ENTERPRISE RISK MANAGEMENT AND ORGANIZATIONAL PERFORMANCE: THE EMPIRICAL STUDY OF LISTED COMPANIES IN THAILAND

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**A Dissertation Submitted in Partial
Fulfillment of the Requirements for the Degree of
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ABSTRACT

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Enterprise Risk Management (ERM) nowadays is a tool for preventive loss for listed-companies due to the volatility of the external environment. Moreover, apart from being a preventive tool, ERM is more important and posits as a compulsory system for alignment to a regulatory base for listed-companies driven from the issues of a lack of corporate governance (CG), historically, from well-known organizations: World-com, Enron, Volkswagen and so on.

Even though, ERM is a vital tool for preventing organizational loss as well as for the alignment of listed-companies with the regulator, ERM was not perceived as a top-down strategic tool for organizations. In Thai-listed companies, ERM is at a low maturity level. Leaders have less knowledge about it and there is a low level of cooperation, although the study of the strategic benefits on ERM has been initially conducted (Gates, Louis, & Walker 2012: 28-38). From this it is important to incline the ERM maturity in Thai listed companies, and the prime objective in this research was to challenge the previous studies with the question, "could it be possible that ERM can posit as a strategic tool for enhancing listed companies' performance (financial, shareholder and managerial performance)?" Secondly, if ERM has its benefits, both top-down and bottom-line, in general, what are the determinants across industries?

The unit of analysis in this research was the organizational level. The population approximately accounted for 701 Thailand-listed companies across eight industries. The research design adopted follow-up qualitative extensions to core quantitative research through an empirical survey. For the quantitative methods, with three concepts, five latent variables, 15 observed variables and 50 measurement items, multivariate analysis through structural equation modelling (SEM) was constructed; while, in the qualitative part, interviews with nine ERM experts were undertaken to illustrate and explore the research results.

After conducting SEM to confirm previous theories, it displayed that the data fitted well with the theories. Based on the first objective, the empirical data showed that after embedding an ERM system, organizations performed significantly better, especially in managerial performance -non-financial performance-. Comparing non-financial and financial indicators, successfully implementing ERM could significantly improve organizational non-financial indicators. The convergence between quantitative and qualitative methods illustrated that ERM is a strategic tool for deducing organizations with good decision making. Furthermore, ERM supplies early warning system information to the organization to adapt themselves to new business arenas more quickly

and in a proactive strategic manner. Some ERM experts stated that ERM is a tool for re-assessing an organization's situation through ways of control mitigation.

Surprisingly, one contribution in this research was about displaying a strength correlation between ERM and corporate governance (CG). A high level of ERM maturity could remedy serious situations from the past: World-com, Enron, Volkswagen and so on.

Unfortunately, despite this research trying to determine the benefits of ERM as a strategic tool enhancing organizational performance, it showed only a low level of causality between ERM and financial indicators: ROA (return of asset), ROE (return of equity) and net profit. ERM in Thai listed-companies still could not sustain long-term growth, especially in the view of the shareholders.

In terms of each industry, there are the distinctive ERM maturity levels based on ANOVA. The financial industry has the best ERM performance; while, consumer products has the worst. From the in-depth interviews, the experts stated that as the regulations in the financial sector increase, they have the highest ERM performance. The regulator has the aim to enact ERM policies, procedures and guidance to financial companies, which is why they do ERM as a systematic cycle.

Nevertheless, for second research objective, when comparing internal to external factors, successful implementation of ERM was found to be significantly associated with internal factors; while, SEM showed that external factors were insignificant. The experts concluded that organizations could not all ignore external factors while implementing ERM, especially for the institutional environments with intense regulator scrutiny and imitate processes within industries given institutional theory (DigMaggio & Powell, 1983).

In an open-system, under the contingency theory, there is no one best way of implementing a system in an organization. However, based on the convergence in the mixed-method, in general, all internal factors are interdependency, while the most vital factor is "leadership". Apart from supportive leaders, organizational characteristic through ways of creating a risk awareness culture also posits as a determinant of ERM. A risk awareness culture could be quantified from the level of open-mindedness for risk issues.

This research has two sides of contributions. To the theoretical contribution, the convergence between ERM and management theories could be illustrated from confirmatory factor analysis (CFA) results with an acceptable range of fit indices given SEM. This is beneficial for future research directions. Practically, this research also has its advantages to propose best practice models. Firstly, Thai-listed companies should do ERM as an end-to-end process, but today they embed ERM in a piece-meal way. Secondly, the author recommends listed companies to have a risk management program at an enterprise level rather than a project based level. Thirdly, the ERM department should communicate and display the tangible benefits to related parties to incline the level of cooperation as all critical success factors in ERM rest upon internal factors. The most important target group to posit the tangible benefits in a top-down level is the risk management committee (RMC) as they are the leaders in the companies. Leaders are the first tier for successful implementation of ERM. Fourthly, apart from leader's role, as a policy recommendation, staff have a mind-set with risks as a burden. Nowadays, staff constantly believe that if they reveal key risks they will also be a fault; therefore, they try not to disclose the real-risks. The author recommends that to embed ERM, an open-

minded environment for risk issues is also important. According to the theoretical path model, there is a significantly strong correlation between the precondition of ERM and its processes, as shown with the high power of explanatory that is confirmed with the ERM standards, as COSO, ISO. Hence, companies should intentionally build up ERM infrastructure: setting precision risk appetite and tolerance, determination of ERM policy, procedures as well as standards, readiness and autonomy of ERM, all before sophisticated ERM processes are employed. Finally, the role of the regulator is also indispensable due to its aim to share ERM standards and principles.

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Patipan Sae-Lim

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CHAPTER 1
INTRODUCTION

1.1 Background of the Study

In 2016, around a thousand experts and policy makers in the World Economic Forum's stakeholder communities disclosed compelling factors that highlight the latest global risks from the past decade. Simply put, the report concluded that emerging global risks were starting to manifest themselves in new, occasionally unanticipated ways and harm people, institutions and economies. The report revealed that the potential risks in the future are climate change, mitigation and adaptation; water crises; and large-scale involuntary migration as the top three most impactful risks.

Basically, multifaceted term-risk- is not a new story. The number of risks has been significantly increasing and intensifying as driven by globalization (Nye & Donahue, 2000). Initially, the author aims to state the root cause of organizational risk as it deploys from globalization effects. With advanced information and communication technology (ICT), economic and political transformation as well as deregulation, isolated localization altered to interconnect and integrate one world, which leads to shorter times for transportation, lower cost of operating and global sourcing. Such phenomenon penetrates localization by increasing the economic growth, generating wider goods and products supported by technology innovation, a better quality of life, variety of choice, made geography and time irrelevant and so forth. For a country, localization then rests upon globalization. This means that a particular event in one nation depends on other nations. Undoubtedly, uncertainty events hence occur from the level of dependency caused by globalization.

For example, historically, the Second World War II impacted not only Europe, but it also Asia. Additionally, beginning in July 1997, in the period of the Asian financial crisis, which we called in Thai as the Tom Yum Goong period, raised fears of a

worldwide economic meltdown through the International Monetary Fund (IMF), where multinational corporations (MNC) are driven by globalization (Stiglitz, 2003). At that time, Thailand utilized the benefits of globalization by trying to expand internationally, for which it did not have suitable internal capacity. International financial institution inflows increased and also offered a better debt policy compared to those of local financial institutions. To put it more simply, international financial institutions dominated local financial institutions. The number of liquidity and credit risks in them increased. As a consequence, Thailand gained a burden of foreign debt that brought the country close to bankruptcy. There were nine out of twelve banks in Thailand with negative impacts from it. Such a down turn in the economic trend lead to an increase in the unemployment rate. After the crisis, the Bank of Thailand (BOT) launched a risk management (RM) policy that forced all financial institutes to have an umbrella of RM governance, policy and framework under BOT's RM policy as a compliance base. Such a situation could increase the level of RM awareness in financial institutes.

Furthermore, even the advance of ICT compels the intensifying of globalization; it also leads to discontent. Wide industry groups were awakened and paid attention to RM during the period of the Y2K problem. During the period before 2000, with the possibility of computer systems throughout the world experiencing shut downs tied to the Y2K problem (Frame, 2003). Concerning the consequence of the Y2K, computer failures did more to highlight the need for robust RM than any other situation in modern history. The developed countries, for instance, the United States and those in Europe, spent a huge budget to rewrite software code and on disaster recovery plans (DRP) to mitigate the Y2K risk, which was a positive side of RM awareness.

Risks sometimes come from rare events that have occurred before in the past decade (Segal, 2011:13). In 2009, threats resurfaced related to risk events, so that they had not been taken seriously in the modern time, for example, H1N1, H5N1 flu pandemic, pirates or even natural disasters. Importantly, referring back to the end of July 2011 - flooding in Bangkok-, it was a huge natural disaster that affected 13.6 million

people as well as causing a total of 815 deaths. At that time, 65 out of 77 provinces were constantly declared flood disaster zones. Additionally, over 20,000 square kilometers of farmland were damaged. Regarding this severe situation, the Asian Development Bank (ADB) argued that "it was the worst flooding yet in terms of the amount of water and people affected". By this, it means that such severity not only affected physical aspects but also affected people's psychology, economics and stability in Thailand.

Risk is a multifaceted concept combining multiple meanings, about which there is limited agreement (Brustbauer, 2014: 1). Normally, risk is the probability of events happening that will influence objectives (Drennan and McConnell, 2007: 2). Defining risk is very complicated, while it can be decomposed into two parts: likelihood and impact (Frame, 2003: 7-9). Generally, some articles define risk as concerned with bad things occurring to diverge from our expected goals, and diagnose risk as largely a negative event to be mitigated and can interpret risk as a potential event of value creation.

Markedly, experts sometimes distinguish between the concept of risk and the concept of uncertainty. For the former, when making a decision under conditions of risk, you could estimate the probability of the risk events you are identifying. For the latter, when making a decision under the conditions of uncertainty, you do not know how to quantify the probability of an event occurring. For example, the event of the reduction of the competitiveness arena in business can be defined as a risk if we know information about our competitors and can quantify the probability of the reduction of competitiveness.

The author truly diagnoses the effect of risk in two levels. At the nation level, firstly, risks initially have an impact on how a nation develops. The development theory -from the mid-1940s to 1970s- displayed the problems in less developed countries caused by low capital and resource misallocation (Mongsawad, 2010). Development theorists, at that time, interpreted development equally to growth. Simply put, development and economic growth are interchangeable.

Since then, there were some theorists who contended that development should consolidate others. Dudley, Amartaya Sen and Meier argued that development should incorporate equality, human development and institutional factors. The ultimate objectives are to rectify poverty, to attain compulsory education, to correct inequality of gender as well as the empowerment of women, to decline child mortality, to enhance both physical and psychology health, to combat HIV and other diseases and to sustain the environment. In short, while past development theorists compelled development through stimulating growth, modern development considers development in-parallel with minimizing risks.

Secondly, the effect of risk at the individual -organization- level became a buzzword in Thailand since 4 December 1997 when King Bhumibol Adulyadej proposed the philosophy of sufficiency economy (PSE) to Thais. PSE emphasizes a development strategy for the nation to alleviate the effect from globalization that is composed of three pillars, and these are "**moderation, reasonableness and risk management through self immunity**". Since then, the National Economic and Social Development Board in Thailand (NESDB) pushed forward the PSE concept into the national level through the ninth NESDB plan.

Even the world is confronted with globalizing risks, in term of organizations, which this research considers, they are also faced with a variety risks. However, their mitigation frameworks have transformed from silo-based RM to a new paradigm that is enterprise risk management (ERM). ERM, therefore, has become increasingly significant for managing corporate risk across an organization's entire risk portfolio in an integrated and holistic manner.

There are many types of risk dependent on standards, frameworks and ways of thinking. The Committee of Sponsoring Organizations of the Treadway Commission (COSO), which is the organization supplying leadership through the development of comprehensive frameworks and guidance on ERM, concluded that there are four types of risk in enterprise, and these are **strategic, operations, reporting or financing and compliance**.

Firstly, the current economic crisis emphasizes catastrophic results when risks associated with strategies are ignored or ineffectively handled, which could create strategic risk for organizations (Fraser, R.S, Simkins, J, & Narvaex, 2010: 31). Strategic risks penetrate firms when strategic planning is unrealistic as well as when its implementation is unattainable.

Secondly, organizations have inevitable operational risks, which account for the main portion in enterprise risk portfolios when compared to other types (Marchetti, 2012: 31). COSO indicates that operations' objective concerns are with the effectiveness and efficiency of operations. Therefore, the emerging operational risks could be somehow reduced to the level of effectiveness and efficiency critical process through people, processes and physical assets. In some occasions, operational risks have a negative effect on the financial statement. The banking industry, for example, has concerns about human error caused by operation staff, in which it could directly effect a portion of its revenue, and that is why the banking industry pays attention to correct data lost spreadsheets as a part of operational risks. Ultimately, a huge loss from operational risks are caused by processes, which drives both the day-to-day operation and rare situations.

Thirdly, capital is a key for operating a business. Considerations in the area of financial or reporting risks are included in the liquidity, financial markets, fluctuation of interest and exchange rate as well as reliable financial reporting (Marchetti, 2012: 30). In reality, there are many sub types of financial risks for, especially, the financing industry. However, with a globalizing world of open business, every organization confronts financial risks. For instance, not only international organizations are faced with the fluctuation of interest rates, but local organizations also find risks caused by the fluctuation of the interest rate if they order material from suppliers abroad.

Fourthly, many organizations really must comply with specific obligations, laws and regulations that depend on their industry to avoid compliance risks. As a consequence, all entities should undertake certain activities or supply specific information to regulatory agencies. Operating businesses should be aligned with both

internal and external laws and regulations. For the former, they are composed of, for example, labor and financial regulations. For the latter, organizations must also comply with environmental and security regulations.

Figure 1.1 Types of risk under sustainability platform.

Source: Saardchom, 2013: 38.

Importantly, Saardchom (2013) insisted that as a result of globalization, business should perform responsibly and accountably in terms of minimizing their environmental and social impacts. However, all existing ERM frameworks fail to take sustainability risks into account. In short, an ERM framework should be extended to incorporate emerging sources of instability in the environment and society if the organization is to attain vigorous growth and create wealth in the long run.

All mentioned, it can prove that organizations should be aware of risk. Additionally, some organizations initially implement ERM. However, effective ERM does not happen automatically (Frame, 2003: 32), for which the road map of it is very long, twisting and occasionally hazardous. It needs all corporation entities. Indeed, the same school of thought in ERM does not mean the same level of success of implementation for all organizations. Some organizations are successful and the rest are

failures, as in table 1.1. This means that, apart from ERM knowledge, there are some individual factor linkages on how success ERM should be.

Table 1.1 Some recent 'Great Risks', successful and unsuccessful.

Successful ERM	**Unsuccessful** ERM
Apollo 11 Lunar Landing	Enron
Exxon-Mobil Merger	Oil Spill by Exxon Valdez
Vanguard Business Model	Long Term Capital Management (LTCM) Business Model
Virgin Group of Companies	

Source: (Coleman, 2009: 200)

1.2 Statement of the Problems

According to prior uncertainty experiences that organizations confronted, it could be proven that some organizations have some degree of ERM awareness. Despite its indispensability, (Ceniceros R, 2008:13) it has been revealed that organizations that have successfully implemented ERM in practice through -identifying, assessing, mitigating and monitoring- are still a small portion accounting for not more than 25%. Today, most listed companies focus on indicating risk factors to the stock exchange but they rarely disclose how to manage such risks effectively.

The level of successful implementation of ERM rests upon the cooperation level from staff. This means that to incline the level of cooperation, ERM should display its tangible value. Importantly, this study, firstly, studied the causality between the ERM and its value.

The problem with ERM is about understanding the reality of its value. Despite growing interest in ERM, it is shown that there was too little research inspecting its value. In the content of the Thai business arena, some sectors implement ERM as a compliance-base. For example, financial institutes have adopted ERM since the BOT

forced them to have it. As a compliance-base, organizations would adopt ERM to align the policy in spite of ERM containing many other tangible benefits. With the constrains of the compliance-base, it will be possible to have a low level of cooperation in organizations in spite of ERM containing many other tangible benefits.

Marchetti (2012: 11) revealed that there is much value and many benefits for adopting ERM, for example, cost saving throughout an integrated approach to compliance, ability to assess current risk position and mitigate, enhancement of productive management and optimized capital structure and allocation.

Apart from such benefits, some production industries tried to find the relationship between ERM strategy and new product development (NPD) performance. According to the empirical result from such relationships, Mu, Peng, & MacLachlan, (2009: 170) concluded that an ERM strategy positively affects the NDP performance, which can significantly improve the chance of NPD success. Additionally, Xiabbo, Hwang, & Low Sui Pheng (2013: 27) considered that there are relationships between ERM and the performance of Singaporean contractors. A quantitative method through a questionnaire-based survey was analyzed with Singaporean contractors to test their awareness and implementation of ERM, and to what extent ERM has an impact on their performance. The result showed that, apart from health, 10 selected performance indicators have benefited from ERM.

Markedly, researchers initially attempted to link the ERM with other tangible benefits, yet the study of them was very piecemeal. To be precise, they tried to find the positive affect of ERM and other sub-parts of the organizations, such as product development, construction process, supply chain management and so forth. On the other hand, in top down aspect, we also found that research about the top management level views linkage to ERM. Gates, Louis, & Walker (2012: 28-38) empirically conducted a study about the relationship of the ERM process and the firms' performance. The survey results from audit and RM executives recommended that

"employing ERM leads to increased management consensus, better-informed decisions, enhanced communication of risk taking and greater management accountability".

As mentioned earlier, academia and practical risk departments are initially aware in adopting ERM both for the top and bottom line. To close the gap as well as compelling the level of cooperation in the organization, it is also questionable that whether implementing ERM could be possibly positively affected by the organizational performance or not. Investing in ERM, it means that organizations will put a lot of resources into accounting for investing in ERM knowledge, staff and implementation costs and so on. It would be worthwhile if investing in ERM it would enhance organizational performance, which is also suspicious.

As mentioned, the first aim in this study accounted for analyzing how the ERM can enhance organizational performance. Could it be possible to strategically enhance the organizational performance after embedding ERM? In addition, from the literature review, ERM displayed some tangible benefits. The second objective therefore studied the identification of the factor affecting the successful implement of ERM. Nevertheless, some organizations have started to implement ERM, to determine why some of them are successful and the rest fail. While there are well-developed standards and a body of knowledge about ERM, such as COSO ERM, ISO 31000, there is not yet any proven and globally accepted standard or guidance relevant to enhance organizations with successful implementation (Yaraghi & Roland G, 2011: 552). As a consequence, organizations that accept the concept of ERM and invest some resources on it will have only the general principle of it. Precisely, organizations could initially implement ERM, yet it could not guarantee whether they are going about it the right way or not.

Actually, studying the critical success factors (CSFs) for implementing ERM is not new, yet there are a few organizations and management theories backing this up as well as limited generalization. To be precise, (Xiabbo et al., 2013: 1199-1214) studied CSFs in ERM in Chinese construction companies. Na Ranong & Phuenngam, (2009) studied CSFs for ERM in financial institutes and concentrated on it procedures. With

the constrains of business types, it benefits organizations to understand what commonly shared critical factors in implementing ERM across business types should be. Moreover, the authors needed to develop some management theories, for example, contingency (Donaldson, 1995) and institutional (DigMaggio & W. Powell, 1983) , 1983) factors to explain the implementation of ERM.

Besides, past research in CSFs in ERM were chosen as the qualitative method, which is inapplicable to inquire preference and attitude information at a large scale across business types. Nevertheless, this research will then select a mixed method to rectify such a limitation. Therefore, to conduct such CSFs in ERM would add to the value of ERM theory.

With a globalizing world situation, many sectors are facing a competitive arena, which constantly leads to it to expand their firms by willing an inflow of capital from the shareholder. They, therefore, need to improve their performance through maximizing shareholder wealth. However, with debt and equity financing in corporations, maximizing shareholder wealth is required as some considerations of taking risks issue, especially, a list of the Stock Exchange of Thailand (SET) of around 700 companies composed of a variety of industries accounting for agro & food, consumer products, financials, industrials, property & construction, resources, services and technology industries. Based on the variety of business types, Thai listed companies revealed that there are common risks across business types: (1) high leverage, (2) inefficient cash flow, (3) lack of regular testing on risk management system, (4) lack of knowledge on complicated products and (5) untimely issue handling.

There are many benefits for listed companies to be in a part of SET accounting as a source of long term funds, positive public image, attracting foreign partnerships, management accountability and professionalism and tax privileges on dividends. Nevertheless, the benefits provided by SET will reflect on the shareholders. To ensure that the benefits to the investors are protected, by the International Organization of Securities Commissions (IOSCO), the international body related to bring together the world's securities regulators, enforces the local securities commission to align with the

security regulator global standards. Therefore, the Securities Exchange Commission (SEC) in Thailand imposes rules and regulations governing securities trading and information disclosure to align with the IOSCO standard. Such rules and regulations govern listed companies to disclose their information. This situation was driven from the scandals of well-known corporations: Enron and Worldcom. Worldcom's, a communication and technology company, stock price was dramatically increased due to the surge in the stock demand. The number of new shareholders in Worldcom came from the performance of the company, but it was in fact deduced from an artificial financial statement. Furthermore, the case of the Volkswagen emissions scandal was the issue of corporate tragedy. All those mentioned are about the lack of corporate governance.

The first priority to disclose companies' information accounts for financial statements that mainly relate to the financial performance from listed companies. The SEC wanted investors to know how listed companies financially perform before new investors decide to be part of the company. For other performance, new investors will find the information in the annual report, which contains many dimensions of a company. One of the significant issues in an annual report is the disclosure of risk factors.

As mentioned above, the risk factors are disclosed as compulsory information, which the SEC enforces to protect new investors for two reasons. Firstly, SEC wants new investors to understand the nature of the risk confronting particular organizations before they decide to be the part of the company. Secondly, SEC also needs listed companies to disclose how they effectively manage risk to new investors. Such information is very advantageous for new investors to decide whether such a company should be a part or not.

From these, it means that all listed companies in SET are aware of ERM. Some of them will conduct it well as they believe that ERM could contain some tangible benefits and value, yet the rest will conduct it with ineffectiveness and need it only for compliance with SEC's regulations. As a consequence, at this time, they still wonder

about the ERM value and also wonder about the benefit of adopting ERM to organizational performance.

All in all, the business environment in Thailand is awake to have ERM. Listed companies in SET will have to conduct ERM effectively if there are some theories to support the reality that ERM could have a positive effect on the organizational performance. In addition, they think that ERM is very important. There are many theories relating to ERM that we can find from ERM books and articles; on the contrary, organizations really need to know the clear concept and theory of CSFs for ERM implementation before they put a lot of effort in to investing in the implementation of it. The two aspects of ERM will be questioned for today's Thai business environment.

1.3 Objectives of the Study

1. To analyze the relationship between ERM and organizational performance.

2. To identify factors affecting the implementation of ERM across business types based on contingency, institutional and ERM theory.

3. To propose the best practice ERM model.

1.4 Research Questions

1. To what extent is ERM implementation related to organizational performance (objective 1)?

2. What are the factors that significantly affect the ERM implementation (objective 2)?

3. What is the relationship between ERM preconditions and its processes?

4. Are there any ERM recommendations in the aspects of factors affecting and adopting to ERM for enhancing organizational performance (objective 3)?

1.5 Benefits of the Study

There are two types of benefits: theoretical and practical benefits as the following.

1.5.1 Theoretical Benefits

1 This study employed organizational and management theories to explain the factors affecting ERM implementation, which are the theoretical contribution that the previous research neglected.

2 Risk management is perceived as a modern concept that needs some accommodation from theories and will significantly positively impact future researchers to cite some theories from this research in their publications.

1.5.2 Practical Benefits

1 To study the relationship between organizational performance and ERM that has huge benefits in terms of inclining some level of cooperation. As discussed, the awareness of ERM in the past was an intangible driver. Accordingly, this finding will persuade top management to pay attention to the RM and RM culture that can be embedded.

2. The findings about factors affecting ERM implementation that can be used to determine the factors that contribute to successful RM implementation.

3 Organizations can be somehow focused only on significant factors in ERM implementation and ignore some insignificance aspects.

4 The findings can indicate the maturity level of ERM implementation in an organization.

1.6 Scope and Limitation of the Study

As mentioned earlier, the empirical study between ERM implementation and organizational performance is the important key delivery from this study. It derives from the question of how organizational performance is measured across business industries. To rectify this, the organizational performance in this study was focused on only quantified measurements due to quantitative research methodology. Moreover, different business types have different performance measurements; hence, this research then focused on the common organizational performance measurement.

For qualitative methods, it will be robust to gather the qualitative information for best practice organizations in the field of ERM. Even the best practice organizations in ERM are more than the selected organization, the author selected only the organizations where they can reveal in-depth information.

1.7 Definition of Key Terms

Most social science relates to the process of decomposition of definitions and concepts. However, the operational definitions are proposed in each chapter, while this part only has definitions of key terms as below. Moreover, there are several dimensions of each key term; yet, this part gives its definitions only in the scope of this research.

- **Enterprise Risk Management (ERM)** is a holistic approach to how RM implementation across an enterprise is employed.
- **Organizational Performance** is a multifaced term on how to measure the performance of organizations. There are several theories as well theorists trying to scope out the measurement dimension practically. Nonetheless, this research can be decomposed in three following measurement dimensions:
  - o **Financial Performance** refers to the short-term organizational measurement in which it rests upon how companies can generate profit.
  - o **Shareholder Performance** refers to financially long-term sustained growth in the views of shareholders.
  - o **Managerial Performance** accounts for non-financial performances that relates to the tangible benefits of the ERM system. This research measured the managerial performance in terms of the benefits of ERM on deducing good decision making, ability to adapt themselves as a new strategic manner -proactive strategies- and increasing corporate governance (CG).
- **Determinants of ERM** refers to critical success factors (CSFs) while implementing ERM comprised of internal and external factors.

- o **Internal Factors** refer to internal environment relating to ERM implementation.
  - ➤ **Organizational Characteristic** is about both the physical and psychological characters of the internal environment.
  - ➤ **Leadership Role** measures the level of involvement and communication from the leader in the issues from risks.
  - ➤ **Risk Management Resources** refer to the tangible resourcing endorsed to ERM system.
- o **External Factors** refer to the external environment relating to ERM implementation.
  - ➤ **Industrial Competition** is measured by the competitive advantage level.
  - ➤ **Volatility** accounts for the level of global and local volatility and uncertainty.
  - ➤ **Institutionalization** accounts for the institutional environment composed of the role of regulators and imitate processed within industry.
- ▪ **ERM Implementation** refers to how to embed ERM in companies.
  - o **Preconditions of ERM** is about the readiness of the companies' internal environment before a sophisticated ERM process will be conducted.
    - ➤ **Risk Management Philosophy** is about the principle of RM system initially stated from the determination of the RM policy as the risk appetite.
    - ➤ **Risk Management Governance** is how ERM governs via a risk management committee (RMC).
  - o **ERM Process** is about the steps of doing RM.
    - ➤ **Risk Identification** is about the process of determining risks that could prevent the organizations goals.
    - ➤ **Risk Assessment** is about risk prioritization from its impact and likelihood.

