senior risk officer's appointments to bring changes in financial feature.

They find small effect as of ERM implementation on a broad variety of organization variables. Although their outcomes could be suitable to minor control examinations, they also increased the question of whether ERM was achieving its confirmed objectives. Generally, their outcome not succeeds to find intention that ERM was value generated; further their study was called for, in exacting the study of how ERM success can be measured. The studies indicated that minor confirmation in their sample of ERM adopters for several significant changes in different important firm variables.

Risk estimation was not the terrifying subject, while it might remain management aware at darkness, profits would not be achievable beyond it. Enterprise Risk Management at essentials had generally described as framework of controlling and

handling risk about in an organization. The main concern of their research was to investigate the ERM.

Their results emphasize that there were very little organizations as of developing countries which were into ERM even as the developed countries organizations were huskily and energetically concerned in it. The gap was due to short alertness or deliberate concerned for value maximization of organization shareholders in developing countries.

As risk, a serious subject for any company wants to determine at various stages frequently intended for advantage or benefit of the company itself. Pakistan had attempted to handle to increase risk consciousness in companies and different educational associations, through adoption which will be extended within future. According to them it was accurate that change makes worry but one consider that the honors of the rewards were value it. In today's occasion the risk custodians can be the best of encouraging revolution in the enterprise risk area (Subhani and Osman, 2011).

In (2011) Moeller focused on the United States (US) market data and used different financial performance measures. Basically ERM is a procedure that affected by the company's BOD, other personnel and management useful in a strategy making across enterprise, that is intended to recognize possible events that may have an effect on the entity and manage danger to be within its risk appetite provide reasonable guarantee regarding the accomplishment of company's goals.

Further, he doubt that the attention in and significance of enterprise risk management and global research for safety issues will moderate in the by future. The concerned specialized must strictly observe progress in these matters and adjust organization procedures to manage with current changes and progress. His initial version summarized remarks on COSO ERM with the terminology. Our determination is with it more and more in future days. That must confirm every one the more accurate used for COSO enterprise risk management and research for safety morality in futures time (Moeller, 2011).

McShane, Nair and Elzotbek (2011) worked on data set of insurance groups consists of 152 companies for the evaluation of risk management activities on firm

value. S&P released by an ERM rating through publicly traded insurers; therefore their concluding data set consists of the 82 publicly traded insurers along with they make use of the 5 different collection of S&P and ERM insurance rating. Their result revealed a positive association among a growing level of risk management and firm value.

They also concluded that enterprise risk management was appeared like a construct that apparently reduces restriction of silo-based TRM. So far slight was identified regarding its efficiency. The minor research on the relationship among ERM and organization performance has accessible diverse results or has been imperfect in require of an appropriate substitute for the amount of ERM execution. They used S&P's recently accessible risk management ranking, the authors also found that there were significance relationship among rising levels of TRM capacity and firm value however no extra boost in value for companies attaining a superior ranking (McShane, Nair and Elzotbek, 2011).

Tahir and Razali (2011) in their paper discussed the description of ERM and its improvement. Earlier studies that were associated to the element of firms with the intention of experienced enterprise risk management were also discussed. They also discussed and explain of enterprise risk management and its expansion over the years. The reality about risks may arise in several perceptions. It shows that risk management (TRM) cannot be handling from divide approach. It desires to be incorporated in a comprehensive style. These aspects were between the major causes of the appearance of ERM in late 1990s. Might be dispute as aspect for firms to accept or apply ERM.

On the other hand, the same year (2011) investigated the association among ERM and firm value. The data collected from of 528 Malaysian firms of 2007. Their study found that statically important relations among them, telling that ever more mature level of enterprise risk management was connected with enhance organization value (Tahir and Razali, 2011).

ERM had been the concern issue for the media interest in current years. Most of the firms have applied ERM programs. Consulting organizations have set specific

ERM entity. The ERM associated courses or research centers developed in universities. Despite the intense awareness in ERM by scholarly articles, there was lack of empirical proof about the effect of such plan on company value. The objective of their study was to determine the amount to which particular companies have executed ERM programs. After that, to assess the value inference of these programs.

They focused on insurance firms and examined insurance firms for the 11-years period from 1995 to 2005, for the association among the value of ERM of 275 insurance firms that operated during in these years. Their study found that a extremely strong relation among firm value and enterprise risk management, with ERM growing the investor value for united state insurance firms through about 16% to 20% correspondingly (Hoyt and Liebenberg, 2011).

The aim of Golshan and Rasid,(2012),in their paper was to see significant the powerful aspects of ERM implementation by Malaysian public listed companies. The two aspects of financial leverage and auditor kinds were found to be significant and powerful aspects for ERM implementation. On the other hand, findings point out that companies through superior financial leverage or with a Big Four auditor were extra likely to have a shape of ERM structure in place. Further researchers could study powerful factors after ERM implementation in other countries and compare it with Malaysia, which was one of the fastest developing economies.

They also worked on Malaysian data; explain that a company's capital structure, international diversification and the sale volume are major drivers for ERM system (Golshan and Rasid, 2012).

The existing literature on an implementation of ERM abstract as of the matter of its designed circumstance. They used the relationship among ERM and different entity risk management practices. Their paper presented an academic base to examine the strategic elements, risk combination and value formation of ERM. They analyzed hypotheses through data as of U.S. property and insurance industry.

Their results showed that insurers through high reinsurance investment and higher geographic diversity were more likely adopted ERM. Later than ERM commencement, the degree of definite IRM alterations was considerable. The market reacted

negatively to ERM implementation. ERM show a strong negative relationship with firm value (Lin, Wen and Yu, 2012).

Their article examined the connection among ERM and firm value. Their study was assumed in the perspective of Chinese insurance industry. Data was obtained as of the CIRC, a management body accountable for regulating insurance products and services in China. They investigated the relationship among ERM and firm value. The data collected from of 119 China Insurance firms of 2007. From the whole population of insurers operating in china in 2010 the initial sample was collected.

Their results illustrate the relationship among ERM or firm value at initial emerge statistically important in a relationship medium but after that falls less statistical significance on closer scrutiny through regression analysis. Accordingly, it was recommended that insurers in China should not look to aggressive investment in ERM as a strategy for producing quick gains in firm value. They concluded that firms value can enhance with an increasing mature level of enterprise risk management are associated. Their study also found that statically significant relationship among variables (Li et al, 2014).

Gatzert and Martin examined in (2015), an ERM implementation in organizations through observed the different literature regarding determinants evidence and they found that value also cause through ERM. The growth of ERM program allows firms to handle business risks in a comprehensive way as different to the silo-based view in traditional risk management structures. One major matter in this regard was what issues make the implementation of an ERM structure in firms.

Whether ERM structures can essentially generate value once executed. Their paper concentrate on these inquiries by performing a proportional evaluation of observed proof as of the literature about the elements of ERM or its value once executed. Their outcome of about the element of an ERM system was partially ambiguous while the relative assessment of the seven studies (Gatzert and Martin, 2015).

Farrell and Gallagher according to them ERM was that regulation in which organization observed, analyzed and managed risks from over the whole company

with the purpose of recognizing fundamental association and therefore optimizing the risk pleasing behavior in a portfolio situation. Their study examines the evaluation implications of ERM development. Companies that had effectively incorporated the ERM programs equally into their planned activities and regular practices show superior skill in finding risk dependency and association across the whole organization and from result improved value when responsibility the ERM maturity journey.

