RISK MANAGEMENT AND PERFORMANCE OF STATE ENTERPRISES IN THAILAND

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ABSTRACT

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The objectives of this study were to investigate the elements having impacts on the quality of risk management practiced by state enterprises in Thailand, and to examine the connection between quality of risk management and the performance of state enterprises. The research employed the quantitative method using a survey response from 36 state enterprises, as well as secondary data collected from the database of the State Enterprise Policy Office, and the qualitative method conducted by means of in-depth interviews with 3 state enterprises applying best practice in their risk management.

The results from both methods indicated that among six critical success factors of risk management-size of the entity, investment in risk management information technology, investment in the development of human resources associated with risk management, risk management competency, risk management organizational structure, and risk culture-all had positive impacts on the quality of risk management. Risk culture distinctively yielded positive results in every statistical analysis, whereas other elements revealed a connection in certain statistical methods only.

Concurrently, both the quantitative and qualitative research results confirmed a connection between the quality of risk management and the effective performance of state enterprises. Thus, the government should meliorate the quality of risk management implemented by state enterprises, particularly by fostering risk management culture to achieve better performance. This improvement will create competitive advantage, empowering state enterprises as a mechanism for the sustainable development of Thailand.

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The value and contributions of this dissertation, if any, are dedicated as an homage to my parents and educators, and to every person that supported me during my research.

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CHAPTER 1

INTRODUCTION

This chapter deals with significance of the study, the objectives of the study, and the expected contributions and scope of the study.

1.1 Significance of the Study

State-owned enterprises play a significant role on the economy of Thailand. In 2013, the total asset value of the entire state enterprise sector amounted to 12 trillion baht, generating a total income of five trillion baht, equaling 40 percent of the gross domestic product (GDP), gaining approximately 300 billion baht in profits. The total stock value of state enterprises listed on the Stock Exchange of Thailand amounted to 17 percent of the total market value.

Since state enterprises have been a driver of the development of the country as well as an instrument serving public policies from the past until the present, the government has given priority to the management of state enterprises as efficient management is beneficial to the country, whereas poor management may cause severe damage.

The government's commitment to improving the efficiency of state enterprises became apparent when the cabinet approved the implementation of a state enterprise evaluation system on June 20, 1995. The cabinet resolution marked the transition in the state enterprise monitoring system from a process-based to a result-based approach. The new approach was introduced in 1996 to 11 state enterprises. Since its introduction, more state enterprises have gradually undertaken the new evaluation system until it has been adopted by 55 entities at present.

The state enterprise evaluation system has been continuously refined to enhance the competitiveness of state enterprises so that they can become a sustainable tool for the development of the country with the flexibility to effectively and

efficiently respond to contextual changes, such as globalization and technology. In 2004, evaluation criteria for organizational management were developed and incorporated into the state enterprise performance appraisal criteria. The purpose of this effort was to encourage state enterprises to establish their own organizational management system and move toward international standards so that they can achieve target outcomes while increasing their competency as a foundation for sustainable growth. The organizational management evaluation criteria consist of six main processes considered significant and fundamental to organizational management, i.e. 1) the roles and responsibilities of the State Enterprise Committee; 2) risk management; 3) internal control; 4) internal auditing; 5) information technology management; and 6) human resources management.

Among the aforementioned five main processes, the State Enterprise Policy Office (SEPO), under the Ministry of Finance, gives priority to risk management, considering that the weighted score of this process is higher than other scores. The weighted score for risk management is 7 percent out of 35 percent of the total weighted score for organizational management, as shown in Table 1.1. It is expected that the tool will help enterprises achieve their objectives within a risk appetite. Further, embracing good cooperate governance assures stockholders of the organization's operation.

Table 1.1 Weighted Average Score of Criteria for State Enterprise Performance Evaluation

Criteria	Weight (%)
1. Performance	**65%**
2. Organizational management	**35%**
2.1 Roles and responsibilities of the State Enterprise Committee	6 %
2.2 Risk management	7 %
2.3 Internal control	4 %
2.4 Internal auditing	6 %
2.5 Information technology management	6 %
2.6 Human resource management	6 %
Total	**100%**

Risk management is the act of managing activities and work procedures to mitigate the possibility that the organization may be affected and the magnitude of damage is within a level that is acceptable, assessable, and verifiable by the organization (Metha Suwannasarn, 2001). Nevertheless, not only should the negative possibility be considered, but both the positive and negative perspectives should be addressed (Shrives and Linsley, 2003). Holmes (2002) described risk management as a process of cautiously operate activities to explore the possibility of gaining benefits for an organization by increasing the possibility of generating positive outcomes and mitigating negative outcomes.

During the last decade, enterprise risk management was a management technic that garnered much attention from the public and private sectors, possibly because many organizations had learnt from their loss after the 1997 economic crisis that poor enterprise risk management was a part of the failure. After the crisis, many organizations required loans and investments from foreign institutions to survive; therefore, they had to restructure in order to comply with international standards. Risk management became an essential tool for those organizations (Narumon Saardchom, 2007).

Risk management is the new management approach that has gained broad acceptance and adoption in the business sector, especially after the major economic crisis in Thailand in 1997 and the 2002 Enron and WorldCom incidents. Since then, public and private organizations have practiced the good governance concept, including risk management.