> ➢ **Risk Mitigation** is about the way of responding to risks effectively through accepting, transferring, reducing and avoiding.

> ➢ **Risk Monitoring** is about the risk management follow-up process.

- **Listed-Companies** means firms whose shares are listed on the stock exchange for public trading.

- **Multivariate Analysis** refers to the causality study among multiple concepts.

- **Structural Equation Modelling (SEM)** is one of the multivariate analysis tools that is employed to test the structural relationship or even path between latent and observed variables. This technique is a combination between factor analysis and regression.

1.8 Chapter Summary

The main aim in this chapter was to describe the rationale of the study as well as present the statement of the problems about ERM today in an organization. Under two problems of ERM, it accounted for the value reflecting the organizational performance and what are the determinants of ERM. The objectives of the study mostly, hence, related to the analysis of the relationship of ERM reflected on organizational performance and to determine the determinants of ERM implementation. The author then stated the benefits of the study, both practical and theoretical, and, in the end, the limitations and scope of this research were revealed.

CHAPTER 2

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

An indispensable process in social science research is **conceptualization,** which defines the specific term of the study. Babbie (2007) defined that conceptualization accounts for "the mental process whereby fuzzy and imprecise notions (concept) are made more specific and precise". Simply put, the conceptualization process involves describing the indicators and dimensions. For the former, it concerns an observation that the author alters to consider as a reflection of a variable in this study. For the latter, it is about the specifiable aspect of a concept. In illustration, in this study, the author should be clear about what the meaning of ERM is. In addition, what is the scope of the measurement of organizational performance in this study?

Indeed, to get a conclusive conceptualization or conceptual framework, the researcher conducts a through literature review. Pant (2009:52) defined a literature review as "a process of the systematic, meticulous, and critical summary of the published literature in the particular field of research."

Hence, the objective of this chapter was to give a definition of the concept terms: ERM and organizational performance, through their long term intellectual study. Next, the author then summarized the theoretical frameworks of the studying, which are about the previous study of the determinants in ERM and the linkage of ERM and value creation at the organization level across the business industry. Ultimately, they propose the conceptual framework in the research and hypotheses were displayed at the end of the chapter.

2.2 Theories of Enterprise RM

2.2.1 Paradigm Shift in Study RM

The study of RM developed its theory after World War II (Crockford, 1982). It is an intellectual process as each generation produced their own theories, concepts and so on. For the last two decades, RM was not regard as a compulsory tool for a strategic and essential issue. It was mainly influenced by a manager's perceptions of risk (Thompson, 2003).

According to the literature, there are five mainly evolutionary periods of RM: the birth of RM, early beginnings, RM in quantitative analysis predominant -1980s, RM focused on methodology and process -1990s (traditional RM, TRM) and ERM (Merna, Al-Thani, & F, 2008).

2.2.1.1 Birth of RM

The first research in RM was found in 1738 related to quantify risk with the geometric mean and minimizing risk by spreading it across a set of independent events. The first industry considering the risk issue was the insurance industry. In 1752 Benjamin Franklin founded, in the USA, a fire insurance company called First American. The Society of Lloyd's in London was founded in 1771 when the firm started to insure potential losses of their clients. At that time, the concept of RM would not be well-known and rarely found any such standards and guidelines.

2.2.1.2 Early Beginning

Between 1995-1960, RM in this era was focused on project RM in the insurance industry (Mehr & Hedges, 1963). At that time, RM was mainly focused on reducing the insurance cost; as a consequence, RM employed the best offer for insurance coverage aimed at minimizing fire costs. Simply put, RM initially grew out of insurance management. The problem of it was only identified and assessed as pure risk without considering the predominant risk, while other types of risk, such as financial or strategic risks, were almost never considered. Concurrently, academia

started to publish the first manuals and principles of the RM process establishing the three stages of identifying, evaluating and dealing with risk (Mehr and Hedges 1963).

Furthermore, at the end of this period, the concept of RM was spread to other industries, including banks and financial institutes, due to fluctuation of market price, interest rates, exchange rates and the price of raw materials. At that time, firms had less methodology to mitigate risks; hence, they initially used the balance sheet and liquidity reserves. In addition, derivatives used today were developed to hedge the risk until now (Dionne, 2013).

2.2.1.3 RM in Quantitative Analysis Predominant 1980s
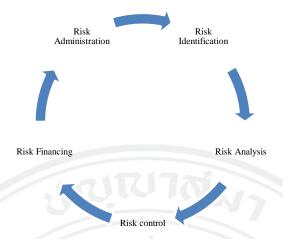
In terms of the methodology, the consideration of risk was not as simple as insurance expected, during the 1980s, a major crisis in the insurance market resulted in the need to employ other approaches that were not independently related to insurance. In the 1980s, discussions on RM highlighted in quantitative analysis that we call PERT (Program Evaluation and Review Technique) (Chapman, 1998).

2.2.1.4 Traditional Risk Management 1990s

The next generation of RM after project RM accounts for TRM, which was focused on the process of RM organization-wide (Dabari & Saidin, 2014: 168) . TRM, initially, defines a RM system in which it separates the units or sections of organization. Simply put, RM at that time was perceived as a single and unrelated element where individual risks were manipulated separately.

TRM was focused on five steps, as in figure 2.1, and these are

1) Risk Identification

2) Risk Analysis

3) Risk Control

4) Risk Financing

5) Risk Administration.

Figure 2.1 TRM phases.
Source: Iulia. 2014, 277-278

According to figure 2.1, TRM forced organizations to identify risks first. After that, the complete risk register should have risk analyses conducted by two methodologies -qualitative and quantitative-. The third step concerns demonstration actions and forthcoming actions through risk control. Risk financing focuses on keeping the risks small and medium. Finally, risk administration specifies RM activities and monitoring the flow of the risk register.

Consequently, the TRM method relates on disaggregate or silo views of conducting RM. Moreover, the significant pitfall of the TRM method is to narrow the focus on threats instead of focusing on opportunities. Such a disadvantage leads RM to make such a compulsory area of improvement, which we call a "paradigm shift in TRM to enterprise risk management (ERM)" (Manab, 2009).

2.2.1.5 ERM (Enterprise Risk Management)

ERM became a buzzword to rectify the silo system of TRM. Today, ERM will be employed and used interchangeably with RM. By this, it means that ERM is a paradigm shift from a silo approach. ERM is quite a new concept of conducting RM

that revolutionizes the TRM approach and recapitulates RM as an integrated and comprehensive system (Iulia, 2014).

With the well-known approach of ERM, it leads many institutes to use ERM standards and guidelines as employed by particular organizations. ERM can be assessed as a natural evolution of the process of RM. There are many well-known ERM standards, such as, "The Committee of Sponsoring Organizations of the Treadway Commission of Enterprise Risk Management" (COSO ERM), AS/NZS ISO 31000: 2009 Risk management and so forth.

Despite there being many ERM standards, (Fraser, R.S et al., 2010: 27) concluded that the most famous and general ERM standard is the COSO ERM. COSO has its mission to provide the enhancement of comprehensive frameworks and guidance on ERM, internal control and fraud deterrence schemes to enhance organizational performance and governance and to decline the extent of fraud in organizations. COSO's vision is recognized as a thought leader in the global market on the development of such compulsory guidelines in the area of risk and control.

Other ERM standards are also repute; however, they are very limited in some extents. For example, AS/NZS ISO 31000 is mostly adopted in the telecommunication and manufacturing industries, as such industries focus on operational risks that are focused on processes, human error and information technology. This research will focus on the COSO standards and will review the details of the COSO ERM standard in the next section. There are two reasons for selecting the doctrine of the COSO ERM standards. First of all, this research is keen to study the relationship of ERM and organizational performance with COSO trying to utilize the standards by emerging the ideas enhancing organizational performance. Secondly, the listed companies in the SET are composed of many industry groups, for which a general standard as COSO ERM would be preferred.

2.2.2 Definition and Types of Risks

In a normative way, RM could be defined in many dimensions (Spikin, 2013). The first thing, however, scholars tried to critique concerning the multifaceted word was "risk".

The word **risk** has turned into a common and widely used part of today's vocabulary relating to personal circumstance, society and also business. Risk has been defined in a number of ways, which are mostly never wholly true or false but it varies from contents (Rosa, 1998). The Oxford dictionary defined risk in many dimensions as follows:

1. A situation concerning exposure to danger.

2. The possibility that something unpleasant or unwelcome will happen.

3. A person or thing regarded as a threat or likely source of danger.

4. A possibility of harm or damage against which something is insured.

However, these definitions are not technical terms and researchers in the field of RM will focus on risk in a technical way. As a consequence, in technical contexts, the concept of risk could have some specific meanings that should incorporate two dimensions. Firstly, the cause of or chance of unwanted an event, which may or may not occur under the condition of known probabilities should be mentioned. Secondly, to some extent the consequences of risk should also be indicated (Rosa, 1998).

Generally, a definition of risk was proposed by Segal (2011: 18-24). He agreed that the definitions of risk should indeed vary, yet, there are three fundamental aspects of risk. First of all, risk is uncertainty. An effective way to think of risk is that it indicates whenever there is less than a 100 percent certainty that such an event will occur precisely as expected. Secondly, risk includes upside volatility. When we identify risk, mostly we think of it as negative events. However, a new concept of RM can define risk including both downside and upside volatility. Ultimately, risk accounts for deviation from the expected.

Simply put, while there are many definitions of risk, there might be a possibility to have some common characteristics that we can mention (Spikin & Cienfuegos, 2013):

1. Risk has an equal meaning to expected loss.

2. Risk has an equal meaning to expected disutility.

3. Risk is the probability of an adverse outcome.

4. Risk accounts for the combination of probability of an event and its consequence.

5. Risk can be referred to as the fact that a decision is made under conditions of known probabilities.

6. Risk means the uncertainty of the outcome of actions and events.

Furthermore, many books and academic papers try to categorize risks in many ways. Risks across culture and industry may be identified distinctively. Importantly, apart from risk definitions, risk should cover all aspects by trying to develop a risk register profile.

Merna et al (2008) studied the specific types of risk -risk universe-. They concluded the types of risks as the following: "project risk, global risk, elemental risk, holistic risk, static risk, dynamic risk, inherent risk, contingent risk, customer risk, fiscal and regulatory risk, purchasing risk, reputation risk, organizational risk, interpretation risk, IT risk, process risk and institutional risk".

To rectify the piece-meal method of studying types of risk, Marchetti (2012: 30) attempted to incorporate them into comprehensive risk types, which organizations should consider during the identification phase as the following:

1. External Risk

When an organization starts to search for external risks, it should reflect on customers, suppliers and competitors. Moreover, such risks should also relate to brand and reputation.

2. Financial Risk

Financial risks accounts for credit cash management, financial markets, such as interest rate fluctuations, financial reporting and so forth. Assessment should cover processes, controls and accuracy.

3. Operational Risk

Simply put, operational risks often refer to the risk derived from people, processes and physical assets.

4. Strategic Risk

Consideration of strategic risks concerns the appropriations of the outlined strategies. Strategic risks focus on the areas of governance, external relations and business models.

5. Regulatory Risk

Such areas concentrate on the alignment of particular rules, laws and obligations. Regulatory risks have distinctive types varying between organizations depending on the rules and laws that will be different for business types.

6. Information Risk

When comprehensively assessing information risks, organizations should consider hardware, software and network support as well as the critical process for the support system from information security.

However, this research limited the scoped of the unit of analysis to Thai-listed companies; therefore, practically, based on 700 companies, there were similar and distinctive types of risk across the industries as follows:

2.2.2.1 Shared Risk across Industries

These types of risk are common to all eight industries.

Shareholder Risk

- Dependency of influential shareholder (control over management)
- Unexpected investment result to shareholder
- Withdrawal from shareholder due to business performance
- Control of dilution

Macro Level of Risk

- Natural disaster
- Spread of disease
- Instability of economy and politics
- Proactive encounter with the opening of AEC
- Government regulation change
- Fluctuation in material price and demand
- Business disruption due to severe occurrence

Reputation Risk

- Loss of goodwill

Financial Risk

- Fluctuation in interest rate
- Fluctuation in exchange rate
- Liquidity management
- Credit risk
- Market risk
- Funding risk

Compliance Risks

- Risk from not complying with sectors laws, regulations or even standards
- Legal disputes

Operational Risk

- Human error risk
- Project delay from operational processes
- Failure of supportive information system
- Lacking of proper internal processes
- Operation processes risks

2.2.2.2 Risk across Industries

Nevertheless, risk types could be somehow different across industries due to the distinctive business models, environment, product delivery and so on. According to the annual reports, the risk across industries can consolidated as follows:

Compliance Risk due to Trademark Termination

- Consumer product sector
- Service sector
- Technology sector

Strategic Risk due to Change in Customer Behavior

- Argo and food sector
- Consumer product sector
- Service sector
- Technology sector

Strategic Risk due to Rapidly Changing Technology

- Technology sector

Strategic Risk due to Customer Diversification Risk

- Consumer product sector
- Property and construction

2.2.3 Definition of ERM

COSO defines ERM as "…a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives" (COSO, 2004).

Under the definition of ERM, it would function as a significant part of an integrated, strategic and enterprise-wide system rather than that of perceiving risk as a silo process as it used to be. Moreover, ERM enforces all levels of staff, starting from the Board of Directors (BOD) to other personnel, to coordinate and participate in the ERM process. Ultimately, according to the ERM definition, three important key worlds should be embedded while implementing ERM as identifying risk across the enterprise, manage it within the risk appetite and ensure the attainment of the entity objectives.

Furthermore, COSO insists that ERM encapsulates the alignment risk appetite with organizational strategy, by proposing four strategic risk responses (avoidance, reduction, sharing and acceptance), indicating and managing risk across the enterprise, seizing opportunity and improving deployment of capital through risk information.

Deloach (2000) listed the differences between TRM and ERM as in table 2.1.

Table 2.1 Differences between TRM and ERM.

"Silo" or TRM Approach	Comprehensive or ERM approach
Fragment	Integrated
Reactive	Proactive
Discontinues	Continuous
Functions	Base in Process

Source: Deloach, 2000

2.2.4 ERM Implementation

ERM is a systematic as well as intellectual approach followed by integrative steps. In this section, the author summarizes two ERM implementation frameworks: COSO ERM and ISO 31000.

2.2.4.1 COSO ERM Implementation Framework

Figure 2.2 COSO ERM implementation framework.
Source: Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004

According to figure 2.2, the relationship through the cube is depicted in three dimensional metrics that organizations should cover during risk management implementation as follows:

1. Objective Categories

There are four objectives that risk should be concerned with as follows:

- Strategic Risks, identifying strategic risks is concerned with high level goals, aligned with supporting its missions.

- Operational Risks, identifying operational risks is concerned with effective and efficient use of resources through human error, process and information system.

- Reporting Risks, identifying reporting risks should cover both financial and non-financial reports in the aspects of its reliability.

- Compliance Risks, identifying compliance risks is related to the obligations of laws and regulations.

Nevertheless, these are distinct but overlapping categories -an objective can fall into more than one category-.

2. ERM Components

There are eight steps to ERM as suggested by COSO, as follows (figure 2.2):

- **Internal Environment**, concerns the nature of the organization and establishing the basis of the risk management philosophy, risk appetite as well as ethical values.

- **Objective Setting,** it ought to initially determine the objective before risk identification starts to align with the entity's mission and are consistent with its risk appetite.

- **Event Identification,** relates to the identification of potential internal and external events affecting the achievement of the entity mission. Marked, risk and problem are distinctive. For the former, it is the future events that people across the enterprise are commonly concerned with, and for the latter, it is about current negative events that would not affect the organizational objectives.

- **Risk Assessment,** this component is indispensable due to the prioritization. As the organization could not manage all risks, it therefore should assess through the product its impact and likelihood.

- **Risk Response,** with the entity's risk tolerances and risk appetite, an organization has four strategies to handle risks: avoiding, accepting, reducing or sharing risk.

  o Responding to risk by avoidance: This strategy is about abandoning activities and policies to avoid the consequences of risks. This strategy will remove risks with consequences too huge. To illustrate, the airline industry abandoned the over-

booking model to reduce the loss of goodwill from passengers if there are no seats for them.

- o Responding to risk by accepting: Some risk could no longer be managed. Organizations can somehow accept the consequence of the risk if such risks are rested upon other parties. Practically, organizations can endorse this strategy during dependency risk and systematic risk. For the former, if the profit margin of the companies is derived from government projects; companies can no longer change the government policy; they then only accept such a risk. For the latter, in the financial market, there are two types of risk: diversification and systematic risk. Diversification risk is about reducing risk with a diverse financial portfolio while systematic risk rests upon market fluctuation, in which companies only accept them as they have no way to manage them.

- o Responding to risk by reducing: Most risks employ this strategy. Reducing risk reduces either its negative consequences or its likelihood or both.

- o Responding to risk by sharing: This strategy is about transferring the consequence of risk to other parties by making a payment. The best practice is to use insurance.

- ▪ **Control Activities,** after mitigating the risks by the strategy adopted, policies and procedures relating to control activities should be deployed. There are three well-known control activities: preventive, detective and corrective control.

- ▪ **Information and Communication,** as ERM tries to rectify the isolation of TRM, information and communication should put-in-place. Information should be accessible and communication of risks from top management is compulsory.

- **Monitoring,** risks in organizations should be dynamic. Monitoring is a risk follow up process that accounts for ongoing management activities, separate evaluations, or even both.

3. **Entity's Unit**

As mentioned, ERM rectifies the silos of RM by trying to identify, assess and mitigate risk across the enterprise. Accordingly, COSO then recommends organizations to initially notify risks from subsidiary units, business units, divisions and entity level.

2.2.4.2 AS/NZS ISO 31000: 2009
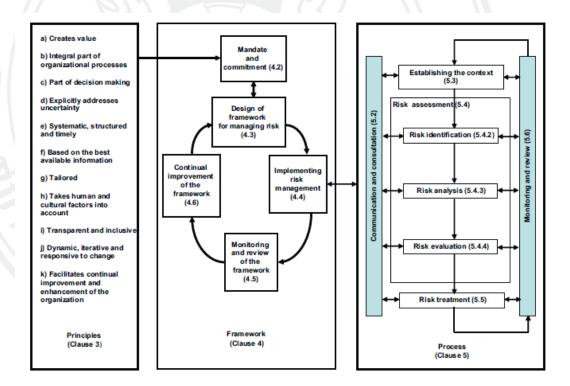
Figure 2.3 Relationships among risk management principles, framework and processes.
Source: AS/NZS ISO 31000: 2009

While COSO pays attention on entity objectives, components and entity units, ISO displays the relationships among RM principles, framework and processes as in the following:

1. RM Principle

- **RM creates and protects value.** RM contributes to the attainment of organizational objectives as well as improvement of performance.

- **RM is an integral part of all organizational processes.**

  This framework also rectifies the silo of TRM; therefore, RM should not be a stand-alone process.

- **RM is part of decision making.**

  Upon any choices, risk is a decision tool for decision makers.

- **RM explicitly addresses uncertainty.**

  Risk can somehow occur or not occur. It therefore has a character of uncertainly.

- **RM is systematic, structured and timely.**

- **RM is based on the best available information.**

  The best available information enhances decision makers when making a risk decision.

- **RM is tailored.**

  RM is aligned with the organization's external and internal context and risk profile.

- **RM takes human and cultural factors into account.**

- **RM is transparent and inclusive.**

- **RM is dynamic, iterative and responsive to change.**

  RM is not a project, but it is in fact a program as it is an iterative process that accounts for plan-do-check-act.

2. RM Framework

- **Mandate and Commitment**

Initially, RM requires strong and sustained commitment

by top management in organizations to, for example, define and endorse RM policy, embedded risks as an organizational culture, determine risk management indicators, ensure all indispensable resources allocated as well as communicate the benefits of RM to all stakeholders.

- **Design framework for managing risks**

To design a good RM framework, organizations should, first, understand the contexts. Next, the RM committee should enact RM policy. Moreover, risks are too hard to mitigate if there are no risk owners. Simply put, organizations should ensure that there is accountability and authority in RM. Fourthly, RM should be entrenched in all organizational practices and processes. Ultimately, resources and communication of risks should be ready.

- **Implementing RM**

Implementation of RM should encompass both the framework and process for managing risk.

- **Monitoring and Review of Framework**

Same as for COSO ERM, ISO also insists that risk should be dynamic. To be precise, risk should periodically be monitored to perceive the effectiveness of the mitigation plan.

- **Continued Improvement of Framework**

Embark upon the monitoring of risks, so decisions should be made on how RM framework, policy and plan can be enhanced.

3. RM Process
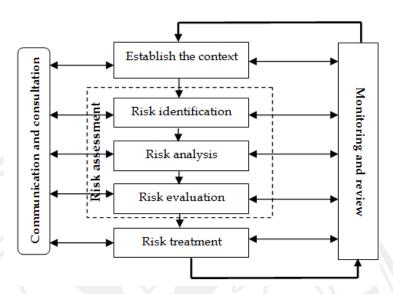
Figure 2.4 RM process.
Source: AS/NZS ISO 31000: 2009

According to this standard, there are four steps in the process as follows:

Communication and Consultation

Communication and consultation to internal and external stakeholders are compulsory to gain a full RM perception. RM perception varies from organization to organization, from industry to industry, which is why understanding it first is a must. Moreover, communication and consultation should be facilitated with truthfulness, relevance, accuracy and so on.

Establishing the concept

Establishing the concept should cover both external and internal concepts. For the former, the PESTEL model (politics, economics, society, technology, environment and legal) can be a good guidance for RM. For the latter, the RM process should directly relate to the objectives of the organization. Moreover, the RM process should consider the organizational culture.

Risk Assessment

Risk assessment includes risk identification, risk analysis and risk evaluation. The aims of **risk identification** are to comprehend the lists of potential events that affect the attainment of organizational goals. Identification must state both

top down and bottom up views. In addition, using relevant and up-to-date information is vital. **Risk analysis** provides an input to the risk evaluation. It accounts for the process of determining the causes and consequences of such risk as well as the combination of consequences and likelihood of risks. Ultimately, **risk evaluation** has its aim to assist in making decision, based upon the outcome of the risk analysis, which risks need treatments and prioritization of the treatment implementation.

Risk Treatment

Risk treatment involves a cycle of analyzing a risk treatment, deciding whether the residual risks level is tolerable, and if not a new treatment should be a compulsory. Likewise, there are many options for risk treatment: avoiding the risks by not starting the activity that gives rise to the risks, removing the risk source, sharing the risk with other parties and retaining the risk by informed decisions.

Monitoring and Review

The propose of monitoring and review of the risk accounts for ensuring that controls are effective and efficient in both design and operation. Indeed, monitoring and review of the risk aims to obtain an improved risk assessment as well as the lesson to be learnt from the RM process. Ultimately, many experts in the risk field consent that monitoring and review of risk supports the process of identifying emerging risks.

2.3 Measuring Organizational Performance

Measuring organizational performance has been studied in different specialized theories. In addition, each of them was suggested with various ways of measuring organizational performance. Jack Welch, former CEO of the General Electric Company, said that three vital indicators firms need to quantify in business are customer satisfaction, employee satisfaction and cash flow. It could be somehow questionable that just these three indicators are deemed enough?

Armstrong & Baron (2007) argued that "the management of organizational performance is, truly, the continuing responsibility of top management who plan,

organize and control activities and supply leadership to achieve strategic objectives and meet the need of stakeholder". According to this argument, measuring organizational performance should view an organization as an open system (Scott, 2003); hence, it consolidates, for example, external factors while measuring organizational performance.

2.3.1 Definition of Organizational Performance

Apart from the distinctive way of measuring organizational performance, its definition has a lack of consensus. Performance accounts for the observable things people do that are important for the goals of the organization (Campbell, McHenry, & Wise, 1990). From this simply definition, there are several observable and tangible things in organizations; hence, organizational performance is multidimensional and varies from time to time.

For example, firstly, in a closed system, an organizational performance definition would relate to the financial performance in an organization, such as, profitability, growth, return on investment (ROI), return on equity (ROE) and so on (Davies, 2007). Nevertheless, financial performance cannot encompass organizational performance in an open system. In order words, stakeholders will considered more than maximize growth unless the risk issue could be somehow considered. Accordingly, the combination between financial and non-financial aspects is more comprehensive.

2.3.2 Theories and Concepts of Measuring Organizational Performance

There are various types of measures for organizational performance that are quite piece-meal (Armstrong & Baron, 2007). Nonetheless, this research needs to consolidate only the provable theories and concepts, as follows:

2.3.2.1 Model of Business Performance

Venkatraman & Ramanujam (1986) initially proposed a schematic for circumscribing the domain of business performance. Obviously, to them, the narrowest conception of business performance would reflect the financial performance that accounts for the base of measuring the level of attaining economic goals in firms and is used in much traditional research. In terms of operationalization, financial indicators can quantify sales and revenue growth, profitability, ROI and any other financial ratios on the statement.

In addition, in a boarder sense, business performance would incorporate indicators of operational performance in addition to financial performance. In terms of operationalization, operational performance could be gathered as market-share, product quality, marketing effectiveness, manufacturing value added and so forth.

Ultimately, the domain of organizational effectiveness accounts for the consolidation of the indicators used in the strategic management or organizational theory, like customer satisfaction.
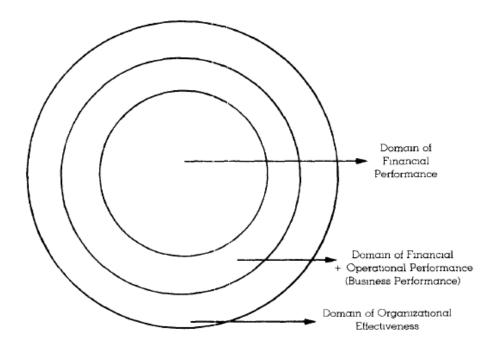
Figure 2.5 Circumscribing domain of business performance.
Source: Venkatraman & Ramanujam, 1986: 803

2.3.2.2 Classical Approach to Performance Measurement

Organizational performance and effectiveness are traditionally interchangeable. According to a closed system, Taylor (1990) stated that organizations can view effectiveness through efficiency that comes from the implementation of the principle of management. The focused area in measuring performance and effectiveness are about goal accomplishment.

The classical approach to performance measurement can be best recognized from Sink & Tuttle (1989). This approach showed that measuring performance has interrelationships among the seven following indicators:

- o **Effectiveness** accounts for doing the right things, at the right time and quality. To be precise, effectiveness will be reached if the goals are attained.

- o **Efficiency**, apart from accomplished goals, efficiency concerns the utilization of management.

o **Quality** is about a wide concept. To make the quality term more tangible, quality can be indicated from inputs, outputs, stakeholders (customers, suppliers, investors) and organizational system.

o **Productivity** can be simplified from the ratio of the outputs and inputs.

o **Quality of Work Life** contributes to a well performing system.

o **Innovation** enforces organizations to sustain and improve performance.

o **Profitability and Budgetability** are reflected in the financial indicators of organizations.

This classical model is logical in terms of the interrelationships among indicators. The focus must initially be on effectiveness followed by efficiency and quality. If these three concepts are in place, other vital indicators follow and are sustained.

2.3.2.3 Balanced Scorecard

The concept of a balanced scorecard was traditionally constructed by Kaplan & Norton (1992) who emphasized that measuring organizational performance should significantly consider both finance and non-finance aspects. To them, "no single measure can supply a clear performance target or focus attention of the critical areas of the business. Managers want a balanced presentation of both finance and operational measures".