They used data from the leading risk industry, management insurance society and maturity risk model over the era as of 2006 to 2011, which companies attains on a 5 point maturity level. And worked on cross-sectional study and they confirmed statistically important associations, telling that a growing level of Enterprise risk management is related with improved value of the firm. From some mixed verification empirical results they argued that a comprehensive strong enterprise risk management be able to add value for the firm therefore in general confirm that theoretical arguments (Farrell and Gallagher, 2015).

The basic objective of their paper was to examine company characteristics to establish the execution of an ERM structure with to study an effect of ERM on company value. They empirically determined effect of an ERM on company value plus also determined the effect of company characteristics on a company's result to implement ERM programs. They focused on firms listed on the German stock exchange (DAX). The data was collected from German Stock Indies (Dax, Mdax, Sdax, and Tecdax). According to them this was the first study of a cross-sectional examination for Germany and very first on behalf of a European country. The time was of five years starting 2009 to ending 2013. The sample was collected of 160 companies. They used a logistic regression and a Cox proportional hazard regression through diverse time sequence for examined the different drivers of ERM and a linear regression for examined the effect of ERM on firm value using Tobin's Q.

Their findings shows that SIZE, INT DIV and IND sector (banking, insurance, and energy) significantly affect the execution of an ERM program with financial leverage was insignificantly associated to ERM implementation. In adding, their

outcomes verify a important positive impact of enterprise risk management on shareholder value. Their outcome about determinants of enterprise risk management showing to better firms as well as internationally operating companies were more probably to adopt ERM system.

They also explained the importance and helpful effect of ERM on shareholder value and controlling for further determinants of firm value (Lechner and Gatzert, 2017).

ERM has a board procedure to involve a company's management toward recognize and review the combined risk that influence company worth with affect an enterprise broad policy to handle those risks in organize to set up an helpful risk management strategy (Meulbroek, 2002). The main target of risk management is to maximize stakeholder value (CAS, 2003; COSO, 2004).

Currently, risk management has develops as of a minor vision so as to targets on estimating risk from "silo" view to incorporated all-inclusive view. Controlling every risk category in an isolated silo makes incompetence due to not have management among the different risk management departments. (Pagach, Warr, 2011 and Hoyt, Liebenberg, 2011).

Given some ERM be able to makes value, the question about the determinants occurrence, which create an implementation further conforming for companies. In this context, the majority articles observed an irrelevant relation among ERM and capital opacity (Pagch and Warr, 2010; Yazid, Razil and Tahir, 2011; Libenberg and Hoyt, 2011; P. Lechner and N. Gatzert. 2017). Further finding was more significant positive relation of ERM and firm size (Pagch and Warr 2011; Libenberg and Hoyt, 2011; Farrell and Gallagher, 2015; Lechner and Gatzert, 2017) apart from Hoyt and Liebenberg (2003).

Additionally, negative relation among ERM and Financial leverage was observed in Libenberg and Hoyt 2011, Farrell and Gallagher 2015 and Lechner and Gatzert 2017, which was different from the finding of the Golshan and Rashid 2012 and Libenberg and Hoyt 2003. Moreover, focusing on Malaysian data, Razil, Yazid

and Tahir in 2011 further significant positive relation of ERM adoption with Profitability, a company's capital structure or sales volume were major drivers for ERM systems.

2.1   Hypotheses Development

To explore the outcome of ERM on a firm's value first find Determinants of ERM engagement (see Lechner and Gatzert 2017). This study initially focused on estimation the determinants of ERM engagement. Then the effect of ERM on a firm value. On the implementation of ERM system in firm through estimate the effect of the firm characteristics (determinants).So follow Lechner & Gatzert (2017) and Hoyt and Liebenberg (2003), They were make use of a logistic regression model based on multi-period sample, because logistic regression model be normally used for binary decisions.

The key plan of the study was observed the impact of ERM on a company's share holder value. On the basis of earlier empirical literature, this study hypothesize that Random Effect model was appropriate or Fixed Effect model was appropriate, when a firm has a positive impact by the implementation of an ERM system. Even though initiating and maintaining an ERM system may be highly cost-intensive (Hoyt & Liebenberg, 2011, Wen, Lin and Yu, 2011, Lechner and Gatzert, 2017).

2.2   Variables

2.2.1   Determinants of ERM engagement

So first target of this study was to estimate the determinants of ERM engagement. After that the effect of ERM on a company's value. For determine the ERM engagement, the following variables are employed for the equation:

$$ERMit = f(CAPOPT, DIVIND, IND, PROF, ROE, SIZE, FLEV, SLACK)i$$

$$(2.1)$$

2.2.2   Dependent Variable

For this function as ERM that was constructed as binary variable. If Firm adopting enterprise risk management by assuming value of 1 and otherwise 0. By following Hoyt and Liebenberg (2003) and Lechner & Gatzert (2017) their study used logistic regression model. Logistic regression model was typically used for binary decisions.

2.2.3   Independent Variables

Capital Opacity: Capital Opacity is defined as "The implication of opacity in financial markets for shareholder behavior, asset prices, and welfare" (see R. Christopher Small 2014). As suggested by Lechner & Gatzert (2017) organizations were probably applying an ERM system by increasing capital opacity. In 2008 the financial crisis was on peak. Companies face the issue regarding the liquidation of the assets at their fair market value, due to non transparency of the assets. In addition, companies through increasing capital opacity were usually undervalued due to superior information asymmetry (Warr and Pagach 2011). This study follow Lechner & Gatzert (2017),Golshan & Rasid (2012),Pagach and Warr (2011). Intangible assets by the BV of total assets is the ratio of Capital Opacity.

Capital Opacity = Intangible assets / book value of total assets

H1: Companies with increasing capital opacity also comforting to apply an ERM system.

Diversification of Industry: Those companies broadly diversified which were engaged in more than a few segment or business units (Warr and Pagach, 2011; Rasid and Golshan, 2012). For the diversification status uses dummy variable, if companies working in two or more different sectors or businesses = 1, if working

in only one sector or businesses = 0 (See Hoyt and Libenberg, 2011; Lechner & Gatzert, 2017).

DIVIND= Companies working in two or more sectors or businesses = 1, working in only one sector or business = 0.

H2: If companies working in two or more sector or businesses are more comforting to apply an ERM system.

Industry: Previous literatures recommend that companies from specific industries like banking, energy and insurance were more probably to implement an ERM structure than any others, reason for that of diverse authoritarian necessities and also because of a superior (diverse) quantity of risk consciousness within the particular industry as compared to other sectors (see Beasley et al., 2005, Rasid and Golshan, 2012). This study not consider financial sector so not considering the insurance and banking industry. Energy sector industry already was more comforting to implement an ERM system because higher degree of risk in energy sector and different regulatory requirements as compared to other sectors (Rasid and Golshan, 2012). Follow the Liebenberg and Hoyt (2011), Rasid and Golshan (2012) and Lechner & Gatzert, (2017). For the energy industry this study used dummy variable,firms operating in energy sector = 1 or otherwise = 0.According to previous argumentation, this study assume

IND = Operating in energy sector = 1, otherwise = 0

H3: If companies are working in other sector than energy sector are more comforting to apply an ERM system.

Profitability: In 2011, Mcshane, Nair and Rustambekov used Profitability as control variable by Return on Assets (ROA) in percentage for year. Razali, Yazid and Tahir in same year also determined ERM through profitability of the firms. Profitability can be measured through Return on Assets (ROA), formula used for ROA as:

ROA = N.I/BTA N.I = Net Income and BTA = Book value of total assets.

Therefore, this study used: PROF = ROA in percentage for Year.