Strong recognition of the importance of risk management in Thailand can be observed when The Stock Exchange of Thailand (SET) collaborated with PricewaterhouseCoopers to launch a risk management guideline for enterprises, including listed companies (PricewaterhouseCoopers, 2003). The international acceptance of enterprise risk management was noticeable in 2004 through the collaboration between PricewaterhouseCoopers (PwC) and the Committee of Sponsoring Organizations of the Treadway Commission, which is a joint initiative of five private sector organizations, including the American Institute of CPAs (AICPA), the American Accounting Association (AAA), the Financial Executives Institute (FEI), The Institute of Internal Auditors (IIA), and The Institute of Management Accountant (IMA) to issue the Enterprise Risk Management-Integrated Framework.

In the framework, COSO (2004) defined enterprise risk management (ERM) as follows: "…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 risks to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives."

The state enterprises in Thailand operate under uncertainties that may affect their business, such as competition under rapid and strong economic changes, the advancement of information technology and its application in business, pressure on social and environment accountabilities, and the expectation of stakeholders regarding good governance. These factors have driven state enterprises to consider establishing management and operation strategies that support the goals and objectives of their organizations. Thus, it is crucial for Thai state enterprises to manage risks efficiently.

Various international studies have supported the positive impact of risk management on the performance of the organization. Besides being value-added to the enterprise, risk management creates a positive impact on other perspectives. PricewaterhouseCoopers (2004) emphasized that the effectiveness of risk management results in positive impacts; it allows the organization to consider the level of risk that it can accept or be willing to accept in order to create value-added for the stockholders. Risk management sets an operational framework for the organization to efficiently manage uncertainties, risks, and opportunities. This remark agrees with results of a research conducted by the Economist Intelligence Unit (EIU) in 2007, where 218 executives around the world were surveyed concerning their approaches to risk management. The research found that the objectives of risk management were not only to avoid losses, but also to improve the reputation and enhance the competitive advantage of the organization. Likewise, Accenture (2011) stated that risk management is a source of competitive advantage, creating long-term profitable growth and sustained future profitability, and Pagach and Warr (2008) suggested that risk management can reduce the fluctuation of stock prices.

Despite a number of studies on the impact of risk management on the performance of the enterprise as well as the frameworks supporting the findings, most of them are foreign case studies. Research on the impact of risk management on

corporate performance conducted in Thailand is limited, particularly in the non-financial dimension.

Although several parties trust the effectiveness of risk management in adding value and improving the performance of state enterprises, in particular by the agency responsible for overseeing state enterprises, such as the State Enterprise Policy Office, it has been 10 years since the introduction of state enterprise risk management evaluation in 2004. Additionally, the results of the risk management evaluation in 2013 revealed that the average score for the entire state enterprise sector was 2.6578, lower than the norm which was set at 3 and lower than other managerial criteria. This score reflects the necessity for the government to continuously promote and give priority to effective risk management on the part of state enterprises. The efficient drivers for risk management effectiveness that have a positive impact on performance should be identified in order to enhance the competitive advantage of state enterprises, enabling them to accommodate possible rapid and intense upcoming changes while being a tool for the sustainable development of the country.