As preferred in mixed strategy, Kaplan and Norton, accordingly, formulated what call the **balanced scorecard** – a set of measures that provide top managers a fast yet comprehensive view of the business. Armstrong & Baron (2007:116)

concluded four basic questions for managers to answer to quantify organizational performance as followings:

- Customer Perspective
- Internal Perspective
- Innovation and Learning Perspective
- Financial Perspective

Initially, the customer perspective defines the value proposition that should measure both the delivered value to the customer and the outcome that results from such a value proposition, for example, customers' satisfaction, market share and so on.

Next, the internal process perspective concerns the process that conducts the customer value proposition. Kaplan and Norton insisted that an internal process perspective focused both productively and efficiently on short and long term processes to present the value expected by customers. In addition, all internal process indicators are related to the school of operations management.

There are many sub-indicators in the innovation and learning perspective, for example, human capital, information capital and organization capital. Simply put, it accounts for the infrastructure that is required to attain the organizational goals.

Ultimately, the financial perspective in an open system should consider stakeholders. Indeed, there are several approaches to measure the financial performance, like Economic Value Added (EVA), revenue growth, profit margins, cash flow, net operating income and so on.

The benefits of a balanced scorecard to Kaplan and Norton (1992) were about the linkage among corporate objectives, business unit targets and team and individual objectives. Moreover, a balanced scorecard is about connecting the financial budget with its strategic goals as well as the alignment between employees and overall strategy. On the contrary, it also confronts obvious pitfalls. Davies (2007)

contended that a balanced scorecard is not a panacea. He argued that a balanced scorecard could work well if organizations have a complete strategy. Furthermore, in the implementation stage, it is compulsory to ensure that all management reaches a consensus and shares a common goal.Ultimately, practically, flexibility in a balanced scorecard is better than the rigidity. This it means that a balanced score card should adapt itself along with the organizational business model.

2.3.2.4 European Foundation for Quality Management (EFQM) Model
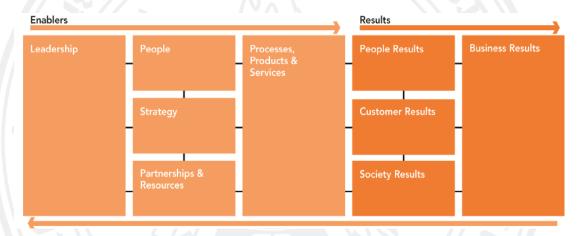
Figure 2.6 EQFM model.
Source: European of Foundation for Quality Management (EQFM)

The European of Foundation for Quality Management (EQFM) insists that due to economic crises, to be excellence, organizations can not focus their efforts in just one area. EFQM consolidates the provided framework from the Balanced Scorecard, ISO9001-robust of Quality Management System- and ISO2600-guidance for Corporate Social Responsibility (CSR) - and proposed nine elements for organizing performance as follows (Figure 2.5):

- Leadership, how the actions of top management support and promote the culture of performance management.

- Policy and Strategy, how an organization formulates, deploys and revises its policy and strategy and implemented action plans.
- People Management, how an organization enforces the full potential of its people.
- Resources, how an organization manages effectively and efficiently its resources.
- Processes, how the model of process improvement can be implemented.
- Customer Satisfaction, how an organization is attainable in relation to the external satisfaction.
- People Satisfaction, how an organization is attainable in relation to the internal satisfaction.
- Impact on Society, in a globalizing world, considering local, national and international areas are priorities.
- Business Result, concerns achieving planned business objectives as well as the needs and expectations.

There are many practical tangible benefits of the EQFM model for example, how business results are attained through continually improved processes, merging both internal and external indicators of measuring organizational performance, aligning individual and business objectives and so forth. Nevertheless, in terms of implementation, it is impossible to collect and manipulate all nine indicators, so it is a piecemeal process.

2.4 Theoretical Framework of Study

2.4.1 Studying Value of ERM

This study was keen to analyze the benefits of ERM to organizational performance, and the author initially reviewed the general value of it as derived from

previous articles. Once ERM is established in organizations, they will need to see the tangible benefit of it. However, even the RM system was derived from institutional theory, which is about the conformation and isomorphism, historically, (DigMaggio & W. Powell, 1983) its tangible value has been studied. Yet, previous studies determined the relationship between ERM and its value in a piece-meal fashion and have some room for improvement. For example, firstly, some papers considered the relationship of RM and organizational performance; while, the conceptualization of organizational performance has been limited. Simply put, the concept of organizational performance was vague and unclear. Secondly, some researchers empirically studied the value of RM only to the bottom line. Furthermore, most historical studies of the value of RM used content analysis of the annual report, financial statement and so on (Quon, Zeghal, & Michael, 2012).

As studying the advantages of ERM are scattered, the author tried to aggregate the value of ERM from previous research.

Starting with the link between managing risk and performance of the bottom line, Mu et al., (2009) synthesized the relationship between a RM strategy and new product development (NPD) performance using survey data from Chinese firms. The result from the confirmatory factor analysis (CFA) and hierarchical regression analysis displayed that "risk management strategies targeted at specific factors these are technological, organizational and marketing, contribute both individually and interactively in affecting the performance of NPD". Accordingly, suitability of the RM strategies can significantly improve the odds of NPD success. In practical and theoretical ways, RM accounts for a cycle in which it is composed of simplicity of indicating, assessing and managing risks; however, when first presenting the value of the risk system, researchers made an exploration of managing risk and industrial performance. Hence, there is some room for improvement. First of all, it would be better to study the cycle of risk rather than that of solely managing risks. Secondly, ERM should be beyond the expected benefits in the bottom line.

Next, the second generation studied the value of processing the ERM in an organization. Where, instead of studying only managing the risk, researchers explored the relationship between the RM process and performance. Park (2010) studied the whole risk process of identify, assess and mitigate risks. He concluded that an effective RM process can significantly reduce loss from production lines. Next, Saleem (2011) proposed seven hypotheses for the RM process in software development under the ISO 31000 framework as in figure 2.7. That study concluded that the RM process has a good impact on performance, and one question accounts for the organizational performance, which was in the context of the dimension of the conceptualization and operationalization of the organizational performance term.
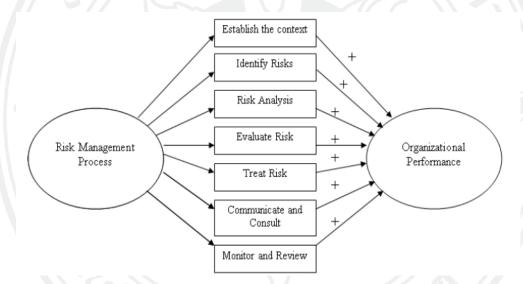
Figure 2.7 RM process and organization.
Source: Saleem, 2011: 263

However, since then, some articles have tried to improve the conceptual framework between The ERM process and organizational performance by trying to determine what organizational performance accounts for. Gates et al., (2012) further worked on the benefits of RM and the performance was to do with the details. To them, ERM empirically has a positive effect on performance in terms of increased management consensus, better-informed decisions, enhanced communication of risk taking and greater management accountability.

In a recent study, Fraser, R.S et al., (2010) insisted that there are still limitations to the study of the values of ERM across business types. To them, "ERM continues to evolve there is still much discussion and confusion over exactly what it is and how should be achieved".

However, as mentioned, apart from mitigation and the process, the challenge of studying the values of ERM accounts for the value of implementing the ERM system. The previous research displayed the value of ERM as in table 2.2.

Table 2.2 Selected Previous Research on ERM value

Author	Methodology	Result of ERM value
Beasley, Pagach, & Warr (2008)	Quantitative Analysis: Multiple Regression Analysis	**Shareholder value**: Positive relation of market reaction to firm size and earning volatility
Pagach & Warr (2010)	Logit/ Matched Sample Model	**Financial Performance**: Significant decrease in stock price volatility after introducing ERM
Hoyt & Liebenberg (2011)	Quantitative Analysis: Multiple Regression Analysis	**Shareholder value**: ERM increases shareholder value by approximately 20%
McShane, Nair, & Rustambekov (2011)	Quantitative Analysis: Multiple Regression Analysis	**Shareholder value**: Does not specific the detail
Marchetti (2012a)	Qualitative and Document Analysis	**Cost savings, improved proactive management and optimized capital structure and allocation**
Brustbauer (2014)	Structural Equation Model (SEM)	**Strategic orientation**, ERM permitted strategic opportunities to be exploited as well as effecting the competitiveness and business success
Nair, Purohot, & Choudhary (2014)	Quantitative Analysis: Multiple Regression Analysis	Increasing business performance in terms of both **financial and non-financial performance**

2.4.2 Studying Determinants of ERM

In recent years, RM itself has shifted the paradigm to be considered across entities as ERM. Historically, firms evaluated risks from individual aspects. Nowadays, the trend of ERM has changed to view RM as an integrated perspective in ERM, which normally accounts for the holistic manner that composes identification, assessment and monitoring. However, how firms successfully implement ERM is still questionable (Brustbauer, 2014). The ERM framework derives from the convergence between theoretical risk concepts and practices to provide broad guidance, suggesting key generally principles; unfortunately, it leaves the details to adopting firms. Apart from the lack of details of implementation, ERM approaches vary across organizational industries (Beasley et al., 2008). Indeed, an empirically reliable mechanism in the determinants of ERM is a challenge. Ultimately, apart from the critical success factors of ERM implementation, several studies have had considerable qualitative approaches (Thiessen, Hoyt, & Merkley, 2001).

Despite there being some published determinants of ERM, it is limited in business types. There are some articles relating to determinants in banking and construction industries as they are highly regulated environments. As mentioned, the second aim of this study accounts for empirically identifying determinants in ERM across business types. Studies of ERM determinants are scatter, however, in this section, the author tries to divide ERM implementation into two stages: precondition and ERM process.

2.4.2.1 Preconditions for ERM implementation

Unfortunately, there are a few supportive theories on key preconditions of ERM implementation (LA, MP, & C-Y, 2009). With traditional documentation, firm size and sector affiliation, CRO appointment, auditor presence, financial leverage and ownership structure are related as preconditions to ERM. However, after empirical study, it can be concluded that there are three important preconditions in ERM as follows (LA, MP, & C-Y, 2009), (Brustbauer, 2014), (Kelliher F & Reinl L, 2009):

1. Firm size

Some empirical studies concluded that larger firms are more likely to implement ERM than smaller ones. This means that size matters. As size increases, the latitude for threatening events is likely to differ in nature and extent. It implies the requirement for a sophisticated and comprehensive ERM system. Moreover, Beasley, Richard, & Hermanson (2005) also determined that size does not only affect the precondition, it truly has a relationship with the ERM process.

2. Sectors

In the financial industry, RM became a buzzword compared to other industries where it is questionable. It could be summed that the level of regulation and institutionalization are a serious matter. It is obvious that regulated industries have been at the forefront of ERM implementation, for example, the financial industry. Apart from regulatory factors, for organizations operating in more competitive environments, ERM is compulsory.

3. Ownership structure

Generally, ERM cannot succeed without strong support from owners. It posits that family owned firms lack an ERM system while corporate ERM should be put-in-place to rectify financial risk due to leverage.

Moreover, Yaraghi & Roland G (2011) empirically conducted a survey of the respondent's perception of the relative importance of factors in the readiness phase of ERM across business types using descriptive and inferential statistics (one sample t-test and factors analysis). According to the result from 19 extraction factors with a five-point likert scale, strategy was graded as the most important, followed by organizational structure and communication, respectively.

Table 2.3 Five top ranked factors affecting preconditions of ERM

Variable Name	Mean	Standard Deviation	Standard Error Mean	T value	Sig Value
Strategy	4.2321	0.63073	0.1192	6.142	0
Organizational Structure	4.1964	0.72443	0.1369	5.087	0
Communication	4.0894	0.6244	0.118	4.994	0
Environment	4.0358	0.65152	0.12314	4.35	0
Top Management	3.9298	0.60422	0.11419	3.753	0.001

Source: Yaraghi & Roland G, 2011

2.4.2.2 Determinants in ERM Process

Historically, studying the successful factors affecting implementation of ERM was primarily derived from qualitative approaches that were about in-depth interviews, document analysis from annual reports as well as other reliable documents, content analysis and so on. From such methods, (Marchetti, 2012) concluded that "successful ERM initiatives have several consistent themes". Although there are many possibly successful factors, eight factors commonly appeared in ERM documents.

- Executive support
- Development of risk intelligent culture
- Incorporate risk into strategy
- Determine risk appetite early
- Focus on few agreed high risks
- Develop monitoring process early on

Since then, in addition to the qualitative method, empirical study in the field of CSFs in ERM has been displayed in particular business types. Furthermore, after reviewing the previous literature, the authors found that there were common CSFs that were mentioned in several sources as in table 2.4.

Table 2.4 Possible CSFs in ERM implementation from previous studies.

CSFs in ERM	Authors	Number of References
Commitment from top management and readiness from risk board	AON (2010), Barton, Shenkir, & Walker (2002), Economist Intelligence Unit (2007), Garvey (2008), Hallowell, Molenaar, & Fortunato (2013), Fortunato (2013) Beasley et al., (2005) and Stroh (2005)	8
Institutional and ERM ownership	AON (2010), Barton, Shenkir, & Walker (2002), Garvey (2008), Hallowell, Molenaar, & Fortunato (2013), Hoyt & Liebenberg (2011), Dabari & Saidin (2014) and Stroh (2005)	7
Risk aware culture	AON (2010), Barton, Shenkir, & Walker (2002), Economist Intelligence Unit (2007), Hallowell, Molenaar, & Fortunato (2013) and Stroh (2005)	5
Integrate ERM with business process	AON (2010), Barton, Shenkir, & Walker (2002) and Stroh (2005)	3
Sufficient resources	Economist Intelligence Unit (2007) and Dabari & Saidin (2014)	2
Dynamic system	AON (2010), Barton, Shenkir, & Walker (2002), Garvey (2008), Hallowell, Molenaar, & Fortunato (2013) and Stroh (2005)	5

2.5 Summary of Review of Literature

The literature review in this study initially considered theories of ERM, then measuring organizational performance and finally in stating the theoretical framework of the study. In this section, the author then summarized previous theoretical frameworks that were composed of three following topics.

2.5.1 Relationship between ERM and Organizational Performance

Generally, this research encapsulated four approaches for measuring the organization: model of business performance, classical approach of performance measurement, balanced scorecard and European Foundation of Quality Management (EFQM model). Moreover, the author studied previous articles relating to ERM value. This research reconciled between general approaches of measuring organization performance and previous articles relating to ERM value, as in table 2.5.

Table 2.5 Summary of relationship between ERM and organizational performance

Source	Financial Performance	Operational Performance	Effectiveness	Efficiency	Quality Performance	Process Performance (Productivity)	Innovation
Model of business performance	✓	✓	✓				
Classical approach of performance measurement	✓		✓	✓	✓	✓	✓
Balanced scorecard	✓						✓
EFQM model	✓		✓	✓		✓	
Previous studies in ERM value	2 articles	1article					

Table 2.5 Summary of relationship between ERM and organizational performance (continued)

Source	Customer Performance	Internal Performance (People)	Society Performance	Strategy and Business	Management Performance	Shareholder Performance
Model of business performance						
Classical approach of performance measurement						
Balanced scorecard	✓	✓				
EFQM model	✓	✓	✓	✓		
Previous studies in ERM value				1 article	2 articles	3 articles

2.5.2 ERM Implementation

In section 2.2, it was discussed that ERM has been developed for two decades. In the post-modern era, the well-known standards on ERM are COSO ERM and ISO 31000. From these two standards, organizations can not ensure the successful deployment of RM implementation, yet such two standards mandate the required steps to implement ERM as follows:

- Preconditions for ERM
- RM Process
  - Risk Identification
  - Risk Assessment (Analysis)
  - Mitigating Risk
  - Risk Monitoring

2.5.3 Determinants of ERM

Although the theory of RM has altered from traditional to the ERM approach, it is not stated how to successfully embed RM systems in firms. Nevertheless, in a positive way, the previous articles indeed present some successful factors for implementing ERM in organizations.

In section 2.4.2 it was summarized that the determinants of ERM mentioned from the ERM theories and previous articles were as in table 2.6.

Table 2.6 Lists of ERM determinants

Determinants of ERM
▪ Commitment from top management and readiness of risk board
▪ Determine risk appetite
▪ Sufficient of resources
▪ Risk aware culture
▪ Selected robust standard and process
▪ Integration between ERM and corporate strategy
▪ Organization size
▪ Sectors
▪ Institution
▪ Volatility

2.6 Conceptual Framework of the Study

The theories of ERM have solely developed for the last two decades while over that time the school of organizational and management theories themselves has altered to cope with the complex, unpredictable and dynamic environment. As mentioned, the study of the value of ERM as well as identifying CSFs in ERM from previous research were lacking from the encapsulation of management theories.

Initially, the dependent variable in this study -organizational performance- is broad; nonetheless, this research then analyzed only the relationship between ERM and organizational performance. The author posited that the convergence between the value of the ERM system reflected the organizational performance, these are financial, operational, strategic, management and shareholder performance, and the mentioned four approaches of measuring organization. However, to be precise, in the listed companies in Thailand, such corporate companies conduct ERM by trying to disclose risk factors to shareholders. In addition at the same time, based on theoretical ERM and previous studies, financial performance is a key to be acquired from the ERM process. However, to posit the theoretical contribution, the author needed to challenge to

consolidate managerial performance in which it reflects the managing decision from top management, corporate governance and others to the proposed framework. In conclusion, the organizational performance derived from ERM in this research accounts for (details of observed variables stated in 3.3.2):

- Financial Performance
- Shareholder Performance
- Managerial Performance

Next, the ERM system in this study –mediate conceptualization-is focused on the ERM implementation accounting for:

- Precondition of ERM
- ERM process

In terms of the independent variables -determinants of ERM-, the aim of this research is to incorporate some management theories to the determinants in ERM. The alternative aim in this study is to verify and validate the theories and concepts of the determinants of ERM implementation, in which the author discovered that they are fitted in two organizational and management theories, these are contingency theory (LA, MP, & Tseng C-Y, 2009) and institutional theory (DigMaggio & W. Powell, 1983).

For the former, **contingency theory**, it is implicit that there is no one best way to embed ERM under the same set of determinants and any ways of embedding ERM is not equally effective (Galbraith, 1973), which leads the author to empirically study the determinants across business types to make a generalization. With contingency theory, the conceptual framework in this study in terms of determinants concerns the **external and internal environment** relating to the variable in 2.5.2.

For **institutional theory**, the RM system somehow perceives it as an institutional environment in which it forces firms to embed it by irrationality. DigMaggio & W. Powell (1983) and Beasley et al., (2005) proved that regulatory influence is the leading indicator to force firms to embed ERM. For example, the Bank for International Settlements (BIS) launched the Basel standard for mitigating liquidity risk, which has forced financial institutions into isomorphism and to align.

To sum-up, the determinants of ERM distribution are to two factors from contingency and institutional theory: internal and external factors. Additionally, sub-variables reflected internal and external factors backed up by the literature review as mentioned as the following:

- Internal Factors (Galbraith, 1973), DigMaggio & W. Powell (1983), (Yaraghi & Roland G, 2011), (Brustbauer, 2014), (Xiabbo et al., 2013) and (LA, MP, & C-Y, 2009)
  - Organizational Characteristic (LA, MP, & C-Y, 2009) and (AON, 2010)
  - Leadership Role (Xiabbo et al., 2013)
  - ERM Resources (Economist Intelligence Unit, 2007)
- External Factors (Galbraith, 1973) and DigMaggio & W. Powell (1983),
  - Industrial Competition (LA, MP, & C-Y, 2009)
  - Volatility (LA, MP, & C-Y, 2009)
  - Institutionalization DigMaggio & W. Powell (1983) and (Beasley et al., 2008)

Determinant ERM	ERM Implementation	Organizational Performance

1. Internal Factors
 	
   1.1 Organizational Characteristic
   1.2 Leadership Role
   1.3 Risk Management Resource
2. External Factors
 	
   2.1 Industrial Competition
   2.2 Volatility
   2.3 Institutionalization
	1. Precondition for ERM
	   1.1 ERM Philosophy
	   1.2 ERM Governance
	2. ERM Process
	   2.1 Risk Identifying
	   2.2 Risk Assessment
	   2.3 Risk Mitigation
	   2.4 Risk Monitoring
		1. Financial Performance
		
		2. Shareholder Performance
		
		3. Managerial Performance

Figure 2.8 Conceptual framework.
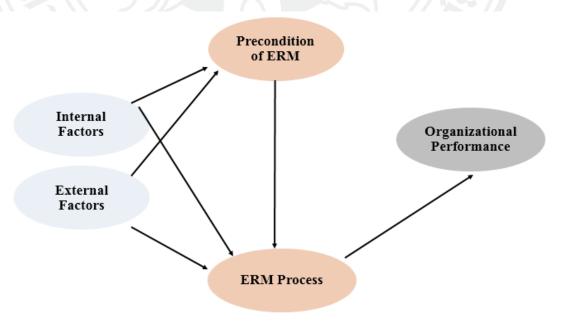
Figure 2.9 Paths of conceptual framework.

2.7 Research Hypotheses

The research hypotheses of this study were produced and rested upon the research questions mentioned in chapter 1. Additionally, according to previous studies as well as the author's background in ERM, it is possible to divide the research into six hypotheses based upon paths in the conceptual framework (figure 2.9) as follows:

H1: ERM process in organizations has a positive effect to enhance the organizational performance.

H2: Preconditions for ERM having a relationship to ERM process.

H3: Internal factors account to some extent for the determinants of the preconditions of ERM.

H4: Internal factors account to some extent for the determinants of the ERM process.

H5: External factors account to some extent for the determinants of the preconditions of ERM.

H6: External factors account to some extent for the determinants of the ERM process.
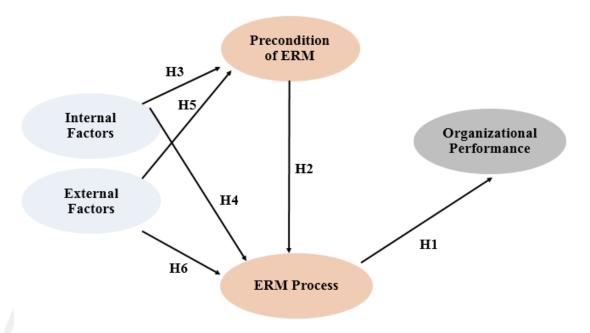
Figure 2.10 Research hypotheses.

2.8 Chapter Summary

The conceptual framework and research hypotheses are the ultimate output in this chapter. The aim in this chapter was to review the related theories and framework of the ERM, the determinants and its value through the concept of the organizational performance as well as sophisticated previous research. The conceptual framework in this study empirically serves two objectives, and these are finding the relationship between ERM and organizational performance and the determinants of the ERM system.

As noted earlier, the schematic representations of the model empirically provided the visual portrayal of the literature through quantitative analysis. However, a qualitative approach is hence encapsulated while interpreting the empirical result. The next chapter includes the methods used to gather the information to verify the conceptual model -research methodology-, as incorporated with the research blueprint (research design), unit of analysis and methods of inquiry as well as operationalization.

CHAPTER 3
RESEARCH METHODOLOGY

As the research objectives, research questions, conceptual framework and research hypotheses have been developed, in this chapter the author presents the details of the research methodology –the method used to gather the information- throughout a research design, unit of analysis and quantitative and qualitative research methodologies.

The mixed research method was employed in this study; the quantitative research method was the main method of inquiry and the qualitative method was incorporated to triangulate the quantitative findings and was enhanced in terms of the interpretation of the findings.

3.1 Research Design

While the research method accounts for the method used to gather the information to answer the research questions, the research design is the blue-print of the selected methods. Creswell (2014) stated that "research designs are types of inquiry within qualitative, quantitative and mixed methods approaches that provide specific direction". To be precise, the research design can be perceived as the strategies of inquiry. Creswell, generally, proposed the alternative research designs as in table 3.1.
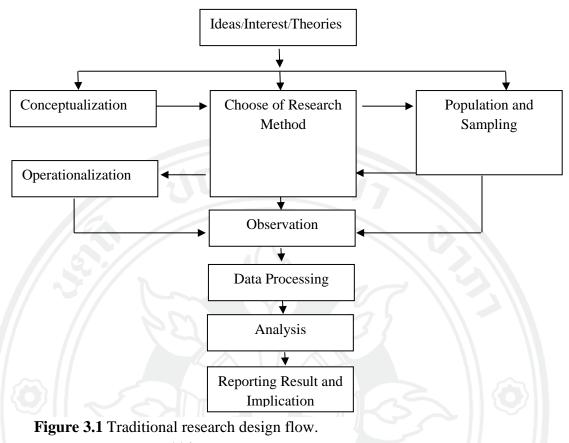
Table 3.1 Alternative research designs.

Quantitative	Qualitative	Mixed Methods
Experimental Design	Normative Research	Convergent
Survey	Phenomenology	Explanatory Sequential
	Grounded Theory	Exploratory Sequential
	Ethnographies	Transformative
	Case Study	

Source: Creswell, 2014

As mentioned, with the mixed method, this research was composed of quantitative and qualitative approaches. For the former, a survey was selected because this research rested upon the numeric description of the attitudes as well as the preference of the population in the form of the ERM system and organizational performance, which stated the detail in 3.3. For the latter, the real situation throughout the in-depth interview from best practice organizations of ERM in Thailand was adopted in the data collection procedures in 3.4. Ultimately, this research posited the convergent parallel mixed methods in which the researcher converges or merges quantitative and qualitative data to supply a comprehensive analysis of the research problems (Creswell, 2014).

With mixed methods, the author followed a traditional research design proposed by Babbie (2007) in figure 3.1, in which it composed of several components. First and foremost, ideas and theories were displayed in chapters 1 and 2. The conceptual framework was derived from multiple theories and concepts mentioned at the end of chapter 2. The rest therefore adheres to the following session. In addition, the results and implications are illustrated in the next chapter.

Figure 3.1 Traditional research design flow.
Source: Babbie, 2007: 114

3.2 Unit of Analysis

The unit of analysis accounts for what and whom is being studied (Babbie, 2007). The unit of analysis, therefore, are those things the researchers examine to conduct the summary descriptions. Normally, the unit of analysis can be an individual, group, organization, social interaction and social artifact.

As mentioned, this study focuses on the determinants in ERM together with the causality between the ERM system and organizational performance. Accordingly, the unit of analysis in this study is about the organization -list of SET listed companies- which is composed of 701 companies from a variety of industries accounting for agro & food, consumer products, financials, industrials, property & construction, resources, services and technology.

3.3 Quantitative Methods

In general, quantitative methods are used to analyze, to explain, to describe and to predict the phenomena of interest. It mostly relates to examining the relationship among several variables through numerical data sampled from the population (Pant, 2009). As it is impossible to collect the preference from the population, firstly, sampling is indispensable to quantitative methods. The second part, which was also important, was about the measurement of the abstract and concept terms stated in 3.3.2. Next, the data collection method was composed of the collection of the primary together with secondary data. For the primary data, it was obtained from a survey. For the secondary data, the author required reliable organization as well as reliable documentation. Finally, before data analysis was proposed, data management encapsulated the assumption testing as a vital process in quantitative research methods.