H4: Companies with increasing profitability are more comforting to apply an ERM system.

Return on Equity: One of the previous studies suggested that the proxy for the firm profitability can be use the return of equity. (Li. Et. all 2014) and one of the same related determinant for ERM was also study. In the previous literature was the Return on Equity and measure through accounting return via using return on equity, ROE = Net Income/Book Equity (Don Pagach and Richard Warr, 2010).

ROE = Net Income/Book Equity

H5: Companies with increasing Return on equity are more comforting to apply an ERM system.

Financial Leverage: Now in modern Era, the debt is the main attraction source of finance for the companies to finance process. The major sources to financing operations can be generated via different method like options, futures or other financial instruments. By borrowing debt, the firm gets chances to invest different business operations without increasing its equity and actually a company increases its leverage and the debt is main attraction for the companies because its lies in the tax factor. Interest paid on the debt is a tax-deductible expense for the company, which effectively reduces its cost to the company. The benefits accruing to a company as a result of reduction in tax due to use of debt is referred to as Tax Shield (Dr.Safdar Ali Butt 2014.In relation among capital structure and firm value, so to manage the relation between them, they consist of a financial leverage variable.

Formula was the book value of liabilities by the market value of equity was the ratio of financial leverage, but the results were unclear with significant negatively (Libenberg and Hoyt, 2008; 2011) as well as positive relations were also there (Rasid and Golshan, 2012). Due to excessive leverage causes more chances of liquidation plus the firm's owners also to bear financial distress costs (Hoyt and Libenberg, 2011). Hence this study used:

FLEV = Book value of Liabilities / Book value of Equity

H6: Companies with increasing financial leverage are more comforting to apply an ERM system.

Firm Size or Size: By follow Lechner and Gatzert (2017) added the principle of proportionality in their paper, with a growing firm size was connected with a rising number of risks, which were likely to effect in a higher probability of ERM implementation. There were positively relation among Size variable and performance for the reason that larger firms must be more capable of ERM (Liebenberg and Hoyt, 2008).This study follows pervious literature in applying the natural logarithm of book value of total so

Size = Natural logarithm of book value of total Assets

H7: Companies with increasing firm size are more comforting to apply an ERM system.

SLACK: In 1963 slack was first time defined by Cyert and March as the difference between the payments required maintaining the organization and the resources obtained from the environment by the coalition. Cash accessibility and Slack gives a measure of a firm's capability to persevere for the period of in use of cash short fall. Financial slack dealings the quantity of extremely liquid assets so as to the companies had on hand that might be used to make up a short fall in operating cash flows. Companies implementing enterprise risk management might make a decision to raise financial slack to give a bigger cushion against financial distress (Pagach and Warr, 2010). They also argue in paper that due to an importance of risk management on reducing the probability of financial distress may have ERM user's superior levels of financial slack. On the other hand, they also note that due to improvement in risk management, the ERM users may be able to reduce the level of financial slack. Cash or marketable securities by total assets are the ratio of Slack.

SLACK = Cash and Marketable Securities / Total Assets

H8: Companies with increasing slack are more comforting to apply an ERM system.

Chapter 3

Research Methodology

3.1 Data Description

This chapter clarifies the basis from where the data has been collected for the research. It also explains the data has been collected from non-financial firms of Pakistan. For detailed study it also provides the list of variables used to complete the research in model. The methodology used for the study has been discussed in this.

Panel data defined as data collected from a small number of observations covering a large numbers of units. Panel data is the mixture of cross-sectional and time series data.

Cross-sectional data: Different variables from the different individual.

Time series data: the data varies with respect to time.

Panel data also known as longitudinal data the same sample at different points in time or (cross-sectional time series data) a cross section of study population of same or different nature, the data is derived from small and large number of observations over time and number of cross-sectional units. Panel data involves measurements over some period of time which refers to multi-dimensional data. The reason of discussing definitions was that this study used panel data as mentioned above.

This study used panel data because the population of industries of same or different nature and different variables from the different industries and varies with respect to time.

3.1.1 Sample Size

The plan of this work to examined the effect of ERM on firm value in Pakistan. Due to restrictions in getting data, the study used panel data of 100 non financial firms located in Pakistan. The sample included non financial firms from the year 1999 to 2015 and so up to seventeen observation years per company.

The data was obtained from the Balance Sheet Analysis (BSA) and Financial Statement Analysis (FSA) published by The State Bank of Pakistan, DWH department. The nature of data was secondary. The non financial firms listed at PSX which has been the largest stock exchange Pakistan as compared to financial firms. The samples of firms that selected were categorized non financial firms. This database covers 100 nonfinancial companies on the bases of capitalization. This study had to eliminate 17 firms due to missing of the data, resulting in 83 remaining companies.

3.2 ERM Identification

The final sample was collected from 83 non financial firms. The data collected through annual report from 1999 to 2015, where 53 firms' used ERM system. Normally companies do not reveal their correct level of risk managing activities of ERM (Martin and Gatzert 2015).

This Study follow (Lechner & Gatzert 2017) for the ERM identifications, following keywords explore through using the best set of phrase & their synonyms and acronyms, The ERM , Chief Risk Officers (CFO), COSO II Integrated Framework (Control Environment, Risk Assessment, Control Activities, Information and Communication and Monitoring), risk committee, holistic risk management and centralized risk management.

Since 25 firms do not disclose several proof of ERM. They still in the final data set with full seventeen observation years, due to disclosure requirements of the publicly traded firms in Pakistan, so study do not have to eliminate any firm as a consequence of missing or erroneous data. Therefore provided 83 company year observations.

3.3 Determinants of ERM engagement

So earlier said that first first target of this study was to estimate the determinants of ERM engagement. After that the effect of ERM on a company's value. For determine the ERM engagement, the following variables are employed for the equation:

3.3.1 Determinants of ERM engagement Equation

$$ERMit = f(CAPOPT, DIVIND, IND, PROF, ROE, SIZE, FLEV, SLACK)i$$
$$(3.1)$$

3.4 The Effect of ERM on a firm's value

The most important ambition of the study was to inspect the effect of ERM on a firm's share holder value. On the basis of earlier empirical literature, this study hypothesize that Model of Random Effect is Appropriate or Model of Fixed Effect is Appropriate by the execution of an ERM system has a significant positive impact on firm value even though initiating and maintaining an ERM system may be highly cost-intensive (Liebenberg and Hoyt 2011, Wen, Lin and Yu, 2012 and Lechner and Gatzert 2017). This study used a linear regression.

3.4.1 Hypotheses for Model

H0 = Random Effect Model is Appropriate.

H1 = Fixed Effect Model is Appropriate.

3.4.2 Statistical Equation

$$Y_{it} = beta_0 + beta_1 x_1 - it + \varepsilon_{it} \tag{3.2}$$

Explanation:

Y_{it} = Dependent Variable

$b_0 = y$ intercept

$b1it$ = Coefficient

ε_{it} = Error term

Based on a 17 years sample, several with 8 control variables and estimated the equation (Tahir and Razali 2011 and Lechner and Gatzert 2017).