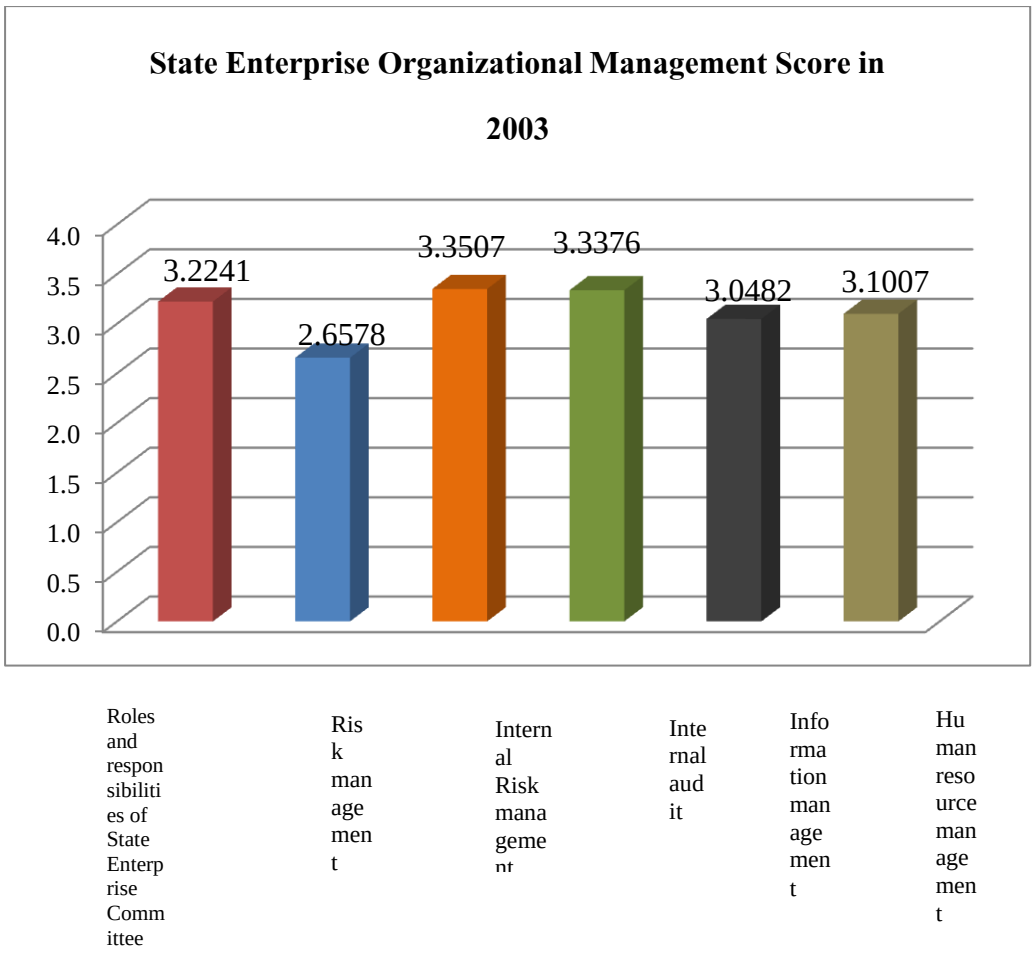

Figure 1.1 Average Scores of 6 Management Evaluation Criteria

The aforementioned reasons inspired the author to study the evolution of the evaluation system for the risk management of the state enterprises in Thailand, the risk management process, and evaluation criteria. This research will try to prove if the effectiveness of risk management affects performance of state enterprises, and what factors influence the effectiveness of the risk management of state enterprises in Thailand.

The findings will be beneficial to stakeholders. The state enterprises will have a guideline to develop their policies, operation plans, budgets, and strategies more efficiently and more effectively. Meanwhile, the agencies responsible for monitoring the performance of state enterprises will have the information needed to establish an

evaluation framework and risk management assessment criteria. The findings should facilitate appropriate budget allocation, so state enterprises, which are an important mechanism in the development of the country, can operate effectively, improving their competitive advantage and enabling sustainable growth.

1.2 Objectives of the Study

This research has three objectives as follows:

1) To study the factors affecting the effectiveness of the risk management of state enterprises in Thailand, which are the size of the organization, investment in risk management support information technology (IT), investment in human resources associated with risk management, the risk management competency of the people in the organization, the risk management-related organizational structure, and risk culture

2) To examine the relation between the effectiveness of risk management and the performance of state enterprises in Thailand

3) To study best practice in risk management of three state enterprises that have undertaken the State Enterprise Performance Appraisal (SEPA) system. The sample includes the enterprises in Group A whose evaluation score for risk management was ≥ 4.5 and scoring ≥ 4 in every category. The selected enterprises represent 3 sectors of business; namely:

(1) PTT Public Company Limited (PTT) from the energy sector

(2) Aeronautical Radio of Thailand Ltd. (AEROTHAI) from the transport sector, and

(3) Bank for Agriculture and Agricultural Cooperatives (BAAC) from the financial institution sector

1.3 Contributions of the Study

The contributions of the study are as follows:

1) Knowledge of the relation between the effectiveness of the risk management of the state enterprises in Thailand and size of assets, investment in risk

management IT, investment in the human resources associated with risk management, risk management competency, and organizational structure and risk culture

2) Knowledge of the factors that have impacts on the effectiveness of the risk management of state enterprises in Thailand

3) Understanding of the relation between the risk management effectiveness and performance of the state enterprises

4) Recommendations that are beneficial to state enterprises and monitoring agencies, and the country as follows:

(1) Benefits for state enterprises: knowledge of the impact of risk management on the performance of the organization allows state enterprises to efficiently allocate their resources to support risk management in order to achieve their targets. The information will enable state enterprises to appropriately and efficiently develop their plans and budget related to and/or having an impact on risk management.

(2) Benefits for monitoring agency: the State Enterprise Policy Office (SEPO) can apply the information to improve their evaluation system and risk management assessment criteria. The findings can be used for budget allocation in order to achieve effectiveness in steering state enterprises to attain their objectives.

(3) Benefits for the country: state enterprises have an important role in the development of the country. The findings of the study should help increase the competitive advantage of the state enterprises. When investors have confidence in the performance of state enterprises, the economy of Thailand can flourish.

1.4 Scope of the Study

The study concerns the state enterprises that have undertaken the evaluation system established by the Ministry of Finance as identified in the SEPO database, consisting of nine sectors: energy, transport, communication, agriculture and natural resources, infrastructure, social and technology, trade and services, industry and financial institutions.

CHAPTER 2

STATE ENTERPRISE PERFORMANCE EVALUATION SYSTEM

This chapter comprises three sections. The first section involves the rationale and structure of the state enterprise performance evaluation system; the second section describes the performance evaluation criteria for risk management under the organizational management category; and the last section illustrates the performance evaluation score.

2.1 Rationale and Structure of State Enterprise Performance Evaluation System

The commitment of the government to improving the performance efficiency of state enterprises, an important mechanism for economic and social development, can be observed through the cabinet resolution reached on June 20, 1995, approving the implementation of the state enterprise performance evaluation system as a tool for monitoring the efficiency of state enterprises. The evaluation system was linked to the State Enterprise Committee and the employees' incentive program. The resolution marked the transformation of the state enterprise monitoring concept from a process-based approach to a result-based approach. The new approach was introduced to 11 state enterprises in 1996. Since the introduction, more state enterprises have gradually undertaken the scheme until it is implemented in 57 enterprises at present.