3.3.1 Population and Sampling

3.3.1.1 Population

The population is defined as the "total of what we need to study as well as about which the researcher wishes to draw conclusions," on the other hand, sampling is the process of selecting an adequate number from the population; accordingly, to perform the sampling frame would make it possible to simplify and inference to target the population (Babbie, 2007: 252).

As mentioned, the population in this study is the listed companies in Thailand. As of September 2016 (https://companylist.org/Thailand/), Thailand's listed companies accounted for 701. Therefore, the members of the population in this study is about 701 various organizations.

Lastly, the population target group should reflect to whom to respond on the risk task either making a decision on risk or even risk coordinators and facilitators. To this importance, the focused target respondents accounted for the BOD, RMC, RM department members and risk coordinators.

Table 3.2 Population.

Industry	Number
Argo and Food Industry	57
Consumer Products	50
Financials	65
Industrials	120
Property and Construction	169
Resources	54
Services	136
Technology	50
Total	701

Source: https://companylist.org/Thailand/

3.3.1.2 Sampling

Ideally, it is too hard to study the entire population; therefore, sampling (Bailey & Kenneth D, 1994: 83) is important. Therefore, from the large scale of the huge population, sampling techniques, finding the optimum sample size, will then be vital for social researchers.

Normally, there are two types of sampling techniques: probability and non-probability techniques. The probability technique allows the concept of random selections, which are suitable for representing a population and it can employ the statistical inferential techniques to generalize to the population (Babbie, 2007: 193). On the contrary, non-probability is inapplicable of generalizing to the population, but it is proper to select a sample on the basic knowledge of a population, its elements and the principle of the study.

Many statisticians have proposed an appropriate sample size for statistical analysis. However, with a sample size school of thought, some scholars suggested an appropriate sample size given the acceptable level of error (Yamane, 1963) , and the rest determining the sample size depending upon the number of

independent variables. Suppose the first concept, Yamane (1963) displayed the famous formula to find the optimum of the sample size based on the formula: $N/(1+Ne^2)$. Given the mentioned population accounting for 713 and the allowance error is about 0.05, the sample size accounts for 256.

Theoretically, the sample size can be calculated under the mentioned concepts; nevertheless, practically, it is possible to having inadequate respondents if the sampling frame accounts for 256 firms. As the number in the population in this study is not large, such a probability sampling concept is inapplicable due to an incomplete response as well as the ignorance of the respondents. With the possibility of inadequate respondents, it can be impossible to employ sophisticated quantitative tools, such as multiple regression, structural equation modeling and so on. As a consequence, the author selected all the population in the study in the first stage.

3.3.2 Operationalization

After the meaning of the conceptual term is defined, next, the quantitative research requires the operationalization process that accounts for the development of the specific research procedures (operations) that will lead to empirical observations reflecting the concept (Babbie, 2010). In other words, it is important to describe how the terms can be measured or how it accounts for the process of defining variables and attributes.

3.3.2.1 Dependent Variable

From the conceptual framework from the literature review, it is posited that organizational performance accounted for the dependent variable in this study. Organizational performance is perceived in multifaceted terms due to several supportive theories, concepts and definitions. However, to consolidate its multifaceted terms, the table below concluded the operationalization process of the organizational performance, which was focused on financial and shareholder managerial performance as follows:

Financial Performance

Even the paradigm of performance measurement has shifted from the classical approach to a balanced-score card. All models comprise of a financial dimension. This research scope is down to the dimension of the finance to how listed companies generate profit by decomposing financial performance with net profit and ROA.

Shareholder Performance

Ebrahim Mohammed Al-Matari (2014) proposed that there are two types of firm and shareholder performance measurement: accounting based and market based. Accounting based is about the measure of the firm's past performance record in terms of profitability in the short term -**backward-looking element**-. For the latter, market based, it is categorized as long term shareholder performance measurement -**forward-looking element**-.

Based on the number of citations from previous studies (Ebrahim Mohammed Al-Matari, 2014), the most well-known accounting based measurement was ROE (number of citation accounting for 52 papers), while Tobin-Q was posited as the most well-known market based firm performance (number of citation accounting for 74 papers). ROE, mostly, interprets the performance of the stock. Tobin-Q refers to the traditional indicator measure as long run firm performance.

However, finally, the author ended up by selecting ROE as the shareholder performance for two reasons. First and foremost, based on figure 3.2, the distribution of Tobin-Q seemed to be a positive skewness for the ROE, which was quite normal. As the author employed multivariate analysis as a process of analyzing data, the normality is the matter. While, Tobin-Q is the most renown of the expected long term measurement, it fluctuated more from market efficiency. Secondly, ROE is indicated in the company financial statement, in which most of the potential shareholders will interpret stock performance from the ROE rather than that of the Tobin-Q.
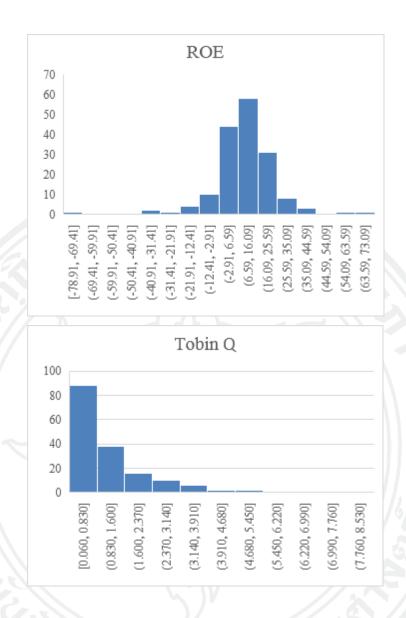
Figure 3.2 Distribution of ROE and Tobin-Q.

Managerial Performance

Managerial performance was scoped down to only the topdown dimensions composed of corporate governance (CG) index, strategic orientation and better informed decision making.

For strategic orientation and better informed decision making both were confirmed from the previous studies by Brustbauer, J. (2014) and Gates, Louis, & Walker (2012: 28-38). However, to CG, there are no papers stating the relationship between CG and ERM, which is why the author needed to explore some challenges by studying the causality between them. There are two reasons for such a causality. First of all, risk management became the buzz-word at the same time of the lack of corporate governance from World-com and Enron-listed companies in the U.S. Secondly, some indicators in ERM were related to the concepts of CG: autonomy level of risk management committee.

Table 3.3 Dependent variable measurement.

Conceptualization Term	Definition	Variables	Measurement
Organizational Performance	Observable things people do in which are important for the goals of the organization (Campbell et al., 1990). (Davies, 2007) pointed out that the most commonly-used measures of organizational performance have been profitability, sales growth, return on investment (ROI) and return.	Financial Performance Shareholder Value	▪ ROA (Rodsutti & and Swierczek, 2002) ▪ Profit Margin (Rodsutti & and Swierczek, 2002) ▪ ROE (McShane et al., 2011) ▪ Shareholder Index

Table 3.3 Dependent variable measurement (continued).

Conceptualization Term	Definition	Variables	Measurement
Organizational Performance	Observable things people do which are important for the goals of the organization (Campbell, McHenry and Wise, 1990). Davis et al. (2010) pointed out that the most commonly used measures of organizational performance have been profitability, sales growth, ROI and ROE.	Managerial Performance	▪ Level of corporate governance from top management (Gates et al., 2012) ▪ Variety level of strategic orientation or even passive or active strategic orientation (Brustbauer, 2014) ▪ Degree of better informed decisions (Gates et al., 2012)

3.3.2.2 Mediate Variables

There were two main aims in this study: finding the ERM determinants and after embedding ERM in the firm, how it can be possible to enhance the organizational performance. Hence, ERM implementation is perceived as the mediate variables focusing on two groups of variable: precondition and ERM process.

Table 3.4 Mediate variable measurement.

Conceptualization term	Definitions	Variables	Measurement
Precondition for ERM	Accounts for internal environment which is suited for the embedded ERM process	Risk Management Philosophy Risk Management Governance	▪ Precise degree of determined risk appetite (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004) ▪ Readiness level of risk management policy and procedure appetite (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004) ▪ Readiness level of risk management committee (Dabari & Saidin, 2014) ▪ Autonomy level of risk management committee

Table 3.4 Mediate variable measurement (continued).

Conceptualization term	Definitions	Variables	Measurement
Enterprise Risk Management Process	Accounts for process of embedding ERM to organization	Risk Identification	▪ Linkage level between potential risk event and corporate views appetite (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004)
			▪ Comprehensive level of identifying risks from external and internal factors appetite (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004)
			▪ Readiness of supportive tool for ERM identification: risk categories, etc… (Thompson, 2003)
		Risk Assessment	▪ Degree of systemic approach of quantify risk from likelihood and impact (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004)
			▪ Degree of sophisticated assessment methods: qualitative and quantitative methodology (Brustbauer, 2014)
			▪ Degree of assessing inherent and residual risks (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004)

Table 3.4 Mediate variable measurement (continued).

Conceptualization term	Definitions	Variables	Measurement
Enterprise Risk Management Process	Accounts for process of embedding ERM to organization	Risk Mitigation	▪ Comprehensive level of risk response strategies: avoid, reduce, share and accept (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004)
			▪ Linking objectives, events, risk assessment and risk response (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004)
			▪ Readiness level of control or risk mitigation plans (Mu et al., 2009)
		Risk Monitoring	▪ Frequent degree of risk monitoring in firms key risks
			▪ Variety of risk monitoring tools: for example, key risk indicators (KRIs), dashboard, etc…
			▪ Variety level of monitoring types: ongoing monitoring activities, separate evaluation, internal and external audit review

3.3.2.3 Independent Variables

As mentioned earlier, determinants are perceived as an independent variables; nevertheless, the determinants in this study were derived from three theories: contingency, institutional and ERM standard itself. To simplify, there were two variables: internal and external factors. For the former, it was composed of organizational characteristics, leadership role, adoption of ERM standard and strategic plan. For the latter, it was composed of industrial competition, volatility and institutionalization.

Table 3.5 Independent variable measurement.

Conceptualization term	Variables	Sub-Variables	Measurement
Determinants of ERM	Internal Factors	Organizational Characteristic	▪ Organization size (Brustbauer, 2014)
			▪ Degree of risk awareness culture (AON (2010), Barton, Shenkir, & Walker (2002), Economist Intelligence Unit (2007), Garvey (2008), Hallowell, Molenaar, & Fortunato (2013), Fortunato (2013) Beasley et al., (2005) and Stroh (2005))
			▪ Readiness of corporate strategic plan (Yaraghi & Roland G, 2011)
		Leadership Role	▪ Supportive level from leadership in risk management process (Xiabbo et al., 2013)
			▪ Degree of communication and involvement from leadership in risk aspect
		Risk Management Resource	▪ Determined mandate of resources in ERM (Economist Intelligence Unit, 2007)
			▪ Level of resources to ERM, for example, hiring consultation, recruiting ERM key person, adoption of ERM standard (Dabari & Saidin, 2014)

Table 3.5 Independent variable measurement (continued).

Conceptualization term	Variables	Sub-Variables	Measurement
Determinants of ERM	External Factors	Industrial Competition	• Degree of industrial competition (Brustbauer, 2014)
			• Degree of new entries coming to business
		Volatility	• Sensitivity of global economy and politic to industry (Brustbauer, 2014)
			• Sensitivity of national economy and politic to industry (Brustbauer, 2014)
			• Degree of uncertainty in industry (LA, MP, & C-Y, 2009)
		Institutionalization	• Degree of law and regulatory influence (DigMaggio and Powell, 1983), (Beasley et al., 2005) and (Brustbauer, 2014)
			• Degree of isomorphism process (DigMaggio & W. Powell, 1983)

3.3.2.4 Control Variables

Control variables hold constant during the process of causality. They were not a part of the analysis, but it is in fact important to determine them to reduce the effect of them by isolation of only the correlation between exogenous and endogenous.

As the maturity of the risks can be different by industry, industry type was posited as a control variable. The author intentionally studied only the multiple concepts of determinants of ERM, implementation of ERM and organizational performance by getting rid of the effect of the sectors.

3.3.3 Instrument Development and Testing

Most social science research employs questionnaires as an instruments for gathering the inquiry of attitude and preference of the ERM system. For quantitative study throughout the collection of primary data, there were two main parts of the questionnaire: gathering demographic data and the perceptions of part of determinants, ERM system and organizational performance.

Indeed, after the operational definitions were defined in 3.3.2 throughout the reliable literature in chapter 2, and the scale construction required to manipulate the conceptualization. The questionnaire in the second part employed a four point Likert scale, ranging from one to four avoiding a neutral option in the questionnaire.

Furthermore, before the questionnaire were distributed to the respondents, pretest, validity and reliability testing were all important steps as follows:

3.3.3.1 Pre-Test

A pilot project pretest is compulsory to ensure the clarity of questions (Pant, 2009). In other words, the pretest enhances the survey questionnaire arrangement to make it more reasonable, specific and friendly to the respondents. Therefore, the accuracy of the gathered data collected from the respondents was verified.

Additionally, the respondents in the pre-test should be similar to the

real sample. As mentioned, this research rested upon the listed companies of various business types; accordingly, the pre-test will use about 10 organizations from all industries to represent the whole group across all industries by rationality of the pre-test. Practically, the author employed **Google questionnaire** as the process of gathering pretest data. The pretest aim was to test how the instrument of the questionnaire performs with its validity and reliability and is not part of the research result.

Lastly, there were 75 respondents in the pre-test accounts from across industries. The result of the thru construct validity is quite high, accounting for 0.70, as well as showing a high reliability (cronbrach alpha above 0.7).

3.3.3.2 Validity Testing

Validity is the ability of the instrument (questionnaire) to measure what it is designed to measure (Kumar, 2005: 135). Babbie (2007: 153) contended that "validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration". To be precise, what do organizational performances, determinants of ERM and ERM implementation in this study mean? Or such measurement in each variable would be possible to reflect our concepts.

Usually, there are three types of validity testing, and what this research focuses on such examinations as follows:

1. Content Validity

Babbie (2010: 153) concluded that "content validity accounts for how much a covers the range of meaning included within a concept". Based on operationalization, for example, ERM implementation in this study rests on risk identification, assessment, mitigation and monitoring, which are covered by the ERM implementation. Two alternative ways this research was conducted to examine the content validity about asking the expertise in ERM field in the industry, where they are the influential regulatory environment: financial industry, property and construction.

2. Criterion-related Validity

The criterion-related validity refers to the degree to which a measure relates to some external criterion. This research attempts to cover some of this testing by adopting many well-known standards, for example, COSO ERM and ISO 31000 to validate the operationalization before launching the questionnaire.

3. Construct Validity

Construct validity is a more sophisticated technique for establishing the validity of an instrument. It is in fact based on a statistical procedure (Kumar, 2005: 155). It is specified by ascertaining the variance observed in a phenomenon. Babbie (2007) emphasized that the construct is about the degree to which a measure concerns the other variable as expected within a system of theoretical relationships. Indeed, this research conducts CFA to evaluate the construct validity by trying to significantly group a few variables.

3.3.3.3 Reliability

Reliability is a matter of whether a particular technique, applied repeatedly to the same object, will yield the same result each time (Babbie, 2007: 150). To be precise, if the measurement is consistent and stable, and hence, predictable and accurate, it said to be reliable. For example, suppose a researcher gathers the same set of information more than once, using the same instrument as well as getting the same or similar conditions, an instrument is considered to be reliable (Kumar, 2005: 156). Accordingly, reliability accounts for the degree of accuracy or precision in the measurement made by the research instrument.

However, in social science it is too hard to have truly accuracy instruments, this research took this issue seriously by using both external and internal reliability testing as follows:.

1. External Reliability

The well-known method of external reliability accounts for the test and re-test method. This method measures the stability of the instrument over time.

From this concept, in the pilot project, the author therefore collected the data twice. The first and the second periods will be different times for two weeks. After that, the proportion of the test and retest scores (test/retest) should be close to one if the instrument is somehow reliable.

2. Internal Reliability

Reliability accounts for the precision level of the instrument. By this it means that the reliability is defined as "the extent to which results are consistent over time after repeated it again and again". Nonetheless, the author constructs Cronbach's alpha values through the SPSS program to test whether the instrument is reliable or not. According to the theoretical point of view, the Cronbach's alpha value should not be less than 0.7 to be considered as reliable (Pallant, 2005: 160).

3.3.4 Data Collection Methods

There are two types of data in this study. First and the foremost, the primary data gathered from the survey due to the inquiry of the preference and the attitude of ERM from the expertise across the business types as described in the unit of analysis and population. Creswell (2014) stated that to get accuracy, validity and reliability of the primary data, the researchers need to carefully conduct the survey design. Generally, the primary data in this study was collected throughout expertise under cross-sectional data collected at a single point of time. Furthermore, the data collection was gathered through direct mail and internet online surveys.

Secondly, in the secondary data, according to the operational definition mentioned in 3.3.2, there is some information that was not collected from the survey. However, in fact it was gathered from reliable documents throughout disclosure like the annual report, financial statement and so on.

3.3.5 Data Management

In the quantitative part, before sophisticated multivariate techniques were employed, data management should put-in-place, which was composed of the handing missing data, outlier and testing multivariate assumption.

3.3.5.1 Missing data and outlier

Missing and outlier data can be possible leads to the violation of the multivariate assumption for especial normality of data. Therefore, considering the missing data and outliers in the preparation of the data is very important.

To confront the missing data, Hair, Black, Babin, & Anderson (2010) stated that generally, researchers have two ways to handle mission data. Suppose they have an adequate data set. Researchers, firstly, then can eliminate such missing cases. However, if the number of case is a concern, an estimated missing data method should be adopted: substitute missing data with central tendency (mean, median, mode and so on), estimated via the predictive model (regression analysis) and sophisticated tools (maximum likelihood estimation, MLE).

For the outliers, usually, even some statisticians attempt to build complex estimator parameters to deal with outliers, and usually, social science researchers face the dilemma to drop or not to drop it under their rationale.

3.3.5.2 Testing Multivariate Assumption

The author consolidated systematic method to test the assumptions of data incorporated how to mitigate in the case of the variation of assumption as table 3.6.

Table 3.6 Testing multivariate assumptions.
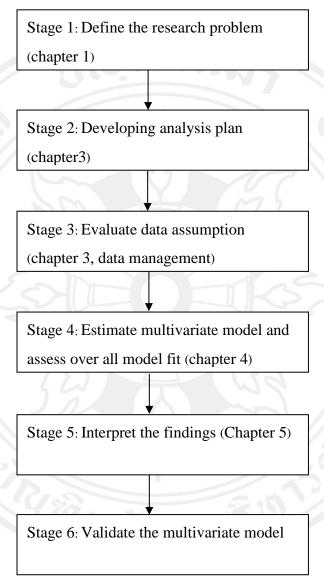
Assumption	How to Test	How to Mitigate
Normality: Shape of data distribution for individual metric variable	▪ Generally, it is hard to test multivariate normality; however, we can test separately by using normal probability plot	▪ Data transformation ▪ Increase sample size
Homoscedasticity: Testing on the error term across the independent variables (it should have the equal distance) if it is not, it accounts for the heteroscedasticity which is the problem.	▪ Scatter plot	▪ Data transformation
Linearity	▪ Scatter Plot	▪ Data transformation

Table 3.6 Testing multivariate assumptions (continued)

Assumption	How to Test	How to Mitigate
Testing Residual	▪ Auto correlation: Graphic or Durbin Watson testing ▪ Normality of residual: Using histogram or normal p-p plot of error	▪ Put relevant variables
Multicollinearity: Testing about the relationship among the independent variables themselves. Normally, the problematic will therefore occur when the independent variables themselves have a relationship.	▪ Scatter plot by each pair of independent variables ▪ Inter- Correlation Matrix ▪ Tolerance value (it should less than 0.1) ▪ VIF (VIF value obtained is between 1- 10, no multicollinearity symptoms)	▪ Add some relevant variables ▪ Get rid of some irrelevant variable ▪ Running simple regression model of each pair of viable ▪ Factor analysis to group significant variables

3.3.6 Data Analysis Plan

To quantitative the methods through a multivariate process, the analysis of the information does not specifically refer to the analysis of the research findings as it is in fact the end to end processing as shown in figure 3.3 and described by (Hair et al., 2010).

```
┌─────────────────────────────────────────┐
│ Stage 1: Define the research problem     │
│ (chapter 1)                              │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Stage 2: Developing analysis plan        │
│ (chapter3)                               │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Stage 3: Evaluate data assumption        │
│ (chapter 3, data management)             │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Stage 4: Estimate multivariate model and │
│ assess over all model fit (chapter 4)    │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Stage 5: Interpret the findings (Chapter 5)│
│                                          │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Stage 6: Validate the multivariate model │
│                                          │
└─────────────────────────────────────────┘
```

Figure 3.3 Steps in analysis of data.
Source*:* Hair et al*. (*2010*)*

Nevertheless, in a broader view, there are two aspects to analyzing data, and these are descriptive and inferential statistics.

3.3.6.1 Descriptive Statistics

Descriptive statistics are used to explain the phenomenon being studied. In terms of the associations of the variables, descriptive statistics posit as a univariate analysis. In short, descriptive statistics are beneficially employed to arrange the gathered data into a manageable form.

Indeed, the descriptive statistics in this study were adopted to manipulate the demographics of the sample through the **central tendency (mean, median and mode), data dispersion (range, inter-quartile and standard deviation)** and so on.

3.3.6.2 Inferential Statistics

The main analysis tool in this studying was the inferential statistics that directly relate to the testing of the hypotheses. In this part, bivariate and multivariate methods were incorporated in the inferential statistics. The inferential tools are described in the following:

1) Compare Mean through Analysis of Variance (ANOVA)

As the author intentionally measured the ERM performance across industries, comparing the means of ERM maturity was adopted. As there are eight industries, analysis of variance (ANOVA) was conducted.

2) Structural Equation Modeling (SEM)

Foster, Brakus, & Yavorsky (2006) stated that "SEM is a confirmatory, multivariate techniques that posit at causal relationships between variables in a diagrammatic form". Furthermore, an advancement of path analysis, SEM accounts for the process of the development of the relationships among variables, both observed and latent variables. For the former (square notation in figure 3.3), it is a

variable that the researcher can directly measure and observe. For the latter (circle notation in figure 3.3), it refers to an unobservable variable.
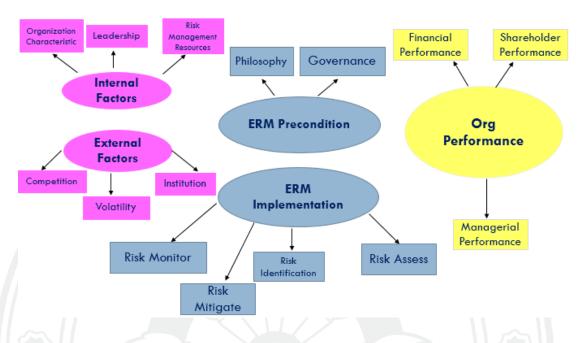
Figure 3.4 SEM for conceptual framework.

SEM is normally mentioned in relation to Sewall Wright's development of path analysis in 1921 (Hancock & Mueller, 2006). Nevertheless, SEM's wide used today initially kicked off when Karl Joreskog –a Swedish statistician- posited the idea of the combination of the aspects of econometrics and psychometrics into a single model. Hoyle (1995: 15) displayed that the SEM approach is a more complete as well as more comprehensive method for the research design. To be precise, this method contributes to statistical hypotheses more than any other methods.

Even if SEM is more comprehensive, its method needs the theory to back it up. This means that SEM is better suited to the test path model of the variable, but it really needs the conforming of theories to back it up, and that is why this research appropriately employed SEM. Apparently, there were two reasons to support the suitability of ERM. First of all, in figure 9.3, it is composed of the

combination of the path between the latent and observed variables. All paths were conformed from the theories or previously published articles.

Foster et al., (2006) concluded that there are normally five steps to employ SEM, as follows:

- Stage 1: **Specification** is an aspect of the theoretical model in terms of the equation. To be precise, this step is employed in the path diagram in which researchers' hypotheses are among the variables from previous research or theories. In this stage, normally, the researchers then established how the latent variables were quantified, which the author has already determined in figure 9.3. In SEM, one arrow accounts for the direct effect between variable while double-headed arrows allow the testing of a correlation between two variables.

- Stage 2: **Identification** is when a model can, in theory, be estimated with the observed data. Identification of the model is about searching for a solution to the model. Simply put, the identification stage in this research accounts for the prediction of unknown parameters: factor loadings or path coefficients. Generally, SEM, normally, is composed of two parts: confirmatory measurement or factor analysis, and assessment of the confirmatory structural model or even path analysis.

- Stage 3: **Estimation** is when the model's parameters are statistically forecast from the data. In this research the estimation computing program was AMOS in SPSS. Blunch (2013) indicated that AMOS is quite a user-friendly interface since AMOS posits the drawing into a

program and is performed via a click and drag module to undertake the necessary calculation.

- Stage 4: **Testing of Model Fit** is about the process to compare the predicted correlation from the model with the observed correlation. In this stage, it is compulsory to quantify the performance of the model. There are many indicators to measure the model fit. In this research the author used several indicators consolidated from many articles as in table 3.7.

Table 3.7 Model fit test parameters for SEM.

Main Indices	Range
Goodness-of-Fit Index (GFI)	Exceeding 0.9 in range from 0 to 1 indicates a good fit
Adjust Goodness-of-Fit Index (AGFI)	Larger than 0.9 in range from 0 to 1 indicates a good fit
Root Mean Squared Residual (RMR)	Significantly good fit indicated if the value is less than 0.05
Root Means Square Error of Approximation (RMSEA)	Significantly good fit indicated if the value is less than 0.05
Comparative Fit Index (CFI)	Above 0.9 is perceived as a good fit
Norm Fit Index (NFI)	Accounting for 1 considered as a model fit

■ Stage 5: **Respecification** is a modified step if the model does not fit.

3.4 Qualitative Methods

Even some of the determinants in ERM in previous research were gathered from information through qualitative methods, this research, on the other hand, initially generalizes the information from quantitative methods. Hence, the role of qualitative methods in this study accounts for the strength of the quantitative result, or it can be possible to argue the opposite way during the process of interpretation of the findings.

Quinn, Cochran, & Michael (2002) inserted that "qualitative research accounts for characterized by its aims, which relate to understanding some aspect of social life, and its methods which general words, rather than numbers, as data for analysis". In addition, the sample sizes of the population in qualitative research are small and not representative in a broader sense. Apart from the explanatory power through quantitative methods, this research incorporates in-depth analysis from qualitative methods to back up the research result to illustrate and explore the findings further.

3.4.1 Data Collection Method

There were two types of data in the qualitative part, which were the same as those of the quantitative: primary and secondary.

First of all, the primary data was generated from individual interviews. Based on generalizations as well as learning the risks across businesses, the author selected representative organizations from all industries. A few organizations were selected from the purposive and convenience methods. For the former, the author selected the organizations, where they were perceived to have best practice in ERM. The latter, were based on the author's previous experience of workplaces, so the author could ensure that the selected organizations were suitable even without company information. Ultimately, the sample organizations across business types in the qualitative process were distributed across all industries.

After selecting the organizations, the instrument (questionnaire) was developed from quantitative instruments as the former will be more indepth and less structured.

For the secondary data, the author requested reliable documents from the selected organizations, for example, annual report, financial statement, related ERM standards and so forth.