3.5 Equation

$$Q_{it} = \beta_0 + \beta_1 ERM_i + \beta_2 CAPOPT_{it} + \beta_3 IND_{it} + \beta_4 PROF_{it} + \beta_5 ROE_{it} +$$

$$\beta_6 SIZE_{it} + \beta_7 FLEV_{it} + \beta_8 DIVit + \varepsilon_{it} \tag{3.3}$$

3.5.1 Dependent Variable

The DV for this equation was Tobin's Q. Lechner & Gatzert (2017) separate the relationship among ERM and Tobin's Q. They used Tobin's Q as a control variable for other firm variable .Follow Liebenberg and Hoyt (2008 & 2011), Gallagher and Farrell (2015), Lechner & Gatzert (2017) they were used Tobin's Q as an alternative for firm value. So the measurement or calculated of Tobin's Q is followed:

Q = (MVE + BVL)/BVTA

Formula for MVE , BVL and BVTA:

MVE = Companies share price is multiply with the number of common stock shares outstanding common stock shares.

MVE = Share price×Common stock share

BVL = By adding of Current liabilities and Non Current liabilities of a firm.

BVL = Current Liabilities +Non Current liabilities

BVTA = Book value of the total assets of the firm.

3.5.2   Independent Variables

Enterprise Risk Management: The ERM was independent in this equation. This was dummy variable. The firm implement enterprise risk management system assumes a value of 1 and otherwise 0. So, this study follow Lechner & Gatzert (2017) and Hoyt and Liebenberg (2003).

Capital Opacity: Capital Opacity is defined as the implication of opacity in financial markets for shareholder behavior, asset prices, and welfare (see Christopher Small 2014). As suggested by Lechner & Gatzert (2017) organizations were probably to apply an ERM system with increasing capital opacity. As suggested by Lechner & Gatzert (2017) the variable of capital opacity (to manage for the collision of opaque assets on share holder value). This study followed Lechner & Gatzert (2017), Intangible assets by the BV of total assets is the ratio of Capital Opacity. Capital Opacity = Intangible assets/book value of total assets

Leverage: Now in modern Era, the debt is the main attraction source of finance for the companies to finance process. The major sources to financing operations can be generated via different method like options, futures or other financial instruments. By borrowing debt, the firm gets chances to invest different business operations without increasing its equity and actually a company increases its leverage and the debt is main attraction for the companies because its lies in the tax factor. Interest paid on the debt is a tax-deductible expense for the company, which effectively

reduces its cost to the company. The benefits accruing to a company as a result of reduction in tax due to use of debt is referred to as Tax Shield (Butt S.A., 2014).

As proposed by Aggrawal et.al in 2008, leverage was capable of rising firm value because managers to pay out funds due to debt forces with the purpose of this force if not, then have been invested in that project which might have negative net present value.In the relation among firm value and capital structure, so to control for the relation among them. some earlier researcher included a financial leverage as a variable. Formula they used: the book value of liabilities by the market value of equity was the ratio of financial leverage, but the results were unclear with significant negatively (Libenberg and Hoyt, 2008; 2011) as well as positive relations were also there (Rasid and Golshan 2012). Due to excessive leverage causes more probability of bankruptcy and the firm's owners to bear financial distress costs (Hoyt and Libenberg 2011).

FLEV = Book value of Liabilities/Market value of Equity

Industry: Previous literatures recommend that companies from specific industries like banking, energy and insurance were more probably to implement an ERM structure than any others, reason for that of diverse authoritarian necessities and also because of a superior (diverse) quantity of risk consciousness within the particular industry as compared to other sectors (see Beasley et al., 2005, Rasid and Golshan, 2012). This study not consider financial sector so not considering the insurance and banking industry. Energy sector industry already was more comforting to implement an ERM system because higher degree of risk in energy sector and different regulatory requirements as compared to other sectors Rasid and Golshan, (2012). Follow the Liebenberg and Hoyt (2011), Rasid and Golshan, (2012) and Lechner & Gatzert, (2017). For the energy industry this study used dummy variable,firms operating in energy sector = 1 or otherwise = 0.According to previous argumentation, this study assume

IND = Operating in energy sector = 1, otherwise = 0

Profitability: (Mcshane, Nair and Rustambekov, 2011), used Profitability as control variable by Return on Assets(ROA) in percentage for year. Razali, Yazid

and Tahir in same year also determine relation between ERM and firm's value through profitability and Return on assets was used the measured profitability. The formula suggested for ROA.

ROA = Annual net income/book value of total assets

Therefore, this study used:

PROF = ROA in percentage for Year.

Return on Equity: One of the previous studies suggested that the proxy for the firm profitability can be use the return of equity. (see Li Qiuving, Wu Yue, Ojiako Udechukwu, Marshall Alasdair and Chipulu Maxwell 2014). And one of the same related determinant for ERM also study in the previous literature was the Return on Equity. Measure through accounting return via using return on equity: ROE = Net Income / Book Equity (see Pagach and Warr, 2010).

ROE = Net Income/Book Equity

Firm Size or Size: By follow Lechner and Gatzert added the principle of proportionality in their paper, with a growing firm size was connected with an increasing number of risks, which be likely to effect in a higher probability of ERM implementation (Lechner & Gatzert, 2017).The relation among firm Size variable and performance were positive and significance for the reason that larger firms must be more capable of adopting ERM (Liebenberg and Hoyt, 2008). This study follows pervious literature in applying the natural logarithm of book value of total

Size = Natural Logarithm of book value of total Assets

Dividend: By follow (Hoyt and Liebenberg, 2011), this study consists in model a dividend payment indicator (Dividends). If a dividend paid in the current year by the company its equal to 1, if the company can not paid a dividend is equal to 0.The predictable sign is unclear. Further to the other level to dividends decrease its free cash flow that could be used for managerial privilege consumption, the payment of dividends is expected to positively affect firm value. 1 = firms paid dividends, 0 = otherwise

DIV = 1= firms paid dividends, 0 = otherwise

3.6   Model Specification

In Table 3.1 the discussion related to variables and their abbreviations which were used in the models. The column related to the dependent and independent of the variable. The formula for the variables which were used to determines the final variable. The predicted sing were also included in the Table and final column related to the references the variables were used by these authors in their research work. Model Specification table is on next page.

TABLE 3.1: Model Specification (Variable, Abbreviation, Formula, predicted sign and References of variables in regression analysis).

S. No.	Variable	Dependent or Independent Variable	Abr.	Formula	Predicted Sign	References
1	Tobin's Q	Dependent variable	Q	Market value of equity + Book value of liabilities/Book value of assets	No one define	Liebenberg and Hoyt (2008, 11), Rustambekov and MsShane Nair (2011), Razali and Tahir (2011), Gallagher and Farrell (2015), L. Philipp and G Nadine (2017)
2	Enterprise Risk Management	Dependent or Independent variable	ERM	ERM = 1 and Otherwise = 0	+(Tobin's Q)	Liebenberg and Hoyt (2011), Warr and Pagach (2011), Rasid and Golshan (2012),Philipp Lechner & Nadine Gatzert (2017)
3	Firm Size	Independent variable	FIRMSIZE	Natural Log of Book value of TA.	+ (ERM) ±(Tobin's Q)	Hermanson , Beasley and Clune (2005), Liebenberg and Hoyt (2008), Yazid,Razali and Tahir (2011), Rasid and Golshan (2012), Philipp Lechner & Nadine Gatzert (2017)
4	Financial Leverage	Independent variable	FLEV	Book value of Liabilities/Book value of Equity	+(ERM) ±(Tobin's Q)	Hoyt and Liebenberg (2008, 2011), Gallagher and Farrell (2015), L. Philipp & G. Nadine (2017)