The Ministry of Finance has established the State Enterprise Performance Evaluation Committee, and appointed the State Enterprise Policy Office (SEPO, 2013) as the secretary to the Committee. The state enterprise evaluation system has been continuously refined to enhance the competitiveness of state enterprises so they become a sustainable tool for the development of the country, with the flexibility to respond effectively and efficiently to contextual changes such as globalization and new technology.

In 2004, the State Enterprise Performance Evaluation Committee determined the criteria for organizational management evaluation and integrated them into a set of criteria for state enterprise performance evaluation. The purpose of this approach was to encourage state enterprises to improve their organizational management to international standards, and to be a platform for sustainable growth. The organizational management evaluation criteria comprise six main processes considered significant and essential to organizational management: 1) roles and responsibilities of the State Enterprise Committee; 2) risk management; 3) internal control; 4) internal auditing; 5) information technology management; and 6) human resource management.

The State Enterprise Performance Evaluation Committee agreed upon amending the evaluation system in 2007 in order to empower the system as a tool for state enterprises to improve their operations to international standards, leading to the competitive advantage of the country. The Committee approved the adaptation and incorporation of the self-assessment approach and Thailand Quality Award (TQA) into the system implemented at that time. The new system was called State Enterprise Performance Appraisal (SEPA). SEPA evaluated performance in seven categories, and six criteria for organizational management evaluation were integrated across the seven categories. In 2011, seven state enterprises, identified as Group A, completely undertook SEPA; namely, PTT Public Company Limited, the Metropolitan Electricity Authority, the Electricity Generating Authority of Thailand, the Bank for Agriculture and Agricultural Cooperatives, the Government Housing Bank, Aeronautical Radio of Thailand Ltd., and Thai Airways International Public Company Limited. By 2013, the number of state enterprises evaluated under the SEPA system increased to 19.

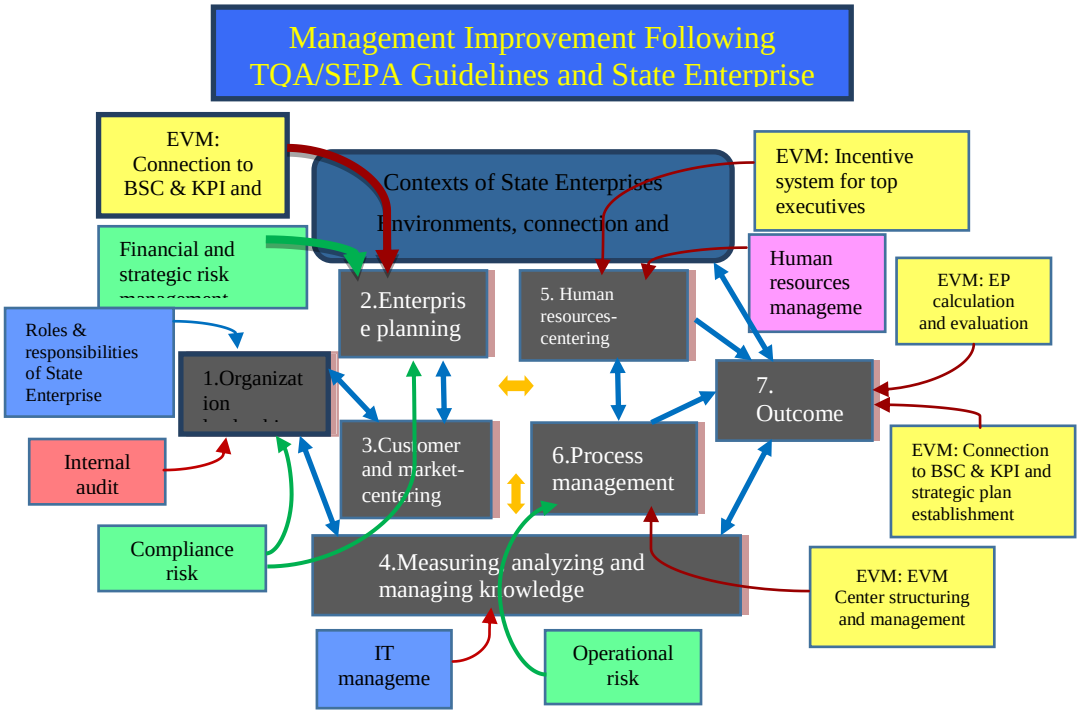

Figure 2.1 SEPA Concept

Source: State Enterprise Policy Office (SEPO), 2013.

The concept of the SEPA system is as follows:

1) Applying government policy as a mechanism to drive state enterprises for improvement of their performance in order to fulfill national strategies

2) Enabling state enterprises to realize their competitive advantage by benchmarking with competitors

3) Centering on improving the performance efficiency of state enterprises by designating the State Enterprise Committee as a responsible agent

4) Focusing on monitoring and appraising the performance of the enterprises' management

5) Adopting business plans/strategic plans/enterprise plans in devising goals, evaluating performance, and monitoring operations

6) Determining key performance indicators instead of minor details

7) Establishing target indicators to facilitate efficient organizational changes of state enterprises by benchmarking their performance against international standards or industry norms

8) Promoting close coordination between state enterprises and their supervising ministries through the Working Group on Improving Efficiency of State Enterprises and the Ministry of Finance

SEPA consists of three main components:

First Component: Performance Agreement

The Performance Agreement is an agreement made between the government and state enterprises, determining annual performance indicators and objectives. It clearly defines the roles and responsibilities of both parties. The process of negotiation to reach the agreement is conducted in a free and fair manner. The Performance Agreement measures the processes managed within the authority of the state enterprise executives only.