3.4.2 Data Analysis Method

Normally there are three ways of analyzing qualitative findings: thematic analysis of data, narrative analysis and the use of computer software (Quinn, Cochran, & Michael, 2002: 23). This research studied the qualitative findings through a thematic analysis of data in which it seeks to identify the main common issues that recur as well as identifying the main themes that summarize all the gathered views. After that, triangulation will be employed to supplement the findings to enrich the discussion. To be precise, triangulation is employed to validate the findings through deliberately searching evidence from a wide range of sources and comparing the results from those distinctive sources.

3.5 Chapter Summary

Chapter 2 mostly related to what the researcher would like to do, while this chapter encapsulated how the researchers plan to answer the research questions.

This chapter initially started with stating the blueprint of the research design through a mixed-strategy of research methodology. The unit of analysis accounts for the listed companies mentioned in 3.2. Due to the mixed method employed in this study, both quantitative and qualitative methods were presented. For the former, the details were about population and sampling method, how to measure the concept term, developing the instrument, data collection and management and ending up with the analysis part. Finally, for the latter, the qualitative method through interviews was illustrated at the end of this chapter.

CHAPTER 4
DATA ANALYSIS AND RESEARCH RESULT

In chapter 3 the author presented the research methodology that employs a mixed methods approach. After gathering both quantitative and qualitative data that incorporates primary and secondary information from listed companies in Thailand, this chapter will detail the research findings. The author, hence, presents the findings by initially stating the quantitative result followed by the qualitative one.

4.1 Quantitative Analysis Result

In the quantitative part, the data will come from both primary and secondary sources. For the former, a questionnaire was the main instrument to gather the attitude and preference of the unit of analysis. For the latter, the author directly contacted credible organizations for the needed information as follows: SET: Stock Exchange in Thailand, SEC: Securities and Exchange Commission, Thailand, IOD: Institution of Directors to inquire some dependent variables, Corporate Governance Index（CG Index）, financial performance throughout the disclosure of financial statement and shareholder performance.

Primarily, the data was presented through descriptive statistics. After the frequency of the data and centrality were stated, data preparation was employed before sophisticated statistical analysis through inferential statistics. Data preparation incorporated testing with the instrument for reliable and validity. With multivariate analysis, data preparation then related to testing to determine if the data violated the assumption. Ultimately, in the last part of the quantitative method, the research hypotheses were solved mainly with SEM.

4.1.1 Characteristics of Organizations and Respondents

Babbie (2007) stated that descriptive statistics are able to display all the collected data in manageable forms by using graphs and tables. Accordingly, in this section, the author presents the results of the characteristics of the organizations and respondents.

4.1.1.1 Characteristics of organizations

The unit of analysis in this study was the organization level, where the population accounted for approximately 700 listed companies in Thailand. The frequency of the characteristics of organizations is presented in Table 4.1.

The researcher contacted approximately 700 companies. There were more than 204 companies that responded to the instrument. However, to conduct both inferential and descriptive statistics, missing values and incomplete information was removed until the total respondents accounted for 204 companies.

First of all, from the 204 companies, it was unsurprising that the majority of the respondents, approximately 21.1%, were located in financial industries, in which they work on banking, finance and securities, or insurance companies. The industrial sector was next accounting for 14.2%. The other sectors had equal portions of about 10%. Noticeably, the consumer product industry had the least amount.

The size of the organizations was defined from the amount of staff. From 204 companies, 60 companies (29.4%) had more than 2,000 staff -large size-. On the contrary, about 50 companies (28.4%) had less than 500 staff. The rests (100 companies) had the number of staff in the range from 500-2000 persons.

Ultimately, according to all the respondents, more than half (64.2%) employed the ERM standard during the process of implementing a risk system. From the 64.2%, about 50% adopted the "COSO-ERM" standard. Therefore, COSO ERM is a renown standard.

Table 4.1 Characteristics of organizations.

Organizations	Number	Percent
Type of Business Sector		
1) Agro and Food	22	10.8
2) Consumer Product	18	8.8
3) Finance	43	21.1
4) Industrial	29	14.2
5) Property and Construction	24	11.8
6) Resources	22	10.8
7) Service	22	10.8
8) Technology	24	11.8
Total	**204**	**100.0**
Number of staff (Mentioned size of organization)		
1) 0-500	58	28.4
2) 501-1000	39	19.1
3) 1001-1500	31	15.2
4) 1501-2000	16	7.8
5) above 2000	60	29.4
Total	**204**	**100.0**
Adoption of Enterprise Risk Management Standards		
1) Employed Standard	131	64.2
COSO ERM	104	51.0
ISO 31000	17	8.3
Others (ISO 9001, HA)	10	4.9
2) Not Employed Standard	73	35.8
Total	**204**	**100.0**

4.1.1.2 Characteristics of Respondents

As the unit of analysis is about the organization level, the instrument in this research collected only a little information about the respondents (Table 4.2).

First and foremost, to measure the validity of data, it could be quantified from the one who filled the instrument who should directly relate to ERM. Interestingly, respondents accounting for one third of the population, had information related to the real situation of ERM as the respondents are either from the RM department (46.6%) or RMC (38.7%), which are both directly related to ERM. However, 14.7% were not directly linked to ERM but related to some extent, for example, internal audit, investment relation and general manager.

Next, for the current position of the respondents, most of the respondents (27%) are lower management level (senior manager, manager or assistant manager) who facilitated the ERM implementing process. Middle management-department head, executive vice president (EVP) and vice president (VP) were also interested in the instrument accounting for 19.1%. Nonetheless, not only facilitators were interested in the instrument, but members of the BOD and higher positions in the companies (CEO, CIO, CFO, etc.), who significantly relate to making decisions and endorsing the ERM polices also filled the form with 7.4 and 15.2 percent, respectively. Finally, half of the respondents had graduated at the master degree level.

Table 4.1 Characteristics of respondents.

Respondents	Number	Percent
Involvement with Risk Management		
1) Risk Management Committee	79	38.7
2) Risk Management Department	95	46.6
3) Not Directly Related	30	14.7
Internal Audit	14	6.9
Investment Relation (IR)	6	2.9
General Manager	4	2.0
Quality Manager	1	0.5
Human Resource Manager	1	0.5
Risk Coordinator	1	0.5
Not Specified	3	1.6
Total	**204**	**100.0**
Current Position		
1) Member of Board of Directors	15	7.4
2) Top Management (C Level)	31	15.2
3) Middle Management	39	19.1
4) Lower Management	57	27.0
5) Secretary	27	13.2
6) Staff	33	16.2
7) Not specified	2	1.0
Total	**204**	**100.0**
Education Level		
1) Below Bachelor's degree	6	2.9
2) Bachelor's degree	66	32.4
3) Master's degree	119	58.3
4) Higher Master's degree	13	6.4
Total	**204**	**100.0**

4.1.2 ERM Performance in Thai-Listed Companies

The ERM implementation performance did not directly relate to the research question, some parts of this research as well as the process of qualitative methodology in this study were still interested in the process of data analysis. As this research gathered information across business types, an explanation of ERM implementation performance was reported centrality. The first part was to display the centrality of the ERM performance overall and the second part illustrates the ERM performance across industries.

4.1.2.1 Overall ERM Performance

Based on the standard deviation of the overall ERM performance, it can be concluded that the ERM performance in Thai-listed companies does not much differ from the standard deviation as it was less than one (nearly 0.7) for each ERM implementation phase. Indeed, from the descriptive statistics, it was noticeable that Thai-listed companies still do not conduct ERM as an end-to-end process. To be precise, according to 204 companies, they pay less attention to the process of mitigating and monitoring compared to other processes. To successfully implement ERM, companies should set a suitable environment as well as identifying, assessing, mitigating and monitoring risk.

Table 4.2 Overall centrality of ERM performance,

ERM Performance	Mean	Standard Deviation (SD)
ERM Philosophy	4.07	0.74
ERM Governance	4.04	0.77
ERM Identification	4.01	0.70
ERM Assessment	3.99	0.73
ERM Mitigation	3.88	0.76
ERM Monitoring	3.87	0.88

Figure 4.1 Performance of ERM implementation in Thai-listed companies.

4.1.2.2 ERM Performance Across Thai-listed Companies' Industries

Both descriptive and inferential statistics were employed to measure the ERM performance across Thai-listed companies' industries. Based on table 4.3, firstly, from the descriptive statistics, it was noticeable that the financial industry has the best performance in ERM implementation followed by service and industrial. These

three industries performed better in ERM than the rest. Property and construction as well as resource industries are neutral in ERM performance. However, technology, consumer products and food and agro industries have less ERM performance and the worst ERM performance in Thai-listed companies is the consumer product sector.

Table 4.3 Performance of ERM implementation across business types.

Business Types	Precondition for ERM			ERM Process		
	ERM Philosophy	ERM Government	Risk Identification	Risk Assessment	Risk Mitigation	Risk Monitoring
Agro and Food	3.77	3.80	3.82	3.73	3.70	3.53
Consumer Product	3.89	3.81	3.74	3.70	3.54	3.35
Finance	4.31	4.30	4.24	4.23	4.13	4.22
Industrial	4.19	4.07	4.18	4.17	4.01	3.86
Property and Construction	4.02	3.89	3.90	3.85	3.81	3.88
Resources	4.16	4.14	3.95	3.97	3.85	3.92
Service	4.16	4.25	4.14	4.24	4.11	4.23
Technology	3.75	3.69	3.81	3.69	3.56	3.58
Total	4.07	4.04	4.01	3.99	3.88	3.87

From the above analysis, it can be concluded that ERM performance across industries in Thai-listed companies from the descriptive statistics could be somehow distinctive. With a sophisticated statistical tool, such as analysis of variance (ANOVA), the author analyzed each phase of ERM implementation to determine significantly different performance levels.

$$H0: \mu1 = \mu2 = \mu3 = \mu4 = \mu5 = \mu6$$

H1: Some μ are not all equal

μ = mean of each phase of ERM implementation

According to the ANOVA (table 4.5), all ERM phases across the industries were found to be significantly different (p value < 0.05). This explains that the ERM performance across industries was significantly distinctive. The financial sector has the best ERM performance, while the consumer product sector has the worst ERM performance. The research question then needed to be posited about which factors make financial companies better performers than the rest.

Table 4.4 ANOVA.

ERM Phase	Mean	Sum of Squares	Df	Mean Square	F	Sig
ERM Philosophy	Between Group	8.37	7	1.2	2.29	0.029
	Within Group	102.49	196	0.5		
	Total	110.86	203			
ERM Governance	Between Group	9.53	7	1.36	2.43	0.021
	Within Group	109.94	196	0.56		
	Total	119.47	203			
ERM Identification	Between Group	6.97	7	0.996	2.09	0.047
	Within Group	93.59	196	0.48		
	Total	100.56	203			
ERM Assessment	Between Group	10.51	7	1.5	2.97	0.006
	Within Group	99.07	196	0.5		
	Total	109.58	203			
ERM Mitigation	Between Group	9.87	7	1.4	2.56	0.015
	Within Group	108.13	196	0.55		
	Total	117.998	203			
ERM Monitoring	Between Group	17.42	7	2.49	3.47	0.002
	Within Group	140.63	196	0.72		
	Total	158.05	203			

4.1.3 Data Preparation

4.1.3.1 Measurement of Reliability and Validity

Firstly, for a survey, the measurement of reliability and validity of the instrument are vital. There are two types of data in this research: primary and secondary data. Based on two measurements, it mainly rested upon primary data (Bailey & Kenneth D, 1994). However, both types of data will be used to test the violation of the multivariate assumption later on.

Reliability is about the precision of our instrument. After repeating the same instrument, it should result in almost the same result. Based on the reliability of the reference value, Babbie (2007) indicated that precision of the instrument should posit the reliability of Cronbach's alpha coefficient more than 0.70. For the empirical data in this research, the Cronbach's alpha coefficients were between 0.75-0.91, which were high enough.

For the validity, there are many tools to measure it for the instrument. This research tested the validity several ways, as mentioned in chapter 3. Creswell (2014) stated that "there are several threats to validity that inclines potential issue about lacking of validity". However, using a questionnaire as an instrument, the construct validity is the most important. Threats to the construct validity happen when investigators employ inadequate definitions and measures of variables. To be precise, in practice, construct validity can be quantified from the correlation between concepts and variables. As mentioned, four out of five concepts in this paper rest upon primary data that needed the construct validity determining: internal factors, external factors, precondition of ERM and ERM process. According to table 4.6, the construct validity rates accounted for 0.84, 0.85. 0.92 and 0.96, respectively. For the empirical data, the construct validity in this paper was also high. Furthermore, in terms of inferential statistics, it concluded that each variable was found to significantly correlate with its concept. Therefore, the instrument in this research was valid.

Table 4.5 Reliability and construct validity.

Instrumental Testing	Reliability Cronbach's alpha coefficient	Construct Validity
Internal Factors		**0.84****
Organizational Characteristics	0.75	
Leadership Role	0.91	
Risk Management Resource	0.80	
External Factors		**0.85****
Industrial Competition	0.88	
Volatility	0.86	
Institutionalization	0.86	
Precondition for ERM		**0.92****
ERM Philosophy	0.91	
ERM Governance	0.89	
ERM Process		**0.96****
Risk Identification	0.85	
Risk Assessment	0.86	
Risk Mitigation	0.87	
Risk Monitoring	0.86	
Organizational Performance		
Managerial Performance	0.78	
Financial Performance	Using Secondary Data	
Shareholder Performance	Using Secondary Data	

** Correlation is significant at the 0.01 level (2-tailed).

4.1.3.2 Testing Violation of Multivariate Assumption

The research hypotheses in this work focused on multivariate analysis in which there were several concepts, variables and measurements. Apart from missing and outlier rectifying, testing the assumptions of the multivariate analysis is compulsory (Hair et al., 2010). David (2014) stated that there are several relating multivariate assumptions: normality, homoscedasticity, linearity, testing residual and multicollinearity. To SEM, Icobucci (2010) emphasized that the important assumptions are normality, multicollinearity, homoscedasticity and adequate sampling size.

1) Multivariate Normality

The normality of data is the most important. It refers to "the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution" (Hair et al., 2010: 71). Many scholars stated that it is too difficult to assess the violation of multivariate normality; however, in most cases testing univariate normality for all variables is sufficient.

The naïve way to test univariate normality is to conduct each normal plot (figure 4.2). Based on figure 4.2, most of the univariate variables for the observed value of each variable against the expected value located reasonably in the straight line; consequently, it suggested a normal distribution (Pallant, 2005: 63).

However, significantly, the author tried to test the univariate assumption by assessing the shape of the distribution with **Skewness** and **Kurtosis** indicators. For the former, it was employed to describe the balance of the distribution, while for the latter, it referred to the flatness of the distribution. Trochim & Donnelly (2006) concluded that the normality of data still exists if such two indicators are located within +2 and -2. Based on 4.7, most of the variables have less impact on the violation of the univariate assumption since the Skewness and Kurtosis values were in the reference range, except some of the secondary data: net profit margin and Tobin' s

Q ratio. Therefore, it concluded that most of the variables in this study had normal distribution; yet transformation of the data is need for only two variables (taking log10).
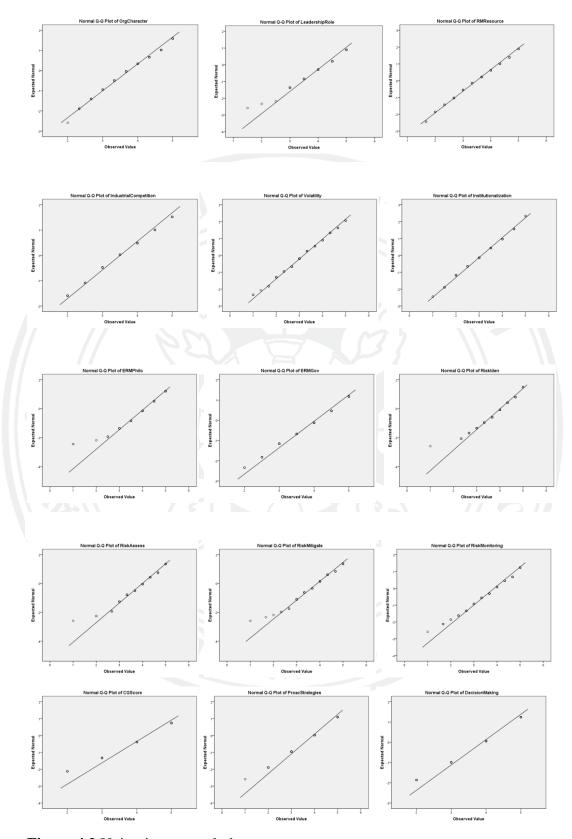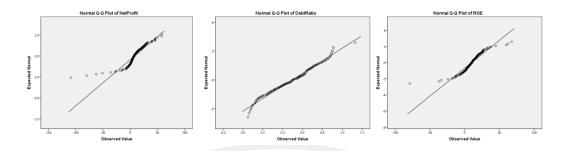
Figure 4.2 Univariate normal plot.
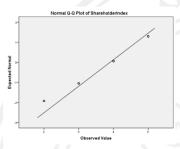
Figure 4.2 Univariate normal plot (continued).

Table 4.6 Normality testing.

Variables	Skewness	Kurtosis
Internal Factors		
Organizational Characteristics	0.027	-0.793
Leadership Role	-0.621	-0.266
Risk Management Resource	0.027	-0.551
External Factors		
Industrial Competition	0.055	-0.831
Volatility	-0.010	-0.201
Institutionalization	-0.039	-0.534
Precondition for ERM		
ERM Philosophy	-0.896	1.792
ERM Governance	-0.455	-0.554
ERM Process		
Risk Identification	-0.706	0.895
Risk Assessment	-0.507	0.349
Risk Mitigation	-0.337	0.141
Risk Monitoring	-0.499	-0.227
Organizational Performance		
Managerial Performance		
CG Rate	-0.894	0.251
Proactive Strategies	-0.482	-0.115
Decision Making	-0.505	-0.001
Financial Performance		
Net Profit Margin	-1.929	11.904
ROA	0.013	3.13
Shareholder Performance		
ROE	-0.719	0.164
Shareholder Index	0.269	0.339

2) Multicollinearity

Multicollinearity is allowed in the study, but its degree should not be too much. Multicollinearity measures the correlation among independent variables. There are several ways to test the phenomenon of multicollinearity.

An analysis of multicollinearity from a scatter plot was initially employed. It is easier to produce a scatter plot but it is too hard to detect such a phenomenon. A statistical indicator was then employed - variance inflation factor (VIF)-. VIF, normally, should not exceed 10, otherwise a problematic violation of the multivariate assumption will occur. Based on table 4.8, the VIF was ranged between 1.8 and 7.1. None of the observed variables exceeded the reference value. Therefore, none of the variables violated the multicollinearity.

Table 4.7 Multicollinearity.

Variables	Variance Inflation Factor (VIF)
Internal Factors	
Organizational Characteristics	1.810
Leadership Role	2.331
Risk Management Resource	1.873
External Factors	
Industrial Competition	2.234
Volatility	1.918
Institutionalization	2.044
Precondition for ERM	
ERM Philosophy	3.590
ERM Governance	3.993
ERM Process	
Risk Identification	3.418
Risk Assessment	4.815
Risk Mitigation	7.187
Risk Monitoring	5.421

3) Homoscedasticity

Homoscedasticity measures data that has a random disturbance (error) so it is the same across all values of the independent variables. To be precise, the error term should have no pattern with all the independent variables having an equal distance. If the plot (figure 4.3) has a pattern, it is possible to violate the multivariate assumption of heteroscedasticity.

Based on figure 4.3, the plots between the regression standard residual and dependent variable has no pattern. As a consequence, the data in this study is "homoscedasticity".
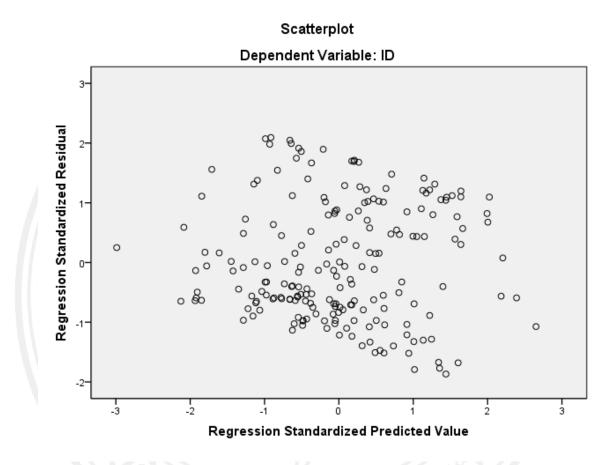
Figure 4.3 Plot between regression standard residual and dependent variable.

4) Sample Size

The greater the sampling size the better in terms of inferential statistics (Kumar, 2005). Foster, Jeremy, Brakus, Emma and Yavorsky (2006: 105) identified that a large sample size should be employed, but it depends on the number of observed variables. Theoretically, a simple formulation for an adequate sample size is $k(k+1)/2$ where k is the number of variables in the model. In this research, there were 15 observed variables, so the 204 samples was satisfactory (15+(16/2)=120).

4.1.4 Assessing Measurement and Structural Modelling

The hypotheses in the study related to causality analysis through multivariate analysis. There are three concepts in this research: determinants, implementing ERM and organizational performance. For the three concepts, they were composed of both latent and observed variables. Accordingly, with multiple causation under both latent and observed variables, SEM can rectify them.

As described in chapter 3, Foster et al., (2006) concluded that there are normally five step to employ SEM, and these are model specification, identification, estimation, testing of model fit and model modification.

4.1.4.1 Model Specification

SEM is a power multivariate tool that allows research to study several causalities; yet, theories indicate each path diagram should be put-in-place. According to the proposed path conceptual framework in chapter 2, the model specification in this study is displayed in Figure 4.4.
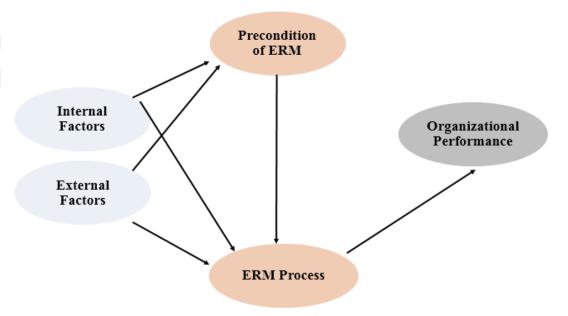
Figure 4.4 Model specification.

4.1.4.2 Model Identification

The SEM model is composed of two steps of analysis: measurement and structural model. For the former, it is about identifying individual construct -unidimentionality-. It accounts for testing the relationship between the observed and latent variables through the prediction of unknown parameters: factor loadings or path coefficients. CFA was therefore conducted to test to what extent each observed variable significantly correlated to its latent variable before sophisticated path analysis can be adopted.

There are three individual constructs: determinants, ERM implementation and organizational performance. The CFA in each construct is stated below.

1) Assessing Measurement Model of Determinants of ERM

The first measurement model analyzed the relationship of two latent variables: internal and external factors -determinants-, in which they were confirmed by contingency and institutional theory. The determinants were theorized separately from the internal and external factors. According to such organizational theories, internal factors are composed of organizational characteristics, leadership role and risk management resources. For the external factors, they are composed of industrial competition, volatility and institutionalization. Cronbach's alpha values, table 4.6, for all mentioned variables were in the range 0.75-0.91, which indicated they were all reliable measures.

For the CFA, standardized regression weights were conducted to measure the relationship between the observed and latent variables. According to the 14 measurement items through the six observed variables, as illustrated in figure 4.5, the factor loading or standardized regression weights between observed and latent variables ranged from 0.62-0.82, which displayed that each
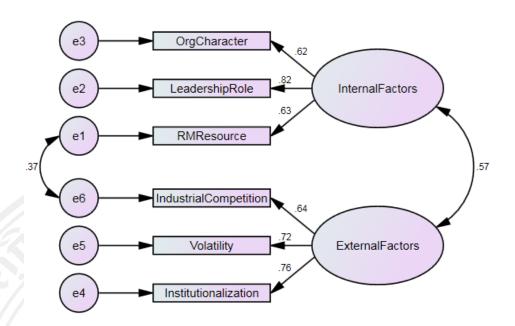
observed variable is a member of the latent variables (internal and external factors). To be precise, the change -variance- of the observed variables has a positive effect on the latent variables.

H_0: $\beta_1 = 0$, where β_1 accounts for the factor loading of internal and external factors.

H_1: β_1 at least one not equal to 0.

From table 4.9, it could be summed up that all observed variables were found to be significantly correlated with the determinants ($p<0.001$). Thus, it could ensure that the organizational characteristics, leadership role and RM resources were internal factors, while industrial competition, volatility and institutionalization were external factors. Indeed, the overall six observed variables tented to fit the data very well (figure 4.5), as the indices were all at an acceptable value (GFI, AGFI, CFI> 0.9 and RMR<0.05). Therefore, the mathematic equation of determinants is stated below.

Internal Factors= 0.62 Organizational Characteristic+ 0.82 Leadership Role + 0.63 Risk Management Resources

External Factors= 0.64 Industrial Competition+ 0.72 Volatility + 0.76 Institutionalization

Chi-square= 18.9, df= 7, p= .01

CMIN/df= 2.7, GFI= 0.97, AGFI= 0.911, CFI= 0.967, RMR= 0.035

Figure 4.5 CFA of determinants.

Table 4.8 Standardized regression weights for determinants.

Latent Variables	Observed Variables 1		Observed Variables 2	
	Standardized Regression Weights	P-value	Standardized Regression Weights	P-value
Determinants				
Organizational Characteristic	0.62	<0.001		
Leadership Role	0.82	<0.001		
Risk Management Resources	0.63	<0.001		
Industrial Competition			0.64	<0.001
Volatility			0.72	<0.001
Institutionalization			0.76	<0.001

2) Assessing Measurement Model of ERM Implementation

There are two concepts for ERM implementation: precondition of ERM and ERM process. From the ERM standards and theories, the precondition of ERM was confirmed by its philosophy and governance. Additionally, for the ERM process, it can be defined from the identification, assessment, mitigation and monitoring risks. The Cronbach's alpha values, table 4.6, for all mentioned variables ranged between 0.85-0.91, thereby indicating all were reliable measures.

Again, standardized regression weights were generated to measure the correlation between the observed and latent variables. From the 16 indicators, six observed variables had high standardized regression weights to their latent variables in the range $0.83 - 0.95$. This indicated that all observed variables were members of their latent variables. The inferential statistics from the hypotheses testing are stated below.

H_0: $\beta_2 = 0$, where β_2 accounts for the factor loading of precondition of ERM and ERM implementation.

H_1: β_2 at least one not equal to 0
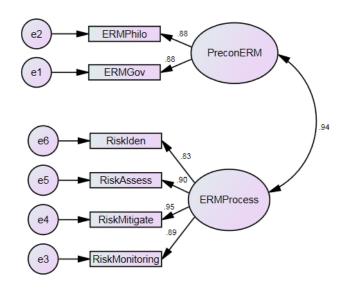
From table 4.10, all observed variables were found to be significantly correlated with the determinants ($p < 0.001$). Accordingly, from the inferential statistics, the ERM philosophy and governance having a positive effect on the precondition, while identification, assessment, mitigation and monitoring risks were significantly correlated with ERM implementation. In terms of model fit, the overall six measurement variables tended to fit the data very well (figure 4.6), as the indices were all at an acceptable level (GFI, AGFI, CFI> 0.9 and RMR<0.05). Then, the mathematic equation of EMR implementation is illustrated below.