S. No.	Variable	Dependent or Independent Variable	Abr.	Formula	Predicted Sign	References
5	Industry.	Independent variable	IND	1 = Operating in other then energy sector, 0 = otherwise	+(ERM)	Liebenberg and Hoyt (2011), Rasid and Golshan (2012), L. Philipp and G Nadine (2017)
6	Industry Diversification	Independent variable	DivInd	Companies working in two or more sectors or businesses = 1, working in only one sector or business = 0.	+(ERM) ±(Tobin's Q)	Liebenberg and Hoyt (2008, 11), Tseng, Loeb and Gordon (2009), Gallagher and Farrell (2015), L.Philipp and G Nadine (2017)
7	Capital Opacity	Independent variable	CAPOPT	Intangible assets/-book value of total assets	+(ERM)	Liebenberg and Hoyt (2011), Warr, Pagach and Beasley (2008), Pagach and Warr (2010, 11), Rasid and Golshan (2012) and L. Philipp and G. Nadine (2017)
8	Dividends	Independent variable	DIV	1 = firms paid dividends , 0 = otherwise	±(Tobin's Q)	Hoyt and Liebenberg (2008, 2011), Gallagher and Farrell (2015) ,L. Philipp & G. Nadine (2017)
9	Profitability	Independent variable	PROF	ROA in percentage for year	+ERM	Micheal K. McShane, Anil Nair and Elzotbek Rustambekov (2011)

S. No.	Variable	Dependent or Independent Variable	Abr.	Formula	Predicted Sign	References
10	Return of Equity	Independent variable	ROE	Net Income/Book Equity	-ERM	Don Pagach and Richaerd Warr (2010), Qiuying Li, Yue Wu, Udechukwu Ojiako, Alasdai (2014) (China)
11	Slack	Independent variable	SLACK	Cash and Marketable Securities/Total Assets	+ERM	Don Pagach and Richaerd Warr (2010)

Chapter 4

Results

4.1 Descriptive Statics

Descriptive statics basically help to explain the basic aspect of the data and present easy and simple summaries about the sample and measures. Standard deviations and values of mean were also reported in the Descriptive Statistic.

TABLE 4.1: Results of Descriptive Statics.

	Q	CAPOPT	PROF	ROE	FSIZE	FLEV
Mean	1.32703	0.00765	0.00023	0.035247	16.2732	2330.19
Median	1.12350	0.0000	0.0000	0.000	16.3164	0.7227
Max.	4.7878	0.417178	0.004939	2.497183	20.13230	1351673
Min.	0.078221	0.000000	-0.014116	-14.20129	-14.20129	0.000000
Std.Dev.	0.713259	0.033763	0.000891	0.513878	1.501210	51321.76
Skewness	1.484434	6.692891	-3.012911	-23.76493	-0.153045	23.54434
Kurtosis	5.531277	55.34576	82.88267	665.1350	2.802901	581.5452
Observation	889	889	889	889	889	889

The above table gives details about the descriptive statistics of the effect of ERM. The table has distributions of different sub parts, which specify about variables relationship of the effect of ERM of non-financial firms of Pakistan. Measures of

the central tendency of variables include the value of mean. Mean is calculated as the average value. Min. stands to explain the minimum level and Max., explain the maximum level. Median indicates the difference of Max., and Min. Standard deviation, the measure of variability; determines the dispersion of data. However the descriptive statistics provide the useful summary of the risk when performing the empirical and analytical analysis.

It can be observed that the mean of Tobin's Q for companies of enterprise risk management was 1.3270. And the median of Tobin's Q of enterprise risk management of firms was 1.1235 therefore showing an ambiguous effect of ERM about the value significance. On the other hand it was not statistically significant. Regarding company's characteristics, the study found that capital opacity was 7.65 of the intangible assets over book value of total assets with maximum 41.717 and minimum 0.00. Std. Dev. was 3.37. Profitability was 0.2 percent of the ROA with maximum 4.939 and minimum -14.20. Std. Dev. was 0.0891.

The ROE was found 35.24 of Net income by Book Equity with Maximum 2.4971 and minimum -14.20129. Std. Dev. demonstrate 51.38 percent of net income over book of equity. This study found that both the mean and the median of firm size are significantly for firms with ERM programs. Financial Leverage has increased values specify that the more of the debt as trade credit has been used by the non-financial firms of Pakistan as compared to that of the equity. So firm comforting to implement an ERM system.

The Descriptive Statics of Graphical representations of Determinants of ERM and the value of ERM is shown in Appendix. The Table of correlation is also show in appendix.

4.1.1 Binary Logistic Regression Model

First this study focused to conduct a binary logistic regression analysis because normally for the binary decisions, the logistic regression was used. In statistic results, logistic regression and logit model were basically used as a regression model where the dependent variable was clear or definite (means categorical). A

binary variable answer depend on one or more than one predictor or independent variables (features) which can be determine by using the binary logistic model. For the estimation impact of firm characteristic on firm's decisions even if they were implemented ERM or not.

The results depend on the sample with firm data for year 1999 to 2015. The determinants which considered are listed in model specification, the 1st column was of variables, the 2nd column of abbreviation, the 3rd column contained the formula, 4th reports the predicted sign and the 5th column of references.

In this result the Descriptive statistic also contains standard deviations and values of mean were not included in the table but reported below the Table 4.2. ERM was the dependent variable where as other all were independent variables. The values of binary logistic regression model were reported in Table 4.2. There was positively semi strong relationship among dependent and independent variable.

4.1.2   Result of Determinants of ERM

TABLE 4.2: Results of variables of Determinants.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	364.4754	62.81853	5.802037	0.0000
CAPOPT	14077.35	2798.438	5.030431	0.0000
DIVIND	1.084847	0.428359	2.532565	0.0113
IND	-0.137680	0.331038	-0.415903	0.6775
PROF	49486.49	9529.446	5.193008	0.0000
ROE	-26.52556	8.458282	-3.136046	0.0017
FLEV	-21.29021	3.706652	-5.743784	0.0000
FIRMSIZE	5.229647	1.050582	4.977859	0.0000
SLACK	150.6305	32.31641	4.661113	0.0000
McFadden R^2 = 0.5145				

Dependent variable was ERM and the method used was Binary logit (Quadratic hill climbing).

For the estimation of the goodness-of-fit of the logit model, the McFadden R-squared was calculated and the R squared was 0.514560.

The result in Table 4.2 showing that capital opacity was found to be positive and significant to apply an ERM system. It suggested that the companies with increasing capital opacity were more comforting to apply an ERM system. Further, conflicting with our expectations, there was statically significant relation among capital opacity and ERM was in our results, which was not similar to previous literature. May be the one possible reason was Pakistani stock market has not too big as compared with USA, Malaysia and Germany.

And the investment behavior was different in these countries. But in Pakistan Investor was very conscious related to investment so an important outcome of the opacity was that, investors can (apparently) monitor the total return from a fund; they cannot see the composition of that return. So maybe that's the firms were very serious related to implementation of ERM. Thus H1 was accepted.

The coefficient for DIVIND (Dummy = 0) was positive and significant to apply an ERM system. The basic reason for the diversification has to minimize unsystematic risk because every kind of investment usually involves some degree of risk. Companies mostly evolved with greater number and further complex risks, and also have to obey with various rules and regulations, so ERM can be very supportive for preventing against terror activities and strongly implementing ERM system in the firm.

However in Pakistan context, it turns into interesting thing that the research finds that firms which expand its business in Pakistan were comforting to implement an ERM system. Result also show there was semi strong relationship among ERM and industrial diversification, which was not similar to past work. Probably one of the reason may be that economic situation in Pakistan was not strong and healthy due to political and terror activities in these years. According to the results for the Pakistan market, it suggested that companies working in two or more sectors or business lines were comforting to apply an ERM system. Thus H2 was accepted.