In order to establish a standard performance evaluation and to allow for the benchmarking of enterprises in similar businesses, state enterprises are clustered into nine sectors: energy, transport, communication, agriculture and natural resources, public utility, social and technology, trade and service, industry, and financial institution. Each sector is supervised by a responsible subcommittee on performance agreement preparation and state enterprise evaluation appointed by the State Enterprise Performance Evaluation Committee.

The process of preparing the Performance Agreement comprises three main steps:

Step 1: Defining Performance Criteria

SEPA measures performance of state enterprises in 3 areas:

1) Policy observance
2) Performance of the organization
    (1) Financial performance
    (2) Non-financial performance
3) Organizational management-This area was introduced in 2003 in an attempt to stimulate state enterprises to improve their management to meet international standards. Organizational management consists of six processes that are crucial and fundamental to organizational management as follows:
    (1) Roles and responsibilities of the Board of Directors
    (2) Risk management

(3) Internal control

(4) Internal auditing

(5) Information technology management

(6) Human resource management

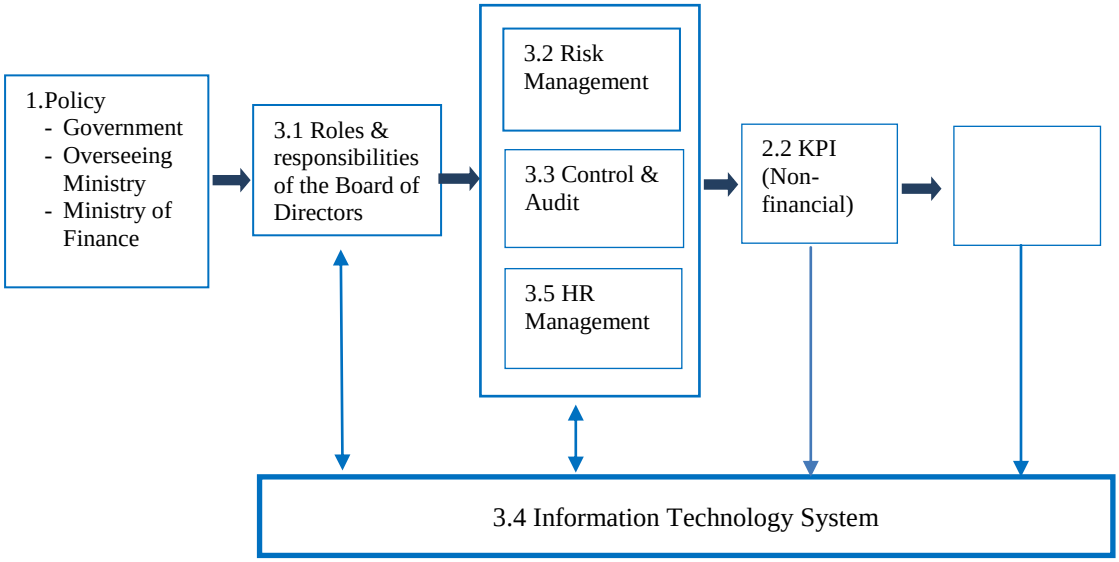

Figure 2.2 Diagram of the SEPA System

Source: State Enterprise Policy Office, 2013.

Some state enterprises are listed on The Stock Exchange of Thailand, where they are regulated under strict rules and protocols. Therefore, the requirements for the Performance Agreement between the listed and non-listed enterprises are different.

Listed state enterprises (listed SOEs)

The Ministry of Finance evaluates the performance of listed SOEs by determining indicators and objectives restrictedly for performance. The defined indicators are financial and non-financial ones, focusing on indicators that are standard to the industry. The corporate governance rating of the enterprise is also assessed.

1) Non-listed state enterprises (non-listed SOEs)

The Ministry of Finance evaluates the performance of non-listed SOEs by measuring three areas of performance as mentioned earlier.

Step 2: Determining Criterion Weight

The defined criteria, which are fewer than 10, vary in the levels of the importance of performance; therefore, each must be assigned a distinct criterion weight. More important criteria hold a higher criterion weight.

By learning the weight or importance of criteria, management can operate the enterprise in an appropriate direction. The commercial state enterprises emphasize profits, whereas the enterprises in the infrastructure and public utility service sector must attend to non-financial performance, particularly the quality of service. The criterion weight is allocated as follows:

1) Policy observance: 20-30%
2) Performance of the organization: 40-50%
3) Organizational management: 30%

Sector/type of enterprise	Criteria and criterion weight
1. Listed SOEs	• Performance: 70% • Organizational management: 30%
2. Non-listed SOEs	• Policy observance: 20% (+/- 10) • Performance: 50% (+/- 10) • Organizational management: 30%

Step 3: Determining Criterion Value

Each criterion holds performance targets at 5 levels, level 1 to level 5. The target at level 5 is more ambitious than defined in the annual enterprise plan. Only state enterprises expressing good management can achieve a level 5 target. The level 3 target is what is identified in the annual enterprise plan, while the target at level 1 is far more humble than declared in the plan.