Precondition of ERM = 0.88ERM Philosophy+ 0.88 ERM Governance

ERM Process = 0.83 Risk Identification + 0.90 Risk Assessment + 0.95 Risk Mitigation + 0.89 Risk Monitoring

Chi-square= 24.485, df= 8, p= 0.002

CMIN/df= 3.061, GFI= 0.961, AGFI= 0.9, CFI= 0.986, RMR= 0.012

Figure 4.6 CFA of ERM implementation.

Table 4.9 Standardized regression weights for ERM implementation.

Latent Variables	Observed Variables 1		Observed Variables 2	
	Standardized Regression Weights	P-value	Standardized Regression Weights	P-value
ERM Implementation				
ERM Philo	0.88	< 0.001		
ERM Governance	0.88	< 0.001		
Risk Identification			0.83	<0.001
Risk Assess			0.90	<0.001
Risk Mitigation			0.95	<0.001
Risk Monitoring			0.89	<0.001

3) Assessing Measurement Model of Organizational Performance

Organizational performance was theorized from managerial performance, financial performance and shareholder performance. Managerial performance can be defined from the CG index, proactive strategies and the ability to make a good decision. Financial performance was focused on the ability to make a profit through the net profit margin and ROA. Lastly, shareholder performance rested upon the return to equity and shareholder index. There were two types of data: primary and secondary.

The standardized regression weights were nearly high but not for all observed variables. Figure 4.7 shows the factor loading of all the observed variables ranged between 0.80 and 0.14. The lowest factor loading accounted for the net profit margin. Thus, it could be summarized that almost all the observed variables were members of their latent variables. The inferential statistics through hypotheses testing is stated below.
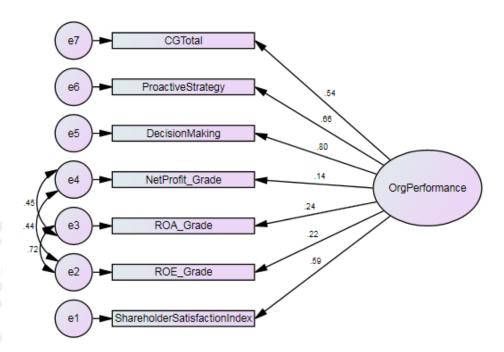
H_0: $\beta_3 = 0$, where β_3 accounts for the factor loading of organizational performance

H_1: β_3 at least one not equal to 0

Based on table 4.11, the P values of the observed variables were less than 0.05, except for net profit margin (0.119). Therefore, from the inferential statistics, it could be shown that CG, proactive strategies, ability to make a good decision, ROA, ROE and shareholder index were found to be members of organizational performance. Importantly, to rectify the problematic covariance between some observed variables, all indices were acceptable at all levels. The model fitted the data. The multiple linear regression is displayed below.

Organizational Performance = 0.54CG + 0.66 Proactive Strategies + 0.80 Decision Making + 0.14 Net Profit Margin + 0.24 ROA + 0.22 ROE + 0.59 Shareholder Index

Chi-square= 17.235, df= 11, p= 0.101

CMIN/df= 1.567, GFI= 0.973, AGFI= 0.930, CFI= 0.98, RMR= 0.037

Figure 4.7 CFA of ERM implementation.

Table 4.10 Standardized regression weights for organizational performance.

Latent Variables	Observed Variables 1		Observed Variables 2	
	Standardized Regression Weights	P-value	Standardized Regression Weights	P-value
Organizational Performance				
Corporate Governance	0.54	< 0.001		
Proactive Strategy	0.66	< 0.001		
Decision Making	0.80	< 0.001		
Net Profit Margin	0.14	0.119		
Return on Asset (ROA)	0.24	0.008		
Return on Equity (ROE)	0.22	0.016		
Shareholder Satisfaction Index	0.59	< 0.001		

4.1.4.3 Model Estimation

After the theories were passed through the measurement model, the AMOS (Analysis of Moment Structure) in SPSS was produced to find the appropriate parameters. Normally, the most important parameter in the SEM is about the standardized regression weights, which accounts for the slope or coefficient that estimates to what extent the standard deviations of a dependent variable will be altered, per standard deviation increase in the independent variable. To determine the SEM using a well known software package, maximum likelihood and ordinary least squares were employed for estimating the parameter.

4.1.4.4 Testing Model Fit & Model Modification

The main objectives in this study were about determining the causality among three concepts: determinants, implementing ERM and organizational performance. The research hypotheses, as mentioned, were considered through assessing the structural model, which related to the causality among such paths.
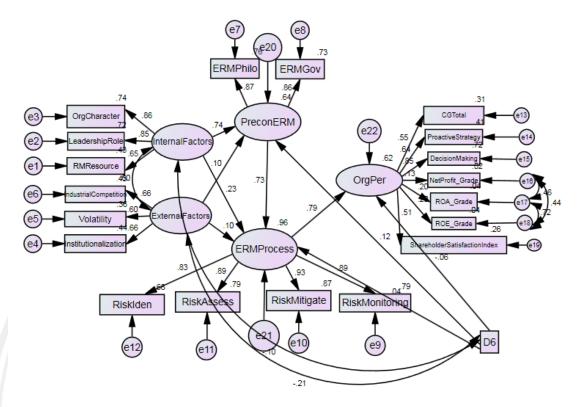
From the model identification (4.1.4.2), it could be summarized that 40 measurement items from 15 observed variables were members of all latent variables: internal factors, external factors, precondition for ERM, ERM implementation and organizational performance. To be precise, based on CFA, almost all observed variables were found to correlate with the latent variable with a high factor loading. After separately testing the measurement model from 4.1.4.2, this part tests the related theories about the path hypotheses as proposed in 4.1.4.1.

For the hypothesized model analysis, it is composed of two exogenous variables: internal and external factors, and three endogenous variables: precondition for ERM, ERM implementation and organizational performance. The full model was analyzed using AMOS graphic version 20. The maximum likelihood method was employed to estimate the parameters and to test the model fit. Moreover, all variables were entered along with the proposed model. Ultimately, all the observed

variables (risk management resources, institutionalization, ERM governance, risk monitoring and shareholder satisfaction index) were assigned values of 1.00 to fix them as reference variables.

With regards to the first attempt, the goodness of fit indices were CMIN/df = 2.9, GFI= 0.79, AGFI= 0.73, CFI= 0.85 and RMR= 0.090. Thus, in the first round, the hypothesized model did not fit the empirical data well as there were some misspecifications of parameters due to poor goodness of fit statistics, and even the standardized regression weight was too high. Accordingly, the hypothesized model had to be modified to improve the fit indices.

For the model modification, the author looked at the modification indices (MIs) and the residual from the model output. The modification indices were produced for adjusting the first attempt or initially-hypothesized model. To rectify the problem, the largest MIs relate to having a high correlation between error terms. According to the initially model, it was noticeable that the MIs values were high in the financial and shareholder indicators since they were derived from the same source of secondary data. To be precise, ROA, ROE and net profit were all calculated from the company return. To improve the model fit, the author then tried to modify the proposed model by obtaining a greater correlation among the error terms, in which there was a high correlation with each other until all goodness of fit indices identified that the modified model had a better fit that the hypothesized model. Therefore, the modified model had a better fit with the empirical data than the hypothesized model as shown in table 4.8.

Chi-square= 244.174 df= 156 p= 0.0

CMIN/df= 1.451, GFI= 0.9, AGFI= 0.9 CFI= 0.97 and RMSEA= 0.05

Figure 4.8 Structural model result.

4.1.5 Result of Hypotheses Testing

The significant finding in this study should reflect each hypothesis as proposed in in chapter 2. After modifying the structural equation model along with the relating theories, the results of the hypotheses testing are illustrated below.

H1: ERM process in organization having positive effect to enhance organizational performance

H_0: $\beta_1 = 0$, where β_1 accounted for the regression weight between the relationship between ERM process and organizational performance.

H_1: $\beta_1 \neq 0$

According to figure 4.9 and table 4.12, $\beta_1 = 79$ and P-value (<0.001) was less than 0.05. Therefore, in hypothesis 1, the empirical result identified that the direct effect of the ERM process on organizational performance was statistically significant. The ERM process can significantly incline strategic organizational performance. Therefore, hypothesis one was accepted.

H2: Precondition for ERM having relationship to ERM process

H_0: $\beta_2 = 0$, where β_2 accounted for the regression weight between the precondition for ERM and ERM process

H_1: $\beta_2 \neq 0$

From figure 4.9 and table 4.12, $\beta_2 = .73$ and P-value (<0.001) was less than 0.05. Therefore, in hypothesis 2, the data indicated that the precondition of ERM was found to significantly affect the ERM process. As a consequence, the completeness of the precondition for ERM could improve the ERM process, significantly.

H3: Internal factors accounting for extent of the determinants for precondition of ERM

H_0: $\beta_3 = 0$, where β_3 accounted for the regression weight between internal factors and precondition of ERM

H_1: $\beta_3 \neq 0$

From figure 4.9 and table 4.12, $\beta_3 = 0.74$ and P-value (<0.001) was less than 0.05. It could be summarized that the internal factors were found to significantly affect the precondition of ERM. As can be seen, the hypothesis linkage between internal factors and precondition of ERM was supported by the underlying data. Suitable organizational characteristics, supportive leader as well as the abundance of ERM resources are all the determinants for the precondition of ERM.

H4: Internal factors accounting for extent of determinants for ERM process

H_0: $\beta_4=0$, where β_4 accounted for the regression weight between internal factors and ERM process

H_1: $\beta_4 \neq 0$

This hypothesis accounted for the positive correlation between the ERM internal environment and its process. The path factor loading result from between the ERM internal environment and its process was statistically significant ($\beta_4=.23$ and P-value$=0.014$). Apart from the internal environment, internal factors composed of the organizational characteristics, supportive leader as well as abundance of ERM resources all significantly inclined the level of the ERM maturity process. Thus, the fourth hypothesis was substantiated.

H5: External factors account for extent of determinants for precondition of ERM

H_0: $\beta_5=0$, where β_5 accounted for the regression weight between external factors and precondition for ERM

H_1: $\beta_5 \neq 0$

Unfortunately, external factors were found to insignificantly effect the precondition of ERM. To be precise, according to figure 4.9 and table 4.12, $\beta_5=0.10$, it was too low a regression weight rate between the external factors and precondition of ERM. For the inferential statistics, the P value of such a correlation accounted for 0.372, which was more than 0.05. Consequently, the external factors were not significantly related to the precondition of ERM. The fifth hypothesis was rejected.

H6: External factors accounting for extent of determinants for ERM process

$H_0: \beta_6 = 0$, where β_6 accounted for the regression weight between external factors and ERM process.

$H_1: \beta_6 \neq 0$

The sixth hypothesis showed the same result as hypothesis five, in which both were insignificant. Based on the empirical data, $\beta_6 = 0.10$ as well as a high P-value. Therefore, external factors did not positively effect the successful implementation of ERM. The sixth hypothesis was rejected.

* p<0.05, ** p<0.01, *** p<0.001
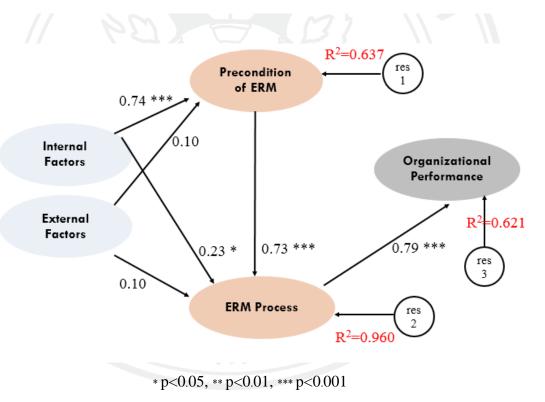
Figure 4.9 Path analysis results.

Table 4.11 Conclusion of research hypotheses results.

	Research Hypothesis	Standardized Regression Weights	P-Value	Interpretation (Compared to Sig 0.05)
H1	ERM Process →Organizational Performance	0.79	<0.001	Support Hypothesis
H2	Precondition of ERM → ERM Process	0.73	<0.001	Support Hypothesis
H3	Internal Factors → Precondition of ERM	0.74	<0.001	Support Hypothesis
H4	Internal Factors → ERM Process	0.23	0.014	Support Hypothesis
H5	External Factors → Precondition of ERM	0.10	0.372	Reject Hypothesis
H6	External Factors → ERM Process	0.10	0.101	Reject Hypothesis

4.2 Qualitative Analysis Result

The main method of gathering the research data was the quantitative methodology through the empirical survey; the qualitative methodology was adopted to encapsulate the research findings. The aim of qualitative research is to understand the relationship between ERM and organizational performance and its determinants to strength or even give the opposing view of the quantitative methodology.

In-depth interviews is one of the famous tools in qualitative research (Quinn et al., 2002). Therefore, this research selected in- depth interviews to gather qualitative data. Interviewees were selected from at least one company across each business sectors: agro and food, consumer products, finance, industrial, property and construction, resources, service and technology. Indeed, the interviewees were related to the field of RM by both being a member of the RMC or member of the RM department or unit. To maintain reliability and validity, the author adopted the same set of questions.

4.2.1 Selected Companies' Profiles and Relating Risk Issues

As risk issues in listed companies are required to be revealed to shareholders, this section considered the selected companies' profiles; accordingly, displaying the related risk issues affecting their performance (but not including their names).

The author intentionally used rational selection related to ERM performance. To be precise, the author selected companies from how well-defined the ERM process was revealed in the annual report. The selected companies did ERM as an end-to-end process. Moreover, the selected companies had better financial performed as they were located in the SET 100.

Initially, for agro & food industry the author selected a well-known frozen food manufacturer. The company currently delivers ready to cook and eat products. This company shows a high-level of professionalism as it was accredited by GMP, BRC and HACCP. Importantly, in 2016-2017, there were some uncontrollable external risks that effected the company's performance about a lack of shrimps from early mortality syndrome (EMS). This situation lead the company to think about how to move to other

new business arena for the processing of risk mitigation. Otherwise, the company has to confront a financial risk due to the fluctuation in the exchange rate from its role as an exporter.

For the consumer product sector, the selected company is a distributor of medical equipment. The customers are mainly the domestic public and private hospitals. Currently, to them, effect performance rests upon how well the company aligns with related rules, regulations and safety goals. Furthermore, company performance will be reduced from major manufacturers from the U.S.A. and Italy. Apart from business risks, financial risks due to volatility of the exchange rate as well as the reliance on the source of funds from financial institutions.

Thirdly, there were two selected banking-financial sector companies. They both delivered the same financial products. Based on the eight industries in the Thai-listed companies, the financial sector is the best for ERM maturity. ERM in such an industry has a systemic approach initially stating the RM practices, consolidated supervision and its processes. For the governance system of ERM in the banking industry there is autonomy and a clear structure. They conduct ERM as an end-to-end process: identify, assess, mitigate and monitor risk effectively. The greatest concern is how risk effects performance to reduce NPL (Non-performing loan) by doing credit risk scoring with sophisticated statistical modelling. Moreover, they are trying to mitigate systemic risks due to financial market volatility. Market risks are caused by the interest rate risk in the trading book portfolio, foreign exchange rate risk, commodity price risks and so on. The banking industry is concerned with operational risk, but they control it with several mitigation policies: data loss system, key risk indicators (KRIs) and so on. Nonetheless, emerging risks concern accounting from technology disruption -fin tech risks-.

In the industrial sector, the selected company stated the vision to be as "a leading chemical company for better living". This company is a renowned petrochemical and chemical manufacturer. As dealing with natural resources, the company enforces a sustainability policy systematically. The company's net-profit in 2016 had more significant growth than in 2015. Despite even better financial performance, the company is confronted with externally turbulent situations. To industrialization, the huge risk is operation and safety risks closely followed by strategic execution risk. Ultimately, with the globalizing world, a lack of future labor caused by an aging society

will be posited as an emerging risk. However, this company also creates ERM preconditions: ERM structure, standard (COSO), ERM tools as well as ERM culture before ERM processes are endorsed.

There are several property and construction companies, yet the author selected the leader in the construction business for the process of data gathering. The company has both operations in local and regional projects. In 2016, this company signed a contract for a huge project. However, the performance will not be continued if the risk is not mitigated. The company has no way of reducing its risks due to the dependency of major shareholders and government policy; they therefore adopted an accepting risk policy. In the construction business, the followed concerns are risks that account for the project's delay risk. This company also implements ERM as an end-to-end process starting with identification, assessing, mitigating and monitoring risks. This company sets up a risk and corporate governance committee. Finally, the company considers risk communication issues by preparing a RM handbook for staff, customers and shareholders.

In the resources industry, this company produces complex petroleum products. They suffered from the financial crisis in 1997 and the rehabilitation process ended in 2000 due to the value of ERM from the BOD. The company adopts both COSO ERM and ISO 31000 for ERM implementation. The company concerns financial risk from the fluctuation in the exchange rate. Nonetheless, by mitigating risk, the key risk indicators (KRIs) are used as an early warning system.

The service industry is composed of commerce, health care service, media, tourism and transportation, and the selected company is in transportation. The goal of this company is to create a safety goal for passengers. The company today has significant grow and has a considerable upward trend. To achieve such growth, risk should be a matter for especially compliance risk. Precisely, transportation and logistics contain lots of standards and regulators with which they need to align. Its negative impact is about the loss of reputation. Moreover, the performance of the company can quantify from external risks at the macro level including terrorism, natural disasters and political instability. Apart from the ERM process, the company handles such external risks by employing a crisis management committee throughout business continuity management (BCM).

Finally, for the most rapidly changing technology sector, the selected company is a well-known telecommunications company with its vision to empower societies through the full benefits of being connected. Last year, the company was confronted with multiple dimensions of risk that caused them a loss. Accordingly, the financial performance declined significantly. The most concerning risk accounted for the risks from the concession agreement, change in law and regulations. Additionally, with high competition, risks are derived from price competition that leads to financial-loss. The company tries to respond to risks with four ways effectively: accept, transfer, reduce and avoid.

4.2.2 Executive Management Views of Key and Emerging Risks across Business in Thai-Listed Companies

Although the main questions account for the relationship of ERM and organizational performance and its determinants, the first question, from the in-depth interview, related to the general question of key risk and emerging risk across the industry using the question: "according to your opinion, do you think what is about your organizational key risks and, in the next few decade, what are about the emerging key risks in your business". Even though this question did not concern the research questions, it was about the process of understanding risk across the business environment.

    1. Agro and Food

The interviewee in this sector is responsible for the Corporate Risk Management & Quality Management Representative. She had RM skills from more than one decade. The author spent about one hour on the process of gathering qualitative information.

Currently, in the agro and food industry, the interviewee confronted the **strategic risk** in which it significantly needs some adaptiveness in the organization. Such strategic risks relate to the raw material price and quantity change. To illustrate, this company mainly produces and exports frozen food products from shrimp, but

shrimp is constantly decreased due to early mortality syndrome. The strategic risks are materialized as the company needs to change its strategic plan by focusing on other kinds of material. Moreover, as mainly an exporter, **financial risk** due to the fluctuation in the exchange rate is a concern.

In the next decade, the interviewee expected that the **macro level of risk due to natural disasters and hazards** will be significantly increased. She then recommends her organization to have a crisis and business continuity plan.

2.   Consumer Product

The interviewee is now the Chief Operation Officer (COO) and also a member of the company's RMC. He insisted that risks caused by internal factors are totally mitigated while he addressed a macro level of risk that has an effect to **organizational strategic execution** that is about **unclear of government and country policy** in the aspect of consumer products. He then suggested that if government policies relating to consumer products are still blurred, corporation will be hard to conduct the effectiveness of the organizational strategy.

He significantly agreed that in the near future emerging risks will materialized due to the **population structure**. To illustrate, as the Thai society will be moving to an aging structure; accordingly, we will be faced with a **lack of labors** who are the driving factors in the consumer industry.

3.   Finance

The author interviewed two different commercial banks where they are in the top three for revenue in Thailand. Two interviewees are now senior vice presidents (SVP) and take the role of department heads in the Business Risk Research Department and Integrated Risk Management and Analytics Department.

For the first interviewee, he stated that the greatest concerned in the banking industry is about **financial risk due to credit risk** as the main transaction in banking is about giving a loan. Next he was concerned about operational risks as it is a bottom line to drive other kinds of risks. The second interviewee agreed with the first interviewee for the issue of credit risk. Yet, to her, if the key risks are defined from

highest impact to the organization, she stated **that liquidity and fraud (operation) risks** are the main concerns. Liquidity could somehow lead to a bank run and bankruptcy. Indeed, liquidity and fraud (operation) risks are interdependency. Loss of operational control can effect the liquidity risk.

Two of the interviewees had the convergence idea in the issue of emerging risks. **The growth of financial technology disruption** is about the emerging risks as well as the opportunity; for example, PromptPay. Financial technology disruption leads to the cost of operating the business of them to be lower than that of the banking transaction. Therefore, the demands of financial technology in the future will be inclined while the demands for banking transactions will decline. On the other hand, banking needs to be cooperative (joint venture, partner), for such financial technology can mitigate such risks and create an opportunity. Accordingly, with financial technology disruption, some business types will be obsolete. In addition, the portfolio mix in banking in the next decade will be altered. Moreover, in the economic system, the next emerging risk is about the **global economic system changing**. To be precise, the first interviewee, viewed that in the next few decades, China and India will influence the global economy and affect local business.

4. Industrial

The interviewee is in the petrochemical sector and was concerned about

financial risks. The most significant risk is about the **ability to generate profit**. To him, the price and production cost is too close; therefore, the profit in the near future will be low. Moreover, as some portion of his company's work is generated from exports, the next concern is about the **fluctuation in the exchange rate**.

Turning to the emerging risk, to him, internal risks: strategic, operational and financial, are not a concern. The emerging risk in a next decade will be about the macro level of risks: accounting from **water crisis and changing climate**.

5. Property and Construction

A well-known property and construction company was selected and the interviewee is the president. She is also now a member of the RMC. In her view, the key risk in property and construction is the main margin in the company rests upon governmental projects about the **project delay due to the moderation of governmental policy**. The driver of such risk is derived from the macro level of external factors. Next, financial risk is due to the fluctuation in the exchange rate.

To the emerging risk, the president also stated that **technology disruption** will be a significant risk that affects the demand for the property and construction industry.

6. Resources

There are many sub types of resources; nevertheless, the selected interviewee, who is employed as a Head of the Corporate Risk Management Division, is in the energy & utilities sector. He is an expert in the field of ERM. Importantly, there are many types of key risk in his sector; however, the greatest concern is about **financial risk due to oil and resource price fluctuations**. Furthermore, the interviewee insisted that such a risk is too hard to control as it totally rests upon the global economic system.

For the emerging risk, due to the limitation of natural resources, in the next few decades, the **trend in the usage of energy will be altered**, for example, consuming renewal resources. Consequently, energy companies then need to adjust their **strategy plan** to cope with such a risk. Ultimately, operating the energy & utilities sector in the future will be faced with **difficulty in the expansion of business due to the tight and rigid new laws and regulatory-compliance risk**.

7. Service

There are several sectors in the service industries, for example, commerce, transportation and logistics, healthcare, media and so on. However, the selected organization, fortunately, accounts for a large organization in transportation and logistics, with experience of a high score in the Corporate Governance index conducted by the IOD.

The interviewee, the vice president, takes the role of the head of the department in RM. To her, the most current concern is about **compliance risk**. Compliance risk materializes when organizations need to align with a particular standard（the interviewee does not need to disclose the name of the standard）, as previously, the company did not align with such a standard and created a huge impact.

To the overall view of the emerging risk in the service sectors, to her, as Thailand 4.0 is focused on the expansion of local business toward foreigners, service sectors are all the main support; therefore, in the next few decades, emerging risks will be about the **risk due to the expansion of business**.

8. Technology

The selected organization in the technology group accounts for information and communication technology. The interviewee, senior vice president, is in charge of in business assurance that is composed of three units: corporate risk, fraud assurance and internal control. He, hence, completely understands corporate risks and how to cope with such risks.

Operating in information and communication technology in Thailand depends on government policy that is an owner of some concessions. Risks are derived from the **instability of Thai government policy,** the same as the property and construction group. Next, as Thailand 4.0 focuses on technology consumption, the currently risk will therefore be about **high competition**.

To the emerging risks, technology disruption will **generate an increase in fraud risk due to less security**. People can access each system easier, hence fraud is materialized. Moreover, in nearly a decade, the population structure will change to an aging society that is low technology consumption, while young teenagers are technology lovers. **Risk is about how to maintain technology perception to both age groups**.

Macro Level of Risks
- Instability of Thai Government Policy (Property & Construction, Technology)
- Unclear Thai Government Policy (Consumer Product)

Strategic Risks
- Ability to adapt in new business areas (Agro & Food)
- Highly Competition (Technology)

Financial Risks
- Inclining NPL due to the low quality of creditor (Finance)
- Liquidity Risk (Finance)
- Fluctuation of Exchange Rate (Industrial Resources)
- Low ability to generate profit (Industrial)

Compliance Risks
- The Difficulty to align business service law, regulatory and standards (Service)

High Impact

High Likelihood

Figure 4.10 Current key risks across business industry.

Globalization Risks
- Lack of Labor due to the Convergence of Aging Society (Consumer Product)
- Maintaining Technology Perception to the differencing aging society (Technology)

Macro Level of Risks
- Inclining Natural Disaster and Hazard (Agro & Food)
- Water Crisis and Climate Change
- Global Economy System Change (Finance)

Technology Risks
- Inclining of Fraud due to technology disruption (Technology)
- Obsoleted some Business Areas due to Technology Disruption (Finance, Property & Construction)

Strategic Risks
- Ability to adapt in new business areas (Resources)
- Business Expansion (Service)

High Impact

High Likelihood

Figure 4.11 Emerging risks across business industry.

4.2.3 In-Depth Interview Results

This section considers the main qualitative part as the questions would be asked against the research questions. The qualitative data analysis in this study adopted a thematic analysis, which relates to "identify the common issues that recur, and identify the main themes that summarizes all the views you have collected" (Quinn, 2002). Moreover, to ensure the reliability and validity, the same set of questions was asked as follows:

- Apart from preventive benefits of employing ERM, do you think that ERM is possible to incline organizational performance in the aspects of managerial, financial and shareholder performance? In which aspects of adopted ERM could experiencing the most incline?

- After positing the tangible benefits of ERM, to successfully implement it, comparing the internal and external factors (under contingency and institutional theory), which one is more important?

- By prioritizing, what are the critical success factors to successfully implement ERM?

- Do you have any policy suggestions about the determinants of embedded ERM?

4.2.3.1 Qualitative Result Based on Question 1

The first question asked about the tangible benefits between ERM and organizational performance in the aspect of inclining managerial, financial and shareholder performance. All interviewees addressed that ERM is more than just a preventive tool. To them, ERM could be somehow perceived as a strategic tool for enhancing organizational performance. According to the interviewees across industries, they have distinctive views but an experience with three themes emerged.