The coefficient for IND was also (Dummy = 0) it's negative and highly insignificant. The reason behind that energy sector is more risky than any sector while

other was not more risky, because of different regulatory requirement and different level of information regarding the risk contained by the relevant sector as compared to other sector. So the other sectors were not comforting to apply the ERM.This finding was in not line with Golshan and Rasid (2012), while consists with the result in Lechner and Gatzert (2017), Industry was associated with the Energy sector were more comforting to execute an ERM system, which was similar to previous literature. So Firms were not comforting to apply an ERM system if they were working in other sector than energy sector. Thus H3 was rejected.

The Return on Assets (ROA) used as an alternative for profitability was positive and significant to apply an ERM system. It confirms there was positive association among profitability and an ERM system in Pakistan. Companies with an increasing profitability were more comforting to apply an ERM system. When firms have profit they increase their business and required tight scrutiny for business, and apply the ERM system to check everything. Matching the result with Razil, Yazid and Tahir(2011). Thus H4 was accepted.

Unexpectedly, this study find negative and statically significant relation of Return on Equity and apply an ERM system. It shows there was no relationship between return on Equity and firm ERM implementation in Pakistan. Dependable with the result with Li Q., Wu Y., Ojiako U., Alasdai (2014) that companies with increasing return on equity were not comforting to apply an ERM system. Thus H5 was accepted.

The coefficient for LEV was negative and significant to apply an ERM system conforming to Liebenberg and Hoyt (2008, 2011) and as well as Lechner and Gatzert (2017). The result shows a statically significant negative association between financial leverage and ERM implementation. So Companies with rising financial leverage were more comforting to apply an ERM system. Thus H6 was accepted.

The coefficient for SIZE was positive and significant to apply an ERM system. Previous research suggested that larger firms should increase firm value (see Hoyt and Lienbenberg research work in 2008). Was line with Liebenberg and Hoyt (2011), Farell and Gallagher (2015) as well as Lechner and Gatzert (2017), this research find companies with increasing firm size were more comforting to apply an

ERM system also find statically important confirmation for the positive connection among firm size and the execution of an ERM system. Thus H7 was accepted.

The result in Table 4.3 shows that SLACK was found to be positive and significant to apply an ERM system. Further, different with our expectations, this results show a statically significant relation among Slack and ERM, which was not similar to previous literature. The result was different from Pagch and Warr (2010). It suggested that the companies with increasing SALACK were more comforting to apply an ERM system. Thus, H8 was accepted.

4.2 The Value of ERM

The basic aim of this study was to measure the effect of ERM on firm's value. By follow Lechner & Gatzert (2017) applying Tobin's Q as an alternative (proxy) for company value by running a simple linear regression for the year 1999 to 2015. The results for this regression analysis were show in Table 4.4.

The result in shown table 4.4 and empirical findings confirm this research hypothesis the value relevance of ERM, a statically significant positive result at the 90.28 % confidence level. Further investigation for hypothesized, the ordinary least square regression analysis run to check the relationship among firm value and ERM. Regression results reports in Table 4.4.

TABLE 4.3: Contrast table of ERM determinants for Pakistan market among previous studies for other countries.

Hypothesis	Variable	Predicted Sign	Logistic Regression	Hoyt Liebenberg (2011) (USA)	Pagch and Warr (2010) (USA)	Razil, Yazid and Tahir (2011) (Malaysia)	Qiuying Li, Yue Wu, Udechukwu Ojiako, Alasdai (2014) (China)	Farrell and Gallagher (2015) (International)	Philipp Lechner & Nadine Gatzert (2017) (Germany)	Nouman Nasir (2018) (Pakistan)
H1	Capital Opacity	+	Non significance	Ns	Ns	Ns		Ns	Ns	Ns
H2	Div Industry	+	Non Significance	Ns	Ns	Ns		Ns	Ns	Ns
H3	Industry	+	Non Significance			Ns			+***	Ns
H4	Prof	+	+***			+***				+***
H5	Roe	-	-***		-***		-***			-***
H6	Financial Leverage	+	-***	-***	-***	Ns		Ns	-***	-***
H7	Firm Size	+	+***	+***	+***	Ns		+***	+***	+***
H8	Slack	+	Non significance		Ns					+***

Variable Description; +*** above 90% than means statically significance confidence level, -*** above 90% than means statically insignificance and Ns means Non Significance.

VIF determine how a large amount of variance of the predicted regression coefficients was boosted while compared with when the predictor variables were not linearly related. It was used to clarify how a large amount of multi co linearity (correlation between predictors) exists in a regression analysis.The results show that there was no problem of multi co linearity because VIF not exceed than 10. (Beasley,et.al, in 1980 stated that variance inflationary factor should not exceed than 10). Because this work values VIF ranging from 2.3452 to 2.466 so this was confirmed by the values. The F statistic probability was 0.0000 which represented that the model was good fitted. The value of adjusted R-square represented that 90.28 %. And the adjusted R square is 88.84%.

The empirical findings were in Table 4.4. The confidence level was 90.38 % showing a statistically significant positive and confirm hypotheses regarding the significance value of ERM. Companies with an ERM system showed if Q-value greater than 1on average compared to Non ERM organization, consider the respective control factors. The goodness of fit was checked through comparable with past studies. The multi co linearity does not exist in this analysis as can be seen as of the correlation statistic likewise the variance inflation factor, which were far lower and above the critical values of 0.1 and 10. Durbin Watson used to detected the presence of autocorrelation (relationship among values separated from each other by a given time covers) in the residual in a regression analysis. The Durbin Watson Stat always among 0 and 4.

The R-squared was 0.902867 and the Adjusted R-squared was 0.88447. The VIF values ranging from 2.345 to 2.466 And the Prob (F-statistic) was 0.0000. The Durbin Watson stat was 2.04415.

The Capital opacity and Industry were perfectly significant; therefore it's verifying the assumption that profitability increases the firm's shareholder value. The statement of a positive relation among firm size and shareholder value through benefits of economics of scale and scope or lower costs of liquidation risks, an increasing firm size has a positive effect on Tobin's Q, the result conflict with the Lechner and Gatzert (2017).

Table 4.4: Results of Variables.

Variables	Co-efficient	Std.Error	t-Statistic	Prob
C	-9.445273	1.840611	-5.131598	0.0000
ERM	0.042657	0.006974	6.116498	0.0000
CAPOPT	-373.5240	64.02578	-5.833962	0.0000
IND	0.134478	0.007782	17.28163	0.0000
PROF	-1308.713	284.7697	-4.595690	0.0000
ROE	1.427383	0.376956	3.786609	0.0002
FIRMSIZE	0.580282	0.103112	5.627686	0.0000
FLEV	-0.168790	0.005785	-29.17875	0.0000
DIV	0.000584	0.005551	0.105238	0.9162
$R^2 = 0.9028$ Adjusted $R^2 = 0.8844$ VIF = 2.345-2.462 Prob (F-statistic) = 0.000 Durbin Watson = 2.0441				

The influence of financial leverage, was significant but with negative sign. Furthermore, this research confirmed that dividend payment reduce the shareholder value of firm so dividend has a negative effect on Tobin's Q. This research conducted simple linear regression to test the result mentioned in table 4.4 very sensitive way. The Control variables were added one by one to the explanatory variable ERM to make sure the robustness of the relation of Tobin's Q and ERM. DV was TOBIN'S Q and the method was used Panel Least Squares.