During the process of determining annual targets, the government's representatives consider the past performance of state enterprises as a baseline for benchmarking against the performance of the private sector and international standards in an effort to encourage the state enterprises to improve their performance to be on par with the private sector. Though improvement cannot be achieved within a year, raising targets every year stimulates the state enterprises to increase their effort.

Second component: Incentive System

For the evaluation system to be an instrument for accelerating the performance of the state enterprises, the best performance indicator is neither the Board of Directors, executives, employees, nor the net profits. The best indicator is the overall performance of the state enterprises. Thus, incentives should be linked to actual evaluated performance as agreed upon in the Performance Agreement. So that the evaluation system is willingly embraced by every party, having the least impact on the existing incentive system and promoting the morale of the Boards and employees of the enterprises that achieve outstanding results or that perform excellently but record a loss, the SEPO agrees to offer both monetary and non-monetary incentives in relation to the levels of performance as follows:

1) The monetary incentive is a bonus for employees and the State Enterprise Committee

2) Non-monetary incentive

(1) Announcement of the actual annual state enterprise performance ranking as evaluated using SEPA

(2) Management freedom, meaning relaxation of compliance to the rules, regulations or cabinet resolutions as generally allowed or as contingent upon actual results

Third Component: Methodology and Procedures for Implementation

Stage 1: The state enterprises submit their business plan/strategic plan/enterprise plan to the SEPO after receiving approval from the State Enterprise Committee and the supervising ministries.

Stage 2: The Committee for Performance Agreement Preparation and Evaluation for each sector together with the SEPO (acting on behalf of the Ministry of Finance), the State Enterprise Efficiency Improvement Committee, and related agencies consider the business plans/strategic plans/enterprise plans to determine indicators, criterion weight, and targets.

Stage 3: The SEPO notifies the state enterprises about the indicators, criterion weight, and targets to issue a Performance Agreement.

Stage 4: The state enterprises report the quarter and annual performance to the Ministry of Finance through SEPO and the State Enterprise Efficiency Improvement Committee.

Stage 5: The Performance Evaluation Committee acknowledges the performance of state enterprises at half-year and end-of-fiscal-year milestones.

Stage **6:** The SEPO reports the annual performance of the state enterprises to the cabinet.

2.2 Evaluation Criteria for Organizational Management Category-Risk Management Area

The following principles are applied to evaluating six areas under the organizational management category, including risk management:

1) Each process that is roles and responsibilities of the State Enterprise Committee, risk management, internal control, internal audit, information technology management, and human resource management is evaluated according to 3 aspects:

(1) Existing systems or processes

(2) Actual performance

(3) Outcomes

2) Benchmarking against other state enterprises adopting SEPA and best practice, if any, may be applied to certain areas.

3) Some areas are not benchmarked against other state enterprises. However, the factors specific to each entity, for instance, the necessity of the organization, the nature of the business, and policy compliance, may be considered.

The evaluation scoring for risk management comprises two parts; the first part follows the COSO ERM framework and the second part is designed to encourage more efficient risk management.

Scoring in the first part is rated at three levels:

Level 1: Minimal risk management: Applied to state enterprises exercising risk management at a basic level or in a defensive manner without systemized risk management, an integrated working group handling risk management, nor risk management guideline for the entity.

Level 2: Basic systematic risk management: Applied to state enterprises adopting risk management as a short-term strategy, appointing a working group/section/division/department to integrate risk management, practicing every

element of good risk management, including clear and systematic impact analysis and having a guideline for risk management according to evaluation criteria published and distributed to employees at every level.

Level 3: Integrated risk management: Applied to state enterprises performing every aspect of risk management as addressed in Level 2 and specifying risk management as a strategy or continuous operation, appointing a working group/section/division/department to handle risk management, devising a tangible operation plan, being able to achieve the targets defined in the plan, determining criteria for the level of impact identified by each factor, determining the expected impact of the target, being able to report the level of impact of each risk factor quarterly, defining the risk appetite and risk tolerance for every risk factor, and performing integrated risk management

Scoring in the second part is determined by the weighted criteria for the following aspects:

1) Applying good IT management
2) Linkage between risk management strategies and policy/ strategies/planning/enterprise investment
3) Constant review of risk management with adjustment when necessary
4) An environment and culture that facilitate risk management
5) Determining risk management as a routine of every unit and linking to incentives
6) Managing risk and value enhancement
7) Using risk management to create value for the organization
8) Actual outcomes of risk management
9) Having a portfolio view of risk
10) Integrating governance, risk, and compliance

It is compulsive for every state enterprise to be evaluated on risk management operations under similar criteria by the TRIS Corporation, a consultant appointed by the Ministry of Finance. The criteria measure performance according to levels (Level 1-3), unlike evaluation of other areas of management, i.e., roles and responsibilities of the State Enterprise Committee, internal control, internal audit, IT management, and human resource management. Furthermore, the criteria tend to be more challenging.