The first emerged theme accounted for property and construction and technology industry. In addition, three interviewees addressed that benefits of ERM in the dimension of inclining **managerial performance**. First, the interviewee from the consumer products and industrial stated the tangible benefit of ERM in terms of better

improved organizational management through control mitigation. The interviewee from property and construction illustrated that ERM is a tool for re- assessment and monitoring organizational management. Good ERM can also incline the CG index. The interviewee from the technology group posited the tangible benefit of ERM in terms of the inducement of good decision making. He insisted that the high maturity level of ERM should help managers to make a good decision.

Secondly, it came across that implementing ERM has a strong relationship with **financial performance**. The interviewee from the agro and food sector stated that the ERM process is an early warning to the organization that initially prevents a potential loss, and therefore its process should reflect financial performance. Additionally, one interviewee from the financial group, inserted that RM has its aim to prevent and reduce financial risk; accordingly, ERM will then have a strong positive relationship to financial performance. As an illustration, the credit risk policy is conducted to reduce NPL and makes a good credit quality. To have a lower NPL, it means that they will generate more profit. He insisted that ERM has a correlation to managerial performance but it is too hard to quantify. To shareholder performance, it is about indirect effects but not the main. Ultimately, the interviewee from the resources group concluded that all three aspects have a positive correlation to ERM, but, obviously, the greatest relationship is about increased financial performance.

The third theme is about the common issue in **shareholder performance**. Another interviewee from the financial and service industry agreed on the benefit of ERM in the dimension of shareholder performance. The service industry mainly relates to maintain shareholder and stakeholder satisfaction performance, and ERM will therefore sustain the organization by increasing shareholder performance. Finally, the interviewee from another financial industry stated that from the empirical data, good ERM inclines ROE that is directly related to shareholder performance.

Table 4.12 Conclusion of emerged theme in question 1.

Industry	Managerial Performance	Financial Performance	Shareholder Performance
Agro and Food		√	
Consumer Product	√		
Finance (1st Interviewee		√	
Finance (2nd Interviewee)			√
Industrial	√		
Property and Construction	√		
Resources		√	
Service			√
Technology	√		

4.2.3.2 Qualitative Result Based on Question 2

After perceiving the tangible benefit of ERM, how to successfully implement ERM was the next concern. Under contingency and institutional theory, to implement any system organizations will rest upon internal and external factors. With this importance, question 2 asked about the comparison between internal and external factors, and which one is the most important?

Most of interviewees stated that both internal and external variables are important. Even though ERM initially embeds in organizations from external factors: uncertainty events, volatility or even regulator driven across industries; successfully implementing ERM totally depends on internal factors. Initially, the agro and food industry insisted that there is a lack of a regulator; therefore, the external environment is less of an effect. For the technology group, the interviewee stated that

even external factors can induced companies to have ERM, and the effectiveness of its implementation wholly rests upon internal variables.

The other industries have similar themes as above; however, there are two interviewees with distinctive ideas, and these are the consumer product and second one from the financial industry. To them, with a very strong regulatory environment, they both agreed on external factors, for example, institutional factors are prioritized. To illustrate, the BOT enacts ERM policy and guidance in which it assists them during the implementing process.

Table 4.13 Conclusion of emerged theme in question 2.

Industry	Internal Factors	External Factors
Agro and Food	√	
Consumer Product		√
Finance (1st Interviewee)	√	
Finance (2nd Interviewee)		√
Industrial	√	
Property and Construction	√	
Resources	√	
Service	√	
Technology	√	

4.2.3.3 Qualitative Result Based on Question 3

Based on question 2, most of the interviewees posited internal factors as the key to implementing ERM successfully.

First and foremost, **leadership or leader style** was the most important factor from the interviewee's view. The Managing Director from property

and construction said that ERM resources will come later on from supportive leaders. Indeed, the interviewees from industrial, resources, service and technology groups had a shared theme. They all addressed that to successfully embed ERM, the tone at the top is vital.

Next, the second important internal factor based on the interviewees' views accounts for **organizational characteristics** through the creation of a risk culture in organizations. Most of them mentioned about the risk environment culture that comes from the awareness of ERM. Agro and food and the first interviewee from the financial industry selected organizational characteristics as a first priority. Furthermore, RM resources will be derived through investment in ERM departments, hiring ERM expertise after organizations are ready in terms of the tone at the top as well as risk awareness culture.

Ultimately, a minority of the interviewees agreed on the external factors ended up with institutionalization. The interviewees from consumer and financial industries believed in the role of the regulator who is sharing ERM standards and guidance. In addition, the important role of the regulator is about to force and drive them in the ERM process in an appropriate way.

Table 4.14 Conclusion of emerged theme in question 3.

Industry	Prioritization Determinants
Agro and Food	1st Organizational Characteristics
	2nd Risk Management Governance
Consumer Product	1st Institutionalization
Finance (1st Interviewee)	1st Organizational Characteristics
	2nd Leadership
	3rd Risk Management Resource
Finance (2nd Interviewee)	1st Institutionalization
Industrial	1st Leadership
	2nd Organizational Characteristics
Property and Construction	1st Leadership
Resources	1st Leadership
	2nd Organizational Characteristics
Service	1st Leadership
	2nd Organizational Characteristics
Technology	1st Leadership
	2nd Organizational Characteristics
	3rd Risk Management Resource

4.2.3.4 Qualitative Result Based on Question 4

Apart from the research conceptual framework, the author required the interviewees to better incline an ERM maturity model as well as proposing best-practice for ERM. There are distinctive answers to question 4; however, the author tried to find themes via thematic analysis as in the following.

Most of interviewees recommended that to completely embed ERM, organizations should **integrate ERM with a business process, corporate strategy,**

key functions and so on. The aim of the connection among them, firstly, is about reducing the Si-Lo. Secondly, according to well-known ERM standards, like COSO, ISO, the ERM process should be repeated across functions.

The vital suggestion comes for the MD in the construction company and department head in the financial institution relating to the RM mind-set. To be precise, people in organizations posit risks as negative events; therefore, they do not need to disclose risks as they are scared about management judging them as being at fault. Organizations should create an **open-minded environment for risk issues**. The interviewee from argo and food added that if organizations conceal key risks and report only neutral risks, the real key risks will not be identified, assessed, mitigated or monitored. Doing ERM under such an environment will be useless.

Furthermore, to incline an ERM maturity model, based on ideas from the service and financial industry that rest upon a real-time monitoring process, to them, ERM should focus on the risk monitoring process. They therefore recommended organizations to **conduct an ERM dashboard through leading key risk indicators (KRIs)**. The benefit of this is about an early warning process and capability of organizational adaptation.
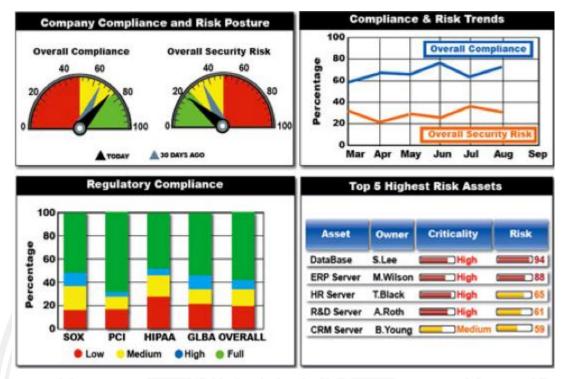
Figure 4.12 Example of KRIs dashboard.

Ultimately, two interviewees from the consumer products and financial industries insisted that best-practice in ERM depends on the strength of the **risk management governance**. Organizations should build a good ERM infrastructure: accounting for ERM policy, committee and so forth.

4.3 Integrated Quantitative and Qualitative Research Result

The most important part in a mixed‑method is how to integrating qualitative and quantitative methods during the interpretation. David (2014) stated that there are four basic mixed methods: preliminary qualitative inputs to core quantitative research projects, preliminary quantitative inputs to core qualitative research projects, follow‑up qualitative extensions to core quantitative research projects and follow‑up quantitative extension to core qualitative research projects.

From 4.1 and 4.2 as well as the research designed stated in chapter 3, this research adopted the third way: **follow‑up qualitative extensions to core quantitative research projects**. To be precise, this design enables the qualitative follow‑up study to move a project beyond the findings from the core quantitative study. David (2014) intentionally stated that to do this design, there are three basic motivations: **exploration, investigation and illustration**.

For exploration, initially, it seeks to display how and why a particular set of results happened. Secondly, investigation, is about how to pursue a further examination from the quantitative data. Ultimately, to illustrate, it describes the basic quantitative finding; it concentrates on demonstrating relatively well understand aspects of the quantitative data. The third integrated method is about the strengths of the supplementary qualitative data and the ways it can extend what was gathered in the quantitative method.

In this research, firstly, the qualitative role was to additionally explain the details of how the internal and external factors related to successfully implement of ERM. In this case, the qualitative information can provide depth and detail to significantly convey more information on the quantitative data. Therefore, this research employed a qualitative follow‑up design to **illustrate** the result from the survey.

Secondly, apart from illustrating the result from the survey, this research also utilized qualitative data to **explore** a new possible path for a conceptual framework as well as related ERM determinants apart from the core quantitative results.

4.3.1 Using Qualitative Follow-Up Designs to Illustrate Results from Surveys

In the survey, this research deployed multivariate analysis through SEM. For SEM, firstly, CFA was constructed to ensure that the observed variables were fitted well with the latent variables under the specific theories. Secondly, the structural model tested the research hypotheses through the causality among the five latent variables: internal factors, external factors, precondition of ERM, ERM processes and organizational performance.

From the CFA, it was shown that most of the observed variables fitted well to the latent variables to a distinctive degree. The power of the relationship among the observed and latent variables was measured from the standardized regression weight, which was estimated from the specific measurement items. On the contrary, the structural model from the SEM was generated by the maximum likelihood method to find the relationship among the latent variables; yet, it could not guarantee which variables determined the most powerful explanation.

Accordingly, the motivation for using qualitative result can be to supply depth and detail to convey more information. To illustrate, based on the quantitative result, it could end up that after implementing ERM, organizations could significantly incline their performance. Organizational performance can be quantified from managerial, financial and shareholder performance. However, to quantitative the analysis, what performance aspects are related the most after embedding ERM could not be answered exactly from the quantitative analysis. This is important, as based on 4.2.2, the qualitative analysis was in-depth regarding which aspects related most to the ERM implementation. Additionally, from the SEM, only the internal factors were found to

significantly affect the ERM implementation: organizational contexts, leadership or ERM resources, were the most significant from the qualitative interview.

4.3.2 Using Qualitative Follow-Up Designed to Explore Result from Surveys

One contribution of the qualitative method accounts for exploring new findings. To be precise, the classic use of complimentary follow-up in-depth interviews with a survey was to develop explanations that were not available within the survey data.

There were two explorations in this study. Initially, based on 4.2.2.2, the questions compared internal and external factors (under contingency and institutional theory) for which one is more important. Based on the qualitative results, it came across that internal factors were found to significant affect implementing ERM while external factors were insignificant. If the author totally adopted only the quantitative method, it displayed that external factors were not important. Yet, according to the qualitative result, they were important for exploring new findings from the external environment. Even if the external factors insignificantly affected the successful implement of ERM, its role was about the driving factors for ERM systems in organizations. To this, future researchers can alter the path of the conceptual framework by inserting external factors prior to the internal factors.

The second exploration was about the new measurement items gathered from the last qualitative question (any policy suggestions about the determinants of embedding ERM?). To this question, it can validate the measurement items in the quantitative part of the instrument that could not be possible to cover some measurement items. To illustrate, there are some important factors that did not appear in the instrument: the integration of ERM and business process, people mind set, etc.

4.4 Chapter Summary

The aim of this chapter was to illustrate the research findings in three ways. First and foremost, the quantitative results were displayed and divided into descriptive and inferential statistics. The research hypotheses were cracked through inferential statistics given in the SEM. To encapsulate the research result, secondly, the qualitative method through interviews was employed to gather emerging risks, benefits of ERM as well as ERM determinants. Ultimately, under a mixed method, the author also explained the integration of the two methods to strengthen the research results. After the analysis, the roles of the follow-up qualitative method to the core quantitative finding were about the illustration and exploration.

CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

5.1 Restatement of Objectives

In the business world, the SEC (Securities Exchange Commissions) regulates listed companies to disclose financial performance as well as RM system to shareholders to protect their rights. Apart from a regulatory basis by SEC, previous scandals from the U.S.A. where well-known organizations went to bankruptcy from unreal financial statements. With these situations, ERM therefore became a buzz-word.

As mentioned earlier, implementing ERM intentionally embeds it to protect against loss as well as alignment of the institutional environment. Therefore, doing ERM, historically was based on the bottom line, and that is why most Thai-listed companies experience a low maturity level (Mu et al., 2009). To this challenge, confirmatory and exploration research had its first objective to find the tangible benefit of ERM in a top-down view to incline ERM maturity in a listed companies context. The first research question accounted for would it be possible to embed ERM as a strategic tool to enhance organizational performance to deduce better decision making (Gates et al., 2012), proactive strategic orientation, inclining corporate governance, improve financial as well as shareholder performance.

According to theory, the tangible benefits of ERM significantly connect both top-down and bottom-up aspects. Secondly, the next objective related to the successful implementation of ERM across eight industries. Even studying ERM determinants was not new; one questionable manner was about which theories explained such determinants. Of the Thai-listed companies, more than half employed well-known ERM standards: COSO ERM, ISO 31000, and they guided the implementation steps but left out the details on how to implement ERM successfully.

Ultimately, the third objective was about proposing a best practice model as ERM policy recommendations to incline the ERM maturity level for Thai-listed companies.

All in all, the objectives in this research were about causality among determinants, implementing ERM and organizational performance. Such objectives, hence, were studied through the integration between quantitative and qualitative methods. The research design accordingly used a qualitative method to follow-up the core of the multivariate analysis given by the quantitative method with the aim to illustrate and to explore the findings.

5.2 Conclusions of Findings

Based on the 700 Thai-listed companies, there were 204 companies that returned completed questionnaires. The major correspondent was the financial industry while the minor was the consumer products industry. Others send questionnaires back accounting for 10%. Most of the organizations employed COSO ERM as an implementation standard.

Data was gathered from both primary and secondary sources. For the former, most of the data was from either the RM department (46.6%) or RMC (38.7%), who are both directly related to ERM. For the latter, some reliable sources of data were formally required from the SEC and IOD, for example.

From the 204 companies, 27% responded with a senior manager, manager or assistant manager, followed by middle management-department head, EVP or VP were also interested in the instrument, accounting for 19.1%. Importantly, members of the board as well as management level also filled the instrument accounting for 7.4 and 15.2 percent, respectively. Therefore, the information gathered from the respondents were related to persons who implement and make decisions about ERM.

The performance of ERM is quantified from the preconditions and its process. For the ERM performance across industries, it could be concluded that Thai-listed companies started to implement ERM, but did not yet have an end-to-end process. Precisely, they have a low maturity level of ERM in the process of mitigating and monitoring risks. Undoubtedly, in terms of specific industries, the financial industry has the best performance in ERM implementation closely followed by the service and industrial sectors. Contrarily, the worst ERM performance is from consumer products.

For the inferential statistics, comparing the mean through ANOVA could display that the preconditions and processes of implementing ERM were found to be significantly distinctive. Accordingly, it confirmed that there are distinct levels of ERM maturity across sectors.

5.2.1 Findings of Research Question 1

The first research question asked "To what extent does ERM implementation relate to organizational performance (objective 1)". The rationale of the study is about challenging prior studies that limited ERM benefits to preventive tools. To put it simply, could it be possible that after implementing ERM, it can significantly create a strategic tool enhancing organizational performance in Thai-listed companies?

There are many related theories about organizational performance (Venkatraman & Ramanujam, 1986). The author focused on the aspect of sustainability growth in the listed-companies where it expands the companies by allocating capital from shareholders. For listed- companies, apart from managerial performance, organizational performance could influence stock performance that reflexes how much companies can generate profit and to what extent it can return a profit and dividend to the equity rather than that of the value of the asset. Consequently, financial and shareholder performance from the financial statement: net profit, ROA and ROE, could incorporate the process of organizational performance as a measurement in which the prior researches were neglected.

To conclude the quantitative result, the empirical data fitted the model with acceptable statistical indices under high explanatory power. To answer research question one, it was concluded that after embedding ERM, organizations can perform significantly better in terms of inclining 1) **managerial performance** through improved management CG, proactive strategic manner and better informed decision making, 2) **financial performance** by significantly generating more profit and 3) **shareholder performance** by improved shareholder satisfaction as well as ROE.

The multivariate analysis under SEM posited that managerial performance indicators had the highest standardized regression weight, it could not guarantee that after implementing ERM, managerial performance would experience the most improvement compared to financial and shareholder performance. To illustrate more conclusions, the quantitative result cannot be compared in which dimensions that are enhanced the most after implementing ERM; therefore, some findings from the qualitative method can directly illustrate it more.

Based on in-depth interviews, four out of nine interviewees stated that the most positive impact after embedding ERM was **managerial performance**. To them, after inclining the robustness of ERM, companies will have improved organizational management through control mitigation. The president from a well-known construction company inserted that ERM is a tool for re-assessed and monitoring of organizational management. Good ERM also can incline the CG index. Ultimately, a department head of ERM in the technology group assured that a high maturity level of ERM can deduce management making good decisions.

The second emerging theme accounted for **financial performance**, the interviewee from agro and food agreed on the benefits of ERM as a preventive loss tool. As if loss is reduced from robust ERM, therefore, financial performance will be inclined. The interviewee from the resources sector concluded that the ERM tool persisted as an early warning for reducing loss as well as increasing financial performance. In the banking industry, the interviewee who is now a senior vice president

in the business risk department stated that doing good ERM can enhance the financial performance by improving the credit quality as well as decreasing the NPL.

Finally, only two interviewees from the commercial bank and service sector thought that ERM and **shareholder performance** have a strong positive relationship. For the former, who is now a first vice president, from the empirical data, good ERM lastly inclines ROE that is directly related to the shareholder performance. For the latter, she insisted that to sustain organizational growth, doing good ERM can incline the shareholder satisfaction index.

As described, the first hypothesis was supported from empirical data.

5.2.2 Findings of Research Question 2

Research question two asked "What are the factors that significance affect ERM implementation?" (objective 2). After positing the strategic benefits of ERM, the next research question was concerned with ERM determinants. It related to hypotheses three to six.

ERM determinants confirmed under the contingency and institutional theory were composed of **internal and external factors**. Internal factors, theoretically, are composed of organizational characteristics, leadership role and RM resources. While, external factors are concerned with industrial competition, volatility and institutionalization.

According to the empirical data gathered across the eight industries of the Thai-listed companies, it displayed that while all observed variables fitted well with the latent, both internal and external, variables, only the **internal factors were found to be significantly associated with implementing ERM for both its precondition and process**. Only the internal factors significantly affect the ERM implementation. Contrarily, the external factors were all insignificantly related to ERM implementation. Therefore, from figure 5.1, hypotheses 3 and 4 were both supported and 5 and 6 were

both rejected. In summary, successful implementation of ERM is associated with organizational characteristics, leadership role and RM resources, which are all internal factors.

The author posited that internal factors positively affect the implementation of ERM from the quantitative method; nonetheless, which internal factors were the most influential factors was questionable from the quantitative method as all the observed variables: organizational characteristics, leadership role and RM resources, had high factor loading scores with p-values less than 0.05. To understand most of the ERM determinants, the qualitative method was employed.

From the nine interviewees, most of them came across that **leader role** as the most crucial factor for successfully implementing ERM. All internal factors: leadership, organizational characteristics and RM resources, are important, but they should come later after a supportive leader. Supportive leaders dictate an appropriate environment for implementing ERM as well as distributing RM resources. Precisely, the tone at the top is the most important ERM determinant.

Next, the second principal factor was **organizational characteristics**. From the qualitative finding, most of the interviewees mentioned organizational characteristics through the creation of a risk culture in organizations. To be precise, the size and readiness of corporate strategies are unrelated to implementing a successful ERM; however, an environment that is aware of risk is a critical success factor to successfully implementing ERM. Risk culture can come from a high level of awareness of risk issues and assesses, mitigates and monitors risk as an early warning system. Apart from these two mentioned factors, RM resources are also important, but it would come after supportive leadership and awareness of ERM culture.

External factors were found to insignificantly effect the successfully implementation of ERM from sophisticated statistically analysis; some interviewees argued that institutionalization is somehow important while implementing ERM. Its role

is about regulating and forcing companies by shared industries standards. Precisely, institutionalization refers to how intense the level of industrial regulators is as well as the isomorphism level. By this it means that ERM will be effectively embedded if regulators regularly enforce companies as well as sharing ERM standards and guidelines. Apart from the regulator's role, the isomorphism process of industry can be a matter. It refers to the level of companies imitating another company's system due to the belief about some of the benefits.

5.2.3 Findings of Research Question 3

Research question 3 asked "To what extent is the relationship between ERM preconditions and its processes?" This was about the second hypothesis that tested the relationship between preconditions of ERM and its process. According to figure 5.2, it was found to significantly effect the preconditions of ERM and its process. The second hypothesis was therefore supported with a high standardized regression weight.

This research tried to incorporate preconditions of ERM to the conceptual model to confirm the best practice for a well-known ERM standard (figure 5.1). Historically, implementing ERM incorporated only the RM process of identifying, assessing, mitigating and monitoring risk, while nowadays ERM standard challenges are the prior concept by including the internal environment to the process of implementing ERM.

For the statistical analysis, organizational preconditions of ERM are important before sophisticated ERM processes are adopted. Importantly, preconditions of ERM mean the appropriated internal environment through determining the risk appetite, policy and procedures of ERM, readiness and autonomy of the RMC. As mentioned, the readiness is important before ERM is embedded in companies.
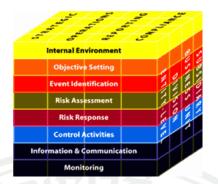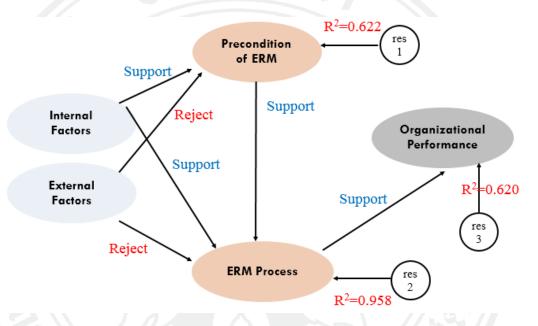
Figure 5.1 COSO ERM standard.

Figure 5.2 Findings alignment with research hypotheses.

5.2.4 Findings of Research Question 4

The best practice of the ERM model as well as the policy recommendation are stated in part 5.4.

5.3 Discussion

The aim of this part was to further analyze the findings mentioned in 5.2. The discussions covered two views: organizational performance and determinants of ERM.

Firstly, organizations today try to compete with each other and across industries. Each type of organization has its aim to compete with all other organizations. For listed-companies, organizational performance would measure both internal and external views (Brigham & Ehrhardt, 2005). However, to compete with others, the external view of performance is more important, as listed-companies must show their ability to their shareholders in view of the stock performance. Good stock performance creates more stock demand; accordingly, the inclining stock demand will result in more capital to expand the business as well as to win in the market.

Consequently, to sustain organizational performance and growth from the shareholder view, companies should do their best in financial and shareholder performance. The tangible value of organizations will then reflect the ability to generate more profit, conspicuously produce liquidity as well as stimulate long term financial stability (James C. Van Horne & John M. Wachowicz, 2001). Therefore, any proactive strategies adopted by listed-companies should reflect such indicators, including ERM.

Regarding the SEM, it displayed that after companies formally embedded ERM, organizational performance was better. Additionally, given the mixed-method, the organizational performance dimension that was positively impacted after formally implementing ERM accounted for the **managerial performance**.

Managerial performance measurements under the revealed theories were related to the corporate governance index, improved decision making and proactive strategies. For the quantitative analysis, the main benefit of ERM was about enhancing management's good decision making. Next, ERM can help listed companies to gain a strategic advantage by increasing competitiveness. Such two benefits were confirmed by prior

theories from Gates et al., (2012). Significantly, this research tried to challenge the prior studied by incorporating the CG index as one of the measurement items for managerial performance; accordingly, it should have a positive relationship between CG index and ERM. Indeed, the author can empirically study the challenge of the relationship between CG and ERM, which was neglected in the previous studies. After effectively implementing ERM, it could remedy situations from the past like World-com, Enron and Volkswagen. To summarize, high maturity in ERM could significantly improve management strategies.

Managerial performance, therefore, does not entirely connect to financial and shareholder performance. Then, with the empirical data, even ERM can be perceived as a strategic tool enhancing organizational performance, but it obviously does not enhance profit, liquidity and sustain long term growth. Indeed, Brigham & Ehrhardt (2005) stated that in the long term, the value of companies can noticeably quantify from the upward ROE. Based on the empirical data, even after implementing ERM, organizations can significantly incline ROE, it was a low level of standardize regression weigh. To conclude, companies employ ERM as a strategic tool but it could not stimulate long term growth under the listed-companies environment.

Importantly, as mentioned above, ERM in Thai listed-companies should improve its system to sustain long term growth rather than positing it as a bottom-down strategic tool. Obviously, listed companies should conduct ERM as an end-to-end process. According to the findings, in Thai-listed companies, some industries conduct ERM by ignoring how to mitigate and monitor risk. To be precise, they do not embed ERM as a whole system. Indeed, most of the listed companies only identify and assess risks; yet, the risks still exist as they do not mitigate and monitor them on a regular basis. Accordingly, to improve the ERM system, companies should first implement it as a complete cycle to perceive ERM as a top-down strategic tool.

Secondly, further discussion was about ERM determinants. Systematically, statistical analysis showed that only internal factors were critical success factors for implementing ERM. All internal factor variables: organizational characteristics, leadership and RM resources, were all significantly effected while embedding ERM. It will then question whether external factors are important for implementing ERM systems?

Even as ERM became a buzz-word, external factors: uncertain events, regulated by institutional environment, preventing lost from rapid environment change, industrial competition and so on, from successful implementation of ERM could empirically relate only to the mentioned internal variables. Yet, it could not guarantee that companies presumably ignored external factors, especially institutionalization. Based on the expert view, even though internal variables are more important for successfully implementing ERM, external factors are the driver factors that spur companies to initially conduct ERM, especially for strict regulators in some industries (Selznick, 1948). Two interviewees from the financial industry, which experienced the best performance in ERM, had a convergent finding that regulators are important as they can guide, share knowledge as well as enact the role for ERM.

When posting external factors as the driving factors rather than that as determinants of ERM, the author presents the research's contribution by proposing a modified conceptual framework as in figure 5.3. It was found to be significantly corrected to each path.
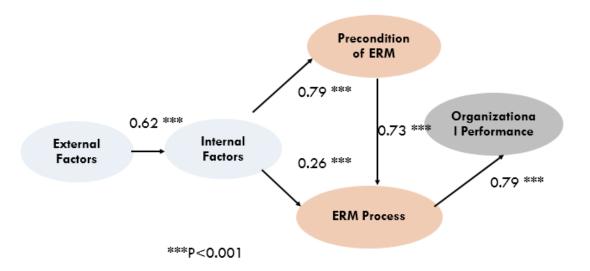
Figure 5.3 Modified future conceptual framework.

Finally, based on contingency and institutional theory with the empirical data, the contingency theory can explain more of the phenomenon in ERM than the institutional theory. To embed ERM, it will rest upon the context of the organization as there is no one best way. This research only concluded ERM determinants as a generalization process.