Chapter 5

Conclusion and Discussion

5.0.1   Conclusion

This study analytically examined the effect of Enterprise risk management on firm value from the non financial firms of Pakistan and which were takes from Pakistan Stock Exchange PSX) market, which basically represented one of the first studies used Panel data set for Pakistan. This study basically used a logistic regression analysis with different time series and cross-sectional to check out the drivers of ERM, and a simple linear regression was used to examine effect Enterprise risk management on a firm value by used an alternative is Tobin's Q.

The result about the determinants of ERM was confirmed that firms with large size were more comforting to apply an ERM system. Hence, the rising amount and difficulty of risks and more different national regulatory requirements may encourage larger firms to invest the essentially financial and human resources to apply a comprehensively ERM system. Unexpectedly, this study finds a negative and statically non-significant relation of return on equity and implements an ERM system. It shows there was no relationship between return on equity and firm ERM implementation in Pakistan.

Furthermore, show that more taking leverage firms were comforting to apply an ERM system because leverage is use a tax shield in Pakistan, implying that companies with a comprehensively risk management system may increase the amount

of debt capital. In previous findings explain that due to by a stricter and stronger regulation, historical crisis events and potentially stronger risk awareness, the organization belonging to insurance, banking and energy sector were more comforting to apply an ERM program in general. Contrary with energy sector, this research worked on different sectors. So this study finds that other sectors were not comforting to apply an ERM system. Contrary to our expectations, this research also find a significant positive relationship among the Profitability and ERM implementation, which shows that the significant financial and HR to establish and maintain an ERM system through more profit.

About the value of ERM was significance, this results for the Pakistan market were consistent with pervious findings by showing a significant positive effect of ERM on firm's value after controlling for other determinants of firm value. In this context, future work should scrutinize the causality of ERM and Q. while this study argue and provide evidence that ERM enhances the share holder value, it could be also possible that more valuable companies will rather implement ERM, to uphold their advantaged value position.

This study provided initial confirmation on the effect of ERM on firm value. One of the main challenges facing in this research was how to identify companies that implementing the ERM system. Many firms don't clearly expose related the ERM implementation, this study done a comprehensive explore of financial reports, calls on different places (CERM, SBP etc), newswires and further medium for evidence of ERM used. As companies usually do not reveal their correct level of risk management of ERM activities (Martin and Gatzert 2015), this study follow (Lechner & Gatzert 2017), a comprehensive keyword search, by using phrases and their synonyms and acronyms: The Enterprise risk management, Chief Risk Officer, COSO II-Integrated Framework (Control Environment, Risk Assessment, Control Activities, Information and Communication and Monitoring) , risk committee, holistic risk management and centralized risk management.

5.1 Recommendations and Implementations

The association among firm value and ERM is positive and discovered in this research for emerging country Pakistan. The firms should adopt enterprise risk management system on the basic of these factors. This will provide help to Firms in managing their ERM system for better system.

According to this study it was concluded that the company when faced the risk or risky position in the organization and has been unable to implement an ERM system then tried to save from risk. The Organization move towards for the implementation of ERM system in their company. The ERM managers must plan ERM improvement from a risk management development perception, which associates the maximum level of enterprise risk management's capability to develop company flexibility to the unidentified and provide as a system for deliberate decision making. The results were in-line with the hypotheses which proves that there was positive and significant relationship in ERM and the firm value of non-financial firms of Pakistan. The non-financial firms of Pakistan however face some difficult to implement an ERM system due to not any risk reporting system in Pakistan.

Companies planning to execute an ERM system must pay huge concentration to develop a risk culture that backing their objectives. Such firms although allocating for the cost of executes ERM must consider factor in, essentially, the cost of purchasing an ERM expert for specialist support, guidance, and training.

5.1.1 Limitations and Direction for Future Research

The study has been taking on only non financial sector industries of Pakistan. The study needs to be tested on both financial and non financial sector for better result. Secondly the sample selected was not enough because of the most of the companies not implement an ERM system. The sample should be also increased for the study as well. It can be further classified in two groups, (like 1st group be firms adopt enterprise risk management or 2nd group be firms can not adopt enterprise

risk management). Furthermore other variables can be used for enterprise risk management (like International Diversification and ROA) to check the firm's value.
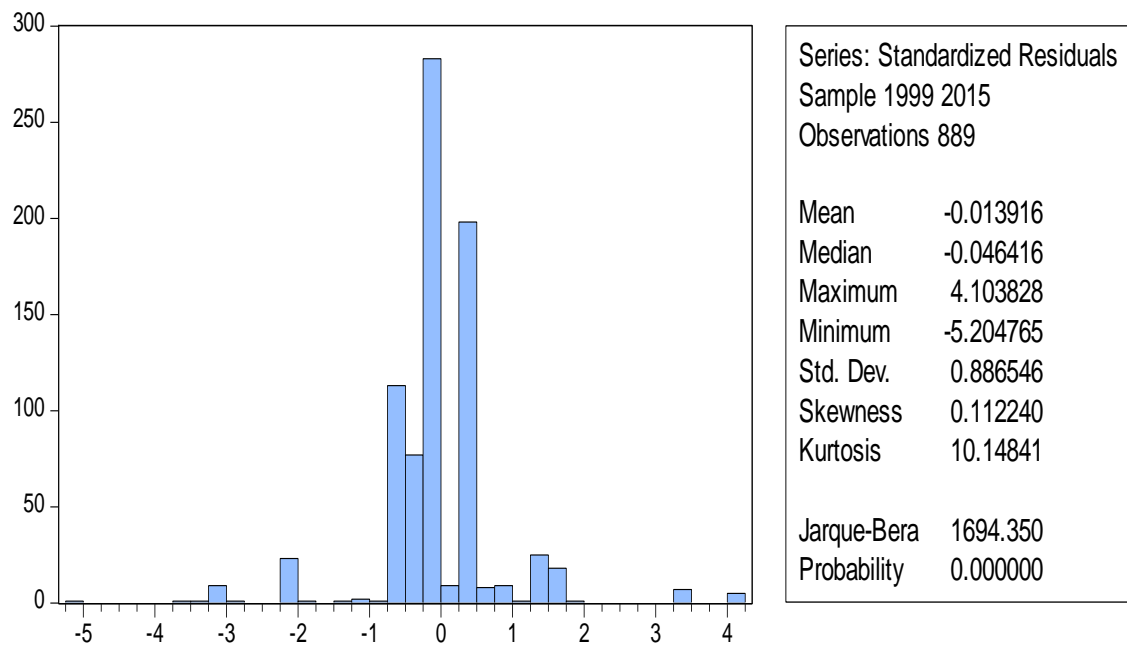
Bibliography

Beasley, M., Branson, B., and Hancock B.,(2010). COSO's Report on ERM-Current State of Enterprise Risk Oversight and Market Perceptions of COSO's ERM Framework. Raleigh: ERM Initiative at North Carolina State University.

Beaslwy, M.S, Clune, R., and Hermanson, DR., (2005). "Enterprise Risk Management: An empirical Analysis of factors Associated with the Extent of Implementation." Journal of Accounting, Auditing and Finance, Vol. 23, No. 3, 311-332.

Pagach, D. and Warr, R., (2010). "The Effects of Enterprise Risk Management on Firm Performance" Working Paper Raleigh: North Carolina State University.

Pagach, D. and Warr, R., (2011). "The Characteristics of Firms that Hire Chief Risk Officers." Journal of Risk and Insurance, Vol. 78, No. 1, 185-211.