2.3 State Enterprise Performance Evaluation Scores

State enterprise performance evaluation scores are divided into five levels, totaling 5 scores, where level 5 means that the performance is strongly improved, level 4 means that the performance is improved, level 3 means that the performance is average, level 2 means that the performance is below average, and level 1 means that the performance is strongly below average.

The performance evaluation scores are published on SEPO's website at www.sepo.goth. Table 2.1 reveals that in the year 2010, when most state enterprises were evaluated under the former system where risk management was a criterion for organizational management appraisal before more enterprises gradually undertook the SEPA that originated in 2008, PTT Public Company Limited achieved the highest overall evaluation score at 4.8718. The Government Savings Bank and Metropolitan Electricity Authority received the scores of 4.8101 and 4.7655 respectively, whereas the Marketing Organization for Farmers was at the lowest rank, scoring 1.7613.

Looking into the results of risk management appraisal for the year 2011, PTT Public Company Limited achieved the highest score at 4.6820. The enterprises achieving the second and third highest score were the Metropolitan Electricity Authority and Metropolitan Waterworks Authority, scoring 4.6220 and 4.5950 respectively. Four state enterprises received the lowest score at 1.0000; namely, the Civil Aviation Training Center, the Dairy Farming Promotion Organization of Thailand, the Rubber Authority of Thailand, and The Market Organization.

By sector, the three highest ranks in both overall performance and risk management were the state enterprises in the energy, public utility, and financial institution sectors respectively, having overall scores at 4.6978, 4.4137 and 4.2845, while the average score of each sector for risk management was 4.3766, 3.8900 and 3.5244 respectively. The sector performing the worst in both overall and risk management evaluations was agriculture and natural resources, scoring 2.9574 and 1.7000 respectively.

Table 2.1 List of 55 State Enterprises and Performance Evaluation Scores for 2010

State Enterprise	2010 Evaluation Scores				
	Overall	**Category 1**	**Category 2**	**Category 3**	**Risk**
1. Energy Sector					
1. PTT Public Company Limited	4.8718	-	4.9773	4.6758	4.6820
2. Electricity Generating Authority of Thailand	4.6203	4.9561	4.5283	4.4448	4.5580
3. Provincial Electricity Authority	4.7337	5.0000	5.0000	4.2391	4.3600
4. Metropolitan Electricity Authority	4.7655	5.0000	4.7518	4.5926	4.6220
5. Bangchak Petroleum Public Company Limited	4.4978	-	4.6615	4.1938	3.6610
Average	**4.6978**	**4.9854**	**4.7838**	**4.4292**	**4.3766**
2. Transport Sector					
2.1 Aerial Transport					
1. Thai Airways International Public Company Limited	4.4786	-	4.8302	3.8255	3.7100
2. Airports of Thailand Public Company Limited	3.6977	-	3.9345	3.2580	2.8500
3. Aeronautical Radio of Thailand Ltd.	3.9083	3.4283	3.982	4.1353	3.7170
4. Civil Aviation Training Center	2.6037	1.8464	3.1559	2.5134	1.0000
2.2 Land Transport					
1. Expressway Authority of Thailand	4.1198	4.5514	3.8264	4.1469	4.3330

Table 2.1 (Continued)

State Enterprise	2010 Evaluation Scores				
	Overall	**Category 1**	**Category 2**	**Category 3**	**Risk**
2. State Railway of Thailand	2.4278	1.9032	2.4341	2.7963	2.2500
3. Mass Rapid Transit Authority of Thailand	3.8366	3.4764	4.4933	3.6134	3.7160
4. Bangkok Mass Transit Authority	3.5925	4.1500	3.5016	3.2055	2.8500
5. The Transport Co., Ltd.	4.3198	4.9356	4.5581	3.6076	2.9000
2.3 Water Transport					
1. Port Authority of Thailand	3.2655	2.5573	3.7212	3.4502	2.6500
2. The Bangkok Dock Co., Ltd.	2.7579	1.9063	3.9143	2.3313	1.9000
Average	**3.5462**	**3.1950**	**3.8501**	**3.3530**	**2.8978**
3. Communication Sector					
1. TOT Public Company Limited	3.8487	5.0000	3.2706	4.2306	3.8200
2. CAT Telecom Public Company Limited	3.3216	4.4892	2.6908	3.8045	2.8500
3. Thailand Post Co., Ltd.	3.3923	5.0000	2.8411	3.7991	2.8500
4. MCOT Public Company Limited	3.8806	-	4.0246	3.6132	3.6690
Average	**3.6108**	**4.8297**	**3.2068**	**3.8619**	**3.2973**
4. Agriculture and Natural Resource Sector					
1. Forest Industry Organization	3.4069	3.2203	4.0857	2.8880	2.5500

Table 2.1 (Continued)