5.4 Proposed ERM Best Practice Model

The ERM system is still a new system to both the public and listed companies in Asia (Bowling & Rieger, 2005). The maturity level of ERM in Thai-listed companies is not as high when compared to other countries in Asia. The empirical results in this research employing the integration between the core quantitative and follow-up qualitative methods could substantially benefit them to incline ERM maturity level as follows:

- Most Thai listed companies still implement ERM in a piece-meal way. They do not construct an ERM program as an end-to-end process. Based on empirical data, they do considerably less in mitigating and monitoring risks, and that is why some industries have a low maturity

level in the ERM system. Importantly, the author will recommend that listed companies do ERM as a cycle: starting with preconditions of ERM, identification, assessment, mitigating and monitoring. COSO ERM suggests companies mitigate key risks in four ways: transfer, tolerance, terminate and treatment risks (Committee of Sponsoring Organizations of the Treadway Commission (COSO) , 2004). Additionally, from the expert views, listed-companies should create systematic key risk monitoring systems by using an ERM dashboard through leading KRIs.

▪ As mentioned earlier, they are distinctive levels of ERM performance across industries. Consumer products, agro and food and technology all have different levels of ERM maturity. To constantly improve, there are two ways. Firstly, companies themselves should do ERM as a cycle, as mentioned. Secondly, the regulator's role, they should enact precisely rules, policies and procedures to guide individual companies. To illustrate, BOT, which is the financial regulator for commercial banks, significantly updates and communicates as well as enforces commercial banks with regards to ERM rules, and that is why the financial industry has the best ERM performance.

▪ RM systems in listed companies are still embed as project-based-PRM. To be precise, they do not conduct RM at an enterprise level. In PRM, companies repeat the RM process to reach the goal of the project rather than that of an organizational goal. Accordingly, the tangible benefits of RM could be connected to a top-down view if companies could conduct RM across a division or department as with ERM. The RM system in Thai listed-companies has a maturity level that does not reach ERM, and that is why tangible benefits of RM will perceive only

bottom-line aspects of preventing loss as well as inclining only the managerial level.

- Based on the significantly positive correlation between organizational performance and implementing ERM, organizations should communicate and display the dimension of ERM benefits, especially for managerial performance, to the RMC, management and staff, to incline the level of cooperative as the critical success factors all rest upon internal factors.

- Cooperation inside organizations is the greatest advantage to incline ERM maturity since ERM determinants are all internal variables: organizational characteristics, leader role and RM resources; nevertheless, the most successful factor for implementing ERM accounts for leadership. Leadership, organizational characteristics and RM resources are all interdependency; while, supportive leaders will consequently come across with an awareness of risk culture as well as abundant RM resources. Therefore, to successfully implement ERM, the author recommends that the ERM department should try to persuade the management level to posit the benefits of ERM both top-down and bottom-up as a leader is the first tier for successfully implementing ERM.

- Apart from leader's role, as policy recommendations, nine interviewees across the industries stated that people inside organizations with a mind-set for risks are also crucial. Nowadays, staff may perceive that if they relate to risk, they will also be at fault; therefore, they try not to disclose the real-risks. That is not good for implementing ERM. The author recommends that to embed ERM, an open-minded environment for risk issues is also important unless ERM could not be perceived as a strategic tool to enhance the organizational performance. RMC should not punish anyone who reveals risk factors.

- Regarding the strong relationship between preconditions and the process of ERM, the ERM department should prepare a suitable internal environment before a sophisticated ERM process is first started. The author suggests that the RM team should supply a precise level of risk appetite, the readiness level of the RM policy and standard procedure as well as the autonomy and activity of RMC before kicking of an ERM program. Although all parts of the ERM process: identifying, assessment, mitigation and monitoring risks, are all indispensable for successful implementation of ERM, the preconditions of ERM are the most vital.

- Finally, today companies have several systems to implement to beat the competitors while they try to limit the number of staff. To successfully implement ERM, the ERM department should reduce the organizational silos by trying to integrate ERM with business processes, key functions as well as corporate strategies. To better perform ERM, it should be conducted in integration rather than in isolation as companies did in the past.

5.5 Contributions of the Study

Starting with the theoretical contributions, historically, studying the critical success factors of ERM had a lack of theoretical back-up. This research encapsulated the convergence between management and risk theories exploring citations for future researchers. Additionally, this research tried to combine multiple concepts among the determinants of ERM and its implementation as well as organizational performance, in which the prior research separately educated them. Accordingly, SEM was employed to fix the research hypotheses.

There were several dimensions of practical contribution. Obviously, after positing tangible benefits of ERM for especially a top-down view, it could be possible to incline

the cooperative level of ERM in organizations. To posit top-down benefits, leaders will then put-in more effort and allocate ERM resources; therefore, the maturity level of ERM in listed-companies will be higher than that of the past. The high maturity of ERM can prevent organizations from loss, better handling turbulent situations, adequate management decisions, informed proactive strategic orientation, inclined management governance system as well as improved financial and shareholder performance.

The second practical contribution in this research is about utilization management. To be precise, understanding the most influentially successful implementations of ERM induces organizations to focus only on crucial factors and ignores the rest.

Finally, as mentioned about the low level of ERM maturity in some industries, public organizations in Thailand nowadays pay less attention to ERM as they do not understand its tangible benefits as well as lacking knowledge of ERM. Importantly, this research can cope with these things. To be precise, some determinants of ERM can be adapted to implement successfully ERM and increase the ERM maturity level.

5.6 Limitations and Directions of Future Research

This study listed the determinants of ERM, its implementation and organizations in the context of Thailand, in which it is the distinction to other types of organizations. Therefore, the results could be inapplicable to other types of organizations.

Moreover, the objective in this study mainly depended on the positive effects between embedded ERM and organizational performance by ignoring internal and external environments related to the organizational performance. Therefore, future research should explore those causal relationships.

Philosophically, we are now facing the bias of social science research. Normally, researchers cannot reduce the whole bias, but I tried to mitigate it as much as possible. Firstly, the author employed several types of data-triangulation (primary and secondary data) to combat the bias of the respondents. Secondly, with the limitation of lacking validity through a survey, qualitative analysis was then used to validate the model after the generalization process from the quantitative analysis. However, the qualitative method itself contained the bias of the interviewee. Ultimately, during the interviews, the author reduced the bias by crossing check the answers.

In future research, first and foremost, the relationship between organizational performance and ERM rests upon how to operationalization the organizational performance. In this research, the author quantified the organizational performance when divided from managerial, financial and shareholder performance. Such measurements rested upon the performance under the listed-companies' environment that would strategically include shareholder performance in a conceptual framework. As mentioned, organizational performance is a multifaced-term (Davies, 2007) that has several ways to be measured. To sum-up, future research can put other measurement items into the research instrument. The research result will then change depending on how the organizational performance is measured.

The aim of this research was to study ERM across industries. To be precise, it was about ERM in a generalization process. However, secondly, it will be possible that future research could study ERM in specific industries. To illustrate, the low level of ERM maturity may be useful for studying the determinants of ERM in the financial industries when they are experiencing the best ERM maturity. To be precise, studying ERM in specific industries can give a solid research contribution.

Thirdly, one theoretical contribution in this research is about the convergence between management and ERM theories. This paper confirmed the conceptual framework from the contingency and institutional theories. However, there are many related management theories that could possibly explain the phenomenon of ERM (Duckert, 2011). Potentially future research may incorporate other related management theories to find the convergence of them and ERM.

Ultimately, due to the low level of ERM maturity in some industries as well as public organizations, future researchers can focus on comparative studies between public and private organizations. Even two such types of organization can be distinctive; however, it can somehow incline the maturity level of ERM in the public organizations.

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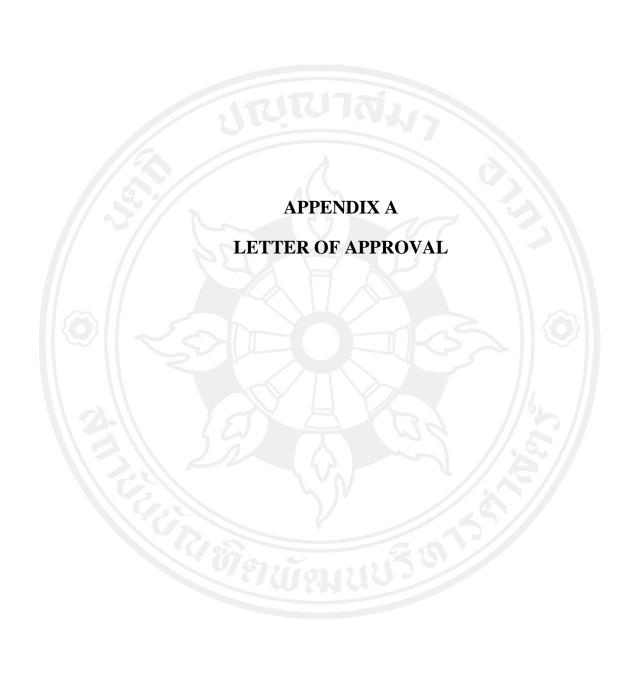
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APPENDIX A

LETTER OF APPROVAL

ที่ ศธ 0526.02/

คณะรัฐประศาสนศาสตร์
สถาบันบัณฑิตพัฒนบริหารศาสตร์
คลองจั่น บางกะปิ กทม.
10240

ธันวาคม 2559

เรื่อง   ขอความอนุเคราะห์เข้าสัมภาษณ์เพื่อทำวิทยานิพนธ์
เรียน   คณะกรรมการบริหารความเสี่ยง/ผู้ดูแลด้านบริหารความเสี่ยง

        ด้วย นายปฏิภาณ แซ่หลิ่ม รหัสประจำตัว 5710131014 นักศึกษาหลักสูตรปรัชญาดุษฎีบัณฑิต
ด้านการบริหารการพัฒนา   (หลักสูตรนานาชาติ) คณะรัฐประศาสนศาสตร์
สถาบันบัณฑิตพัฒนบริหารศาสตร์ ได้รับอนุมัติให้ทำวิทยานิพนธ์ เรื่อง   Enterprise   Risk
Management and Organizational Performance: The Empirical Study of Listed Companies
in Thailand โดย ผศ . ดร . ไพโรจน์   ภัทรนรากุล เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ งานวิจัยนี้ มี
วัตถุประสงค์เพื่อศึกษาการนำระบบบริหารความเสี่ยงองค์กรมาสร้างกลยุทธ์ในการเพิ่มสมรรถนะของ
กลุ่มบริษัทจดทะเบียน
        คณะรัฐประศาสนศาสตร์ จึงเรียนมา ขอความร่วมมือท่านในการให้ข้อมูลเชิงคุณภาพ ซึ่ง
ข้อมูลที่รวบรวมได้จะถูกเก็บไว้เป็นความลับและใช้เพื่อประโยชน์ในการดำเนินงานวิจัยเท่านั้น
ทั้งนี้ หากงานวิจัยชิ้นนี้สำเร็จเสร็จสิ้น และมีข้อมูลเชิงกลยุทธ์ เชิงนโยบาย ที่มีประโยชน์ต่อ
บริษัทท่าน ผู้วิจัยยินดีนำส่ง บทสรุปผู้บริหาร (Executive Summary) และข้อมูลอื่นๆ ในโอกาส
ต่อไป หรือหากท่านมีข้อสงสัย สามารถติดต่อ ผู้วิจัย โดยตรงที่หมายเลขโทรศัพท์
087-7119446, email: patipanlim7@gmail.com

        คณะรัฐประศาสนศาสตร์ หวังเป็นอย่างยิ่งว่าคงได้รับความอนุเคราะห์จากท่านเป็น
อย่างดี จึงขอขอบคุณล่วงหน้ามา ณ โอกาสนี้

                                ขอแสดงความนับถือ

                        (ผู้ช่วยศาสตราจารย์ ดร. ไพโรจน์ ภัทรนรากุล)
                            คณบดีคณะรัฐประศาสนศาสต

คณะรัฐประศาสนศาสตร์
โทรศัพท์/โทรสาร 02-374-4977

APPENDIX B

QUESTIONNAIRES

แบบสอบถามการวิจัย เรื่อง ระบบบริหารความเสี่ยงองค์กรกับสมรรถนะองค์กร กรณีศึกษาบริษัทจด
ทะเบียนไทย

เรียนผู้ตอบแบบสอบถาม

      แบบสอบถามนี้ เป็นส่วนหนึ่งของการทำวิทยานิพนธ์หลักสูตร Doctor of Philosophy in Development
Administration (International Program) คณะรัฐประศาสนศาสตร์สถาบันบัณฑิตพัฒนบริหารศาสตร์ เพื่อศึกษา
การใช้เครื่องมือการบริหารความเสี่ยงมาสร้างกลยุทธ์การเพิ่มสมรรถนะขององค์กรและปัจจัยส่งเสริมความสำเร็จ
ของระบบบริหารความเสี่ยง

      ผู้วิจัยใคร่ขอความร่วมมือท่านในการตอบแบบสอบถาม โดย ข้อมูลท่านจะถูกจัดเก็บเป็นความลับและ
ใช้เพื่อการวิจัยทางการศึกษาเท่านั้น ผู้ตอบแบบสอบถามจะใช้เวลาทั้งสิ้นโดยประมาณ 10 นาที ในการตอบ
แบบสอบถาม

      จึงเรียนมาเพื่อขอความร่วมมือในการตอบแบบสอบถามและขอขอบพระคุณในความร่วมมือมา   ณโอ
กาสนี้

ปฏิภาณ แซ่หลิ่ม

                         ผู้วิจัย

คำชี้แจงในการตอบแบบสอบถาม

- ▪ แบบสอบถามประกอบด้วย 5 ส่วน ผู้วิจัยใคร่ขอความกรุณาท่าน ในการตอบแบบสอบถามทุกข้อ โดยส่วนที่ 5 ท่านอาจ
ว่างไว้ หากไม่มีข้อคำแนะนำเพิ่มเติม
- ▪ หากผู้ตอบแบบสอบถามดำเนินการเสร็จ ผู้วิจัยใคร่ขอความกรุณาท่าน ปิดใส่ซองขนาดเล็ก (ติดแสตมป์ 5 บาท) ที่แนบมา
พร้อมกันนี้และส่งแบบสอบถามกลับภายในวันที่ 30 มกราคม 2560

ส่วนที่ 1สอบถามข้อมูลทั่วไปของผู้ตอบแบบสอบถามและข้อมูลพื้นฐานบริษัท

1. ท่านทำงานเกี่ยวข้องกับระบบบริหารความเสี่ยงในส่วนใด

    ☐ 1) คณะกรรมการบริหารความเสี่ยง   ☐ 2) ฝ่ายบริหารความเสี่ยง   ☐ 3) อื่นๆ (โปรด
ระบุ)…………………………

2. ตำแหน่งงานในปัจจุบันของท่าน (โปรด
ระบุ)……………………………☐……………………………………………………..

3. อายุ ☐ 1) น้อยกว่า 30 ปี   2) 31-40 ปี ☐   3) 41-50 ปี ☐   4) มากกว่า 50 ปี

4. อายุงาน   ☐ 1) น้อยกว่า 5 ปี   ☐ 2) 6-10 ปี   ☐ 3) 11-15 ปี   ☐ 4) มากกว่า 15 ปี

5. ระดับการศึกษาของท่าน ☐ 1) ต่ำกว่าปริญญาตรี   ☐ 2) ปริญญาตรี   ☐ 3) ปริญญาโท   ☐ 4) สูงกว่า
ปริญญาโท

6. บริษัทท่านอยู่ในกลุ่มอุตสาหกรรมใด

☐ 1) Agro and Food ☐ 2) Consumer Product ☐ 3) Finance ☐ 4) Industrial
☐ 5) Property and Construction ☐ 6) Resources ☐ 7) Service ☐ 8) Technology ☐ 9)
อื่น…………………..

7. บริษัทท่านจัดอยู่ในธุรกิจขนาดใด ☐ 1) เล็ก ☐ 2) กลาง ☐ 3) ใหญ่

8. จำนวนพนักงานในบริษัทท่านโดยประมาณ…………………………..คน

9. บริษัทท่านเลือกใช้มาตรฐานสากลด้านการบริหารความเสี่ยงหรือไม่ ☐ 1) ใช้ (ตอบข้อ 9.1) ☐ 2) ไม่ใช้ (ข้ามไปตอบ
ส่วนที่2)

9.1 มาตรฐานที่บริษัทท่านใช้คือ ☐ 1) COSO ERM ☐ 2) ISO 31000 ☐ 3) อื่นๆ (โปรด
ระบุ)…………………..

ส่วนที่ 2 แบบสำรวจ สมรรถนะขององค์กร (Organizational Performance)

ประโยคต่อไปนี้ จะสัมพันธ์กับความรู้สึกและทัศนคติของท่าน โปรดทำเครื่องหมาย √ ในข้อที่ตรงกับความรู้สึกท่าน โดย

1= ไม่เห็นด้วยอย่างยิ่ง   2 = ไม่เห็นด้วย   3 = ไม่แน่ใจ   4= เห็นด้วย   5= เห็นด้วยอย่างยิ่ง

ข้อคำถาม	1	2	3	4	5
2.1 บริษัทท่านมีนโยบายส่งเสริมการมีธรรมาภิบาล (Corporate Governance) ของผู้บริหารระดับสูง					
2.2 บริษัทท่านมีกลยุทธ์ในการดำเนินธุรกิจเชิงรุกที่หลากหลาย					
2.3 บริษัทท่านมีกลไกที่ช่วยผู้บริหารในการตัดสินใจ (Decision Making)					

<u>**ส่วนที่** 3</u> แบบสำรวจ ระบบบริหารความเสี่ยงองค์กร (Enterprise Risk Management, ERM)

ประโยคต่อไปนี้ จะสัมพันธ์กับความรู้สึกและทัศนคติของท่าน โปรดทำเครื่องหมาย √ ในข้อที่ตรงกับความรู้สึกท่าน โดย

1= ไม่เห็นด้วยอย่างยิ่ง   2 = ไม่เห็นด้วย   3 = ไม่แน่ใจ   4= เห็นด้วย   5= เห็นด้วยอย่างยิ่ง

ข้อคำถาม	1	2	3	4	5
3.1.1.1 บริษัทท่านมีการกำหนดระดับความเสี่ยงที่ยอมรับได้ (Risk Appetite)					
3.1.1.2 บริษัทท่านมีความพร้อมด้านนโยบายการบริหารความเสี่ยง					
3.1.2.1 บริษัทท่านมีคณะกรรมการบริหารความเสี่ยงเป็นหลักในกระบวนการตัดสินใจในประเด็นความเสี่ยงองค์กร					
3.1.2.2 คณะกรรมการบริหารความเสี่ยงมีความเป็นอิสระ (Autonomy) ในการตัดสินใจ					
3.2.1.1 บริษัทท่านมีการเชื่อมโยงการระบุความเสี่ยง (Risk Identification) กับ ยุทธศาสตร์องค์กร					
3.2.1.2 บริษัทท่านระบุปัจจัยเสี่ยงทั้งจากปัจจัยภายนอก (External Factors) และ ปัจจัยภายใน (Internal Factors)					
3.2.1.3 บริษัทท่านมีการสร้างเครื่องมือในการช่วยระบุความเสี่ยง เช่น การจัดทำ Catalog ประเภทความเสี่ยง					
3.2.2.1 บริษัทท่านประเมินความเสี่ยง (Risk Assessment) โดยพิจารณาจากความถี่และผลกระทบ					
3.2.2.2 บริษัทท่านประเมินความเสี่ยงด้วยวิธีการเชิงปริมาณ (Quantitative Method) และเชิงคุณภาพ (Qualitative Methods)					
3.2.2.3 บริษัทท่านมีการประเมินความเสี่ยงทั้งก่อนและภายหลังการจัดการความเสี่ยง					
3.2.3.1 บริษัทท่านเลือกใช้วิธีการจัดการความเสี่ยงที่หลากหลาย เช่น การลดความเสี่ยง การยอมรับความเสี่ยง การถ่ายโอนความเสี่ยง การยกเลิกความเสี่ยง					
3.2.3.2 บริษัทท่านมีแผนการจัดการความเสี่ยงที่สอดคล้องกับลักษณะของความเสี่ยงและยุทธศาสตร์ขององค์กร					
3.2.3.3 บริษัทท่านมีความพร้อมในแผนและนโยบายการจัดการความเสี่ยง (Risk Mitigation Plan)					
3.2.4.1 บริษัทท่านมีการติดตามความเสี่ยงหลัก (Key Risks Monitoring) อย่างใกล้ชิด					
3.2.4.2 บริษัทท่านมีกลยุทธ์ในการติดตามความเสี่ยงด้วยตัวชี้วัดความเสี่ยง (Key Risk Indicators)					
3.2.4.3 บริษัทท่านมีการติดตามความเสี่ยงตามรอบเวลาที่ชัดเจน					

ส่วนที่ 4 <u>ปัจจัยสู่ความสำเร็จในการบริหารความเสี่ยงองค์กร (Enterprise Risk Management Critical Success</u>

ประโยคต่อไปนี้ จะสัมพันธ์กับความรู้สึกและทัศนคติของท่าน โปรดทำเครื่องหมาย √ ในข้อที่ตรงกับความรู้สึกท่าน โดย

1= ไม่เห็นด้วยอย่างยิ่ง   2 = ไม่เห็นด้วย   3 = ไม่แน่ใจ   4= เห็นด้วย   5= เห็นด้วยอย่างยิ่ง

ข้อคำถาม	1	2	3	4	5
4.1.1.1 บริษัทท่านมีการกำหนด วิสัยทัศน์ พันธกิจ ยุทธศาสตร์ และวัตถุประสงค์องค์กรชัดเจน					
4.1.1.2 บริษัทท่านมีวัฒนธรรมที่ตระหนักในการบริหารความเสี่ยง					
4.1.2.1 บริษัทท่านได้รับการสนับสนุนจากผู้นำหรือผู้บริหารระดับสูงในกระบวนการบริหารความเสี่ยง					
4.1.2.2 บริษัทท่านมีการสื่อสาร และการมีส่วนร่วมจากผู้นำหรือผู้บริหารระดับสูงในกระบวนการบริหารความเสี่ยง					
4.1.3.1 บริษัทท่านมีการสนับสนุนทรัพยากรด้านความเสี่ยง เช่นการตั้งฝ่ายบริหารความเสี่ยง เงินลงทุนด้านการบริหารความเสี่ยง การจัดอบรมถ่ายทอดความรู้ด้านการบริหารความเสี่ยง เป็นต้น					
4.1.3.2 บริษัทท่านมีการจ้างที่ปรึกษาภายนอกด้านการบริหารความเสี่ยง					
4.1.3.3 บริษัทท่านเชื่อว่าความสำเร็จของกระบวนการบริหารความเสี่ยง มีปัจจัยมาจากการเลือกมาตรฐานสากลด้านความเสี่ยง เช่น COSO, ISO เป็นต้น					
4.2.1.1 บริษัทท่านมีสภาพแวดล้อมการแข่งขันที่สูง (Competitive Arena)					
4.2.1.2 บริษัทท่านง่ายต่อการเผชิญกับสถานการณ์คู่แข่งรายใหม่ (New Entering)					
4.2.2.1 บริษัทท่านมีความอ่อนไหว (Sensitivity) ต่อสถานการณ์โลก (Global Level)					
4.2.2.2 บริษัทท่านมีความอ่อนไหว (Sensitivity) ต่อสถานการณ์ภายในประเทศ (Local Level)					
4.2.2.3 บริษัทท่านมักเผชิญกับสถานการณ์ความไม่แน่นอน (Uncertainty Events)					
4.2.3.1 บริษัทท่านมีกฎหมาย กฎระเบียบ ข้อบังคับ ที่ต้องดำเนินการตามเป็นจำนวนมาก					
4.2.3.2 บริษัทท่านมักมีการเลียนแบบพฤติกรรมจากองค์กรอื่นๆ					

ส่วนที่ 5 <u>ความคิดเพิ่มเติมเกี่ยวกับระบบบริหารความเสี่ยงองค์กร</u>

APPENDIX C

INTERVIEWEE INFORMATION

Number	Sector	Companies	Interviewee' Name	Current Position	Department	Interview Time
1	Agro & Food Industry	Surapon Foods PCL.	Ms. Ajaree Phaireepairit	Corporate Risk Management & Quality Management Representative	Enterprise Risk Management	45 Minutes
2	Consumer Product	Techno Medical PLC.	Mr. Preecha Bhandtivej	Company Director & Chief Operating Officer (COO.)	Board of Directors (BOD.)	47 Minutes
3	Finance	Krungthai Bank PCL.	Mr. Rachatapong Suksanguan	Senior Vice President and Manager	Business Risk Research Department	90 Minutes
4	Finance	Kasikorn Bank PCL.	Ms. Duangporn Kit-o-pas	First Vice President (FVP)	Integrated Risk Management and Analytics Department	40 Minutes
5	Industrial	PTT Global Chemical PCL.	Not Indicated	Vice President (VP)	Enterprise Risk Management	30 Minutes
6	Property and Construction	CH. Karnchang PCL.	DR. Supamas Trivisvavet (Ph.D.)	President	Board of Directors (BOD.)	80 Minutes
7	Resouces	IRPC PCL.	Mr. Chanyut Phulumlerd	Head of Department	Corporate Risk Management Division	30 Minutes
8	Service	Airport of Thailand PCL.	Ms. Apiradee Khamkomkul	First Vice President (FVP)	Enterprise Risk Management	70 Minutes
9	Technology	Total Access Communication PCL.	Mr. Suthut	Senior Vice President (SVP)	Business Assurance and Risk Management	40 Minutes

BIOGRAPHY

NAME	PATIPAN SAE-LIM
ACADEMIC BACKGROUND	Master of Science in Applied Statistics and Information Technology:

School of Applied Statistics
National Institute of Development Administration (NIDA), Bangkok Thailand
Degree: M.S.(Hons., Applied Statistics and Information Technology) 2014
Major: Decision Technology Management   GPA: 3.96/4
Thesis: Airline Overbooking Models with Misspecification (Presented at The Chinese University of Hongkong) (Impact Factor 2008: 0.773)

Bachelor of Science in Statistics, 2 ND Class Hons. 2010
Faculty of Science and Technology
Thammasat University Bangkok Thailand
Degree: Bachelor of Science, 2 ND Class Hons.
Major: Statistics   Minor: Management Information Systems GPA: 3.27/4

EXPERIENCES   Area of Expertise
1. Enterprise Risk Management (ERM)
2. Crisis Management
3. Business Continuity Management (BCM)
4. Statistical Data Analysis
5. Operation Management
6. Model Builder (Decision Model, Queuing Model etc,..)
7. Mathematics and Statistics Theory
8. Banking and Telecommunication Policies and Standard Guideline
9. Airline Booking & Airline Overbooking Model &Logistics Management

Working Experience
1. Head of risk management unit
Faculty of Medicine Ramathibodi Hospital, Mahidol University
2. Corporate risk management supervisor
Total access communication Public Company Limited. (dtac)
3. Business Continuity Management Project Manager
Kiatnakin Bank Public Company Limited
4. Senior IT Risk Quality Assurance Specialist
Kasikorn Bank Public Company Limited
5. Research Risk Officer
Research Risk Officer