Butt, S. A, (2014). "Strategic Finance" Finance Book. Second Edition

Fraser, J. R. S., & Simkins, B. J. (2007). "Ten common misconceptions about enterprise risk management". Journal of Applied Corporate Finance, Vol. 19, No. 4, 75-81.

Dickinson, G., (2001). "Enterprise Risk Management Its Origins and Conceptual Foundation" The Geneva Papers on Risk and Insurance, Vol. 26, No. 3, 360-366.

Hoyt, R. E. and Liebenberg, A. P., (2003). "The Determinants of Enterprise Risk Management: Evidence from the Appointment of chief risk officers." Risk Management and Insurance Review, Vol. 6, No. 1, 37-52.

Hoyt, R. E. and Liebenberg, A. P., (2008). "The value of the Enterprise risk management: Evidence from the U.S. Insurance Industry".

Hoyt, R. E. and Liebenberg, A. P., (2011). "The Value of Enterprise Risk Management." Journal of Risk and Insurance, 78(4): 795-822.

Gordon, L. A., Loeb, M. P., Tseng, C. Y., (2009). "Enterprise risk management and firm performance: A contingency perspective." J. Account. Public Policy, Vol. 28, 301-327.

Philipp, L. & Nadine G., (2017). "Determinants and value of enterprise Risk management: empirical evidence from Germany." The European Journal of Finance, Vol. 1351, No. 874, 1466-4364.

Li, Q.,Wu Y., Ojiako U., Marshall, A., and Chipulu, M., (2014). "Enterprise Risk Management and Firm Value Within China's Insurance Industry." Acta Commercii, 14(1): 1-10.

Lin, Y., Wen, MM., and Yu, J., (2012). "Enterprise Risk Management: Strategic Antecendents, Risk Integration and performance." North American Actuarial Journal, Vol. 16, No. 1, 1-28.

Genrikh, L., (2015). "The impact of enterprise risk management on firm performance of small and medium Enterprise." European Scientific Journal, Vol. 11, No. 13, 1857-7881.

Subhani, M.I. and Osman, A., (2011). "The Essence of Enterprise Risk Management in Today's Business Enterprises in Developed and Developing Nations." European Journal of Social Sciences (EJSS).

Farrell, M. and Gallagher, R., (2015). "The Valuation Implications of Enterprise Risk Management Maturity." Journal of Risk and Insurance, Vol. 82, No. 3, 625-657.

McShane, M. K., Nair, A., and Rustambekov, E., (2011). "Does Enterprise Risk Management Increase Firm Value?" Journal of Accounting, Auditing & Finance, 26(4): 641-658.

Moeller, R., R., (2011). "COSO Enterprise risk management: establishing effective governance, risk, and compliance process." 2nd Edition.
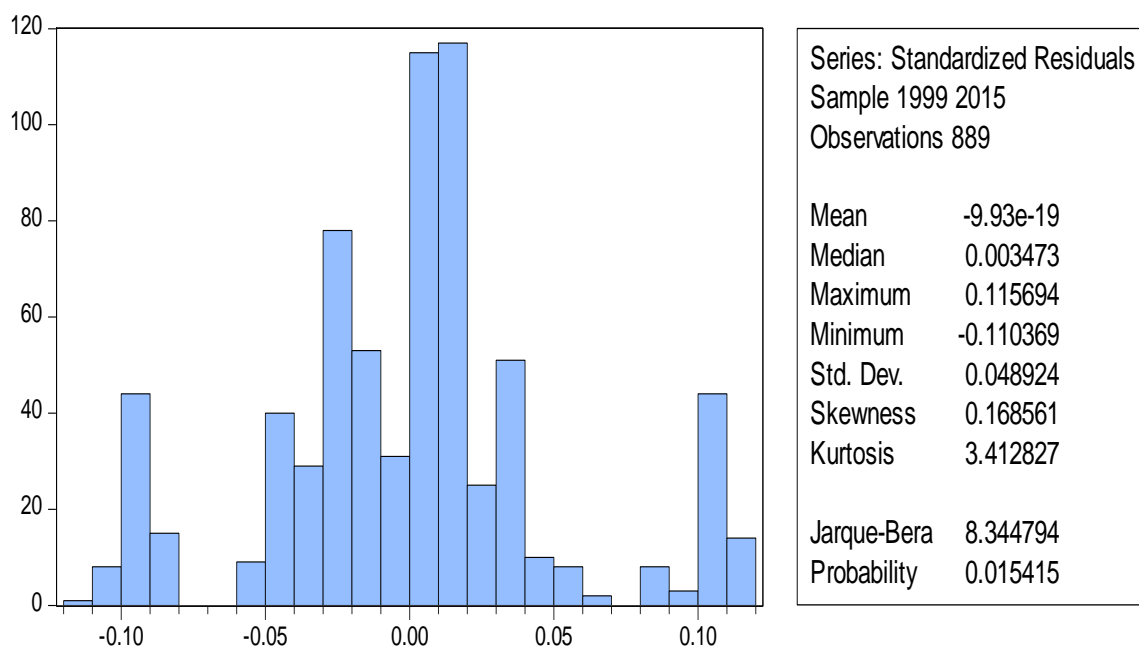
Golshan, N. and Rasid, S., (2012). "Determinants of Enterprise Risk Management Adoption: An empirical Analysis of Malaysian Public listed Firms." International Journal of Social and Human Sciences, Vol. 6, 119-126.

Gatzert, N.,and Martin, M., (2013). "Determinants and Value of Enterprise Risk Management: Empirical Evidence from the Literature." Working Paper, Department for Insurance Economics and Risk Management, Friedrich-Alexander-University (FAU) of Erlangen.

Gatzert, N.,and Martin, M.,(2015). "Determinants and Value of Enterprise Risk Management: Empirical Evidence from the Literature." Risk Management and Insurance Review, Vol. 18, No. 1, 29-53.

Nocco, B. W., & Stulz, R. M., (2006). "Enterprise risk management: theory and practice." Journal of Applied Corporate Finance, Vol. 18, No. 4, 8-20.

Razali, A. R., Yazid, A. S., and Tahir,I. M., (2011). "The Determinants of Enterprise Risk Management (ERM) Practices in Malaysian Public Listed Companies." Journal of Social and Development Sciences, 1(5): 202-207.

Razali, A. R., and Tahir,I. M., (2011). "Review of the literature on Enterprise Risk Management." Business Management Dynamics, Vol. 1, No. 5, Nov 2011, pp. 08-16.

Appendix

Graphic Representation for Determinants for ERM

Series: Standardized Residuals	
Sample 1999 2015	
Observations 889	
Mean	-0.013916
Median	-0.046416
Maximum	4.103828
Minimum	-5.204765
Std. Dev.	0.886546
Skewness	0.112240
Kurtosis	10.14841
Jarque-Bera	1694.350
Probability	0.000000

Graphic Representation for the Value of ERM

Series: Standardized Residuals	
Sample 1999 2015	
Observations 889	
Mean	-9.93e-19
Median	0.003473
Maximum	0.115694
Minimum	-0.110369
Std. Dev.	0.048924
Skewness	0.168561
Kurtosis	3.412827
Jarque-Bera	8.344794
Probability	0.015415

Co-relation Analysis Table

Predictors	1	2	3	4	5	6
Q	1.0000					
CAPOPT	-0.0123	1.0000				
PROF	0.1987	0.0424	1.0000			
ROE	0.0390	-0.2158	0.03720	1.0000		
FSIZE	0.1290	0.1224	0.2417	0.0896	1.0000	
FLEV	-0.0387	0.0038	0.0374	0.0212	0.0530	1.0000