State Enterprise	2010 Evaluation Scores				
	Overall	**Category 1**	**Category 2**	**Category 3**	**Risk**
2. The Botanical Garden Organization	3.5176	3.5455	4.4215	2.5187	2.4000
3. Marketing Organization for Farmers	1.7613	1.0000	1.5532	2.4325	1.6500
4. Fish Marketing Organization	3.0032	3.2825	3.3273	2.4396	1.9000
5. Dairy Farming Promotion Organization of Thailand	2.7985	2.6400	3.1678	2.4895	1.0000
6. Office of the Rubber Replanting Aid Fund	3.1169	5.0000	3.0162	2.4394	1.4000
7. Rubber Authority of Thailand	3.0974	4.4964	3.0531	2.1467	1.0000
Average	**2.9574**	**3.3121**	**3.2321**	**2.4792**	**1.7000**
5. Public Utility Sector					
1. Metropolitan Waterworks Authority	4.7529	4.9853	4.8563	4.4983	4.5950
2. Provincial Waterworks Authority	4.5363	4.1444	5.0000	4.0906	4.1750
3. National Housing Authority	3.9520	3.5218	4.7590	3.5137	2.9000
Average	**4.4137**	**4.2172**	**4.8718**	**4.0342**	**3.8900**
6. Social and Technology Sector					
1. Office of the Government Pawnshop	3.4856	3.7538	3.8338	2.8847	2.8000
2. Sports Authority of Thailand	3.4657	3.6683	3.7175	3.0403	2.1500

Table 2.1 (Continued)

State Enterprise	2010 Evaluation Scores				
	Overall	**Category 1**	**Category 2**	**Category 3**	**Risk**
3. The Zoological Park Organization under the Royal Patronage of His Majesty the King	3.5469	3.4333	4.3074	2.8839	2.6500
4. Thailand Institute of Scientific and Technological Research	3.9508	3.5000	4.2667	3.8023	3.5990
5. National Science Museum	3.8266	3.5604	4.6491	2.8901	1.8000
6. Government Pharmaceutical Organization	4.1497	3.5724	4.9404	3.8538	2.9500
Average	**3.7376**	**3.5814**	**4.2858**	**3.2259**	**2.6582**
7. Trade and Service Sector					
1. The Government Lottery Office	3.6432	2.8757	3.9687	3.3803	2.8500
2. Tourism Authority of Thailand	3.8660	3.9578	4.3668	3.2930	3.5040
3. The Market Organization	2.4908	1.6667	3.2936	1.6969	1.0000
4. Public Warehouse Organization	2.4219	1.7167	2.6307	2.8177	2.6000
5. Dhanarak Asset Development Co., Ltd.	2.8710	1.5642	3.2843	2.7914	2.3000
Average	**3.0586**	**2.3562**	**3.5088**	**2.7959**	**2.4508**
8. Industry Sector					
1. Thailand Tobacco Monopoly	3.5555	2.1804	4.2802	3.7093	2.9000

Table 2.1 (Continued)

State Enterprise	2010 Evaluation Scores				
	Overall	**Category 1**	**Category 2**	**Category 3**	**Risk**
2. Playingcard Factory	3.6496	4.7646	3.9041	2.7344	2.8000
3. Liquor Distillery Organization Excise Department	2.8855	3.5808	2.1491	3.0260	2.5000
4. Police Printing Bureau	3.3473	3.4094	3.7798	2.7346	2.1500
5. Industrial Estate Authority of Thailand	4.2437	3.2221	4.8561	4.2734	4.0980
Average	**3.5363**	**3.4315**	**3.7939**	**3.2955**	**2.8896**
9. Financial Institution Sector					
1. Krung Thai Bank Public Company Limited	4.0892	-	3.8951	4.4496	4.4350
2. Government Savings Bank	4.8101	5.0000	5.0000	4.4574	4.5280
3. Government Housing Bank	4.6680	5.0000	4.9412	4.1371	3.8490
4. Bank for Agriculture and Agricultural Cooperatives	4.6967	5.0000	4.9306	4.2048	3.6560
5. Export–Import Bank of Thailand	4.0660	4.0400	4.2861	3.8330	2.8500
6. Small and Medium Enterprise Development Bank of Thailand or SME Bank	4.2180	5.0000	4.2556	3.4037	2.7000
7. Secondary Mortgage Corporation	3.4239	2.3333	4.2871	3.3279	2.7500

Table 2.1 (Continued)

State Enterprise	2010 Evaluation Scores				
	Overall	**Category 1**	**Category 2**	**Category 3**	**Risk**
8. Thai Credit Guarantee Corporation	4.3575	4.5917	4.9959	3.5185	3.3580
9. Islamic Bank of Thailand	4.2308	4.3101	4.8493	3.3902	3.5940
Average	**4.2845**	**4.4094**	**4.6045**	**3.8580**	**3.5244**
Average of all the state enterprise sectors	**3.7244**	**3.6681**	**4.0001**	**3.4267**	**2.9980**

Source: SEPO, 2013.

CHAPTER 3

LITERATURE REVIEW

This chapter presents a discussion of the literature on risk management. The author addresses the definitions of risk, opportunity, and risk management as well as explores the frameworks and theories supporting the necessity for enterprise risk management. Research on the key success factors for risk management is discussed. Certain factors are applied as variables for this study, such as the size of the organization, and investment in the development of risk management and organizational management. This chapter reviews the studies and articles involving the "soft side" factors of risk management such as risk culture that have gained more attention recently. The results of the research on the impact of risk management on the performance of the organization are applied in the process of reviewing the variables regarding the effectiveness of the enterprise risk management and performance employed in this study.

3.1 Definitions of Risk, Opportunity, and Risk Management

The definition of "risk" is given differently in two international risk management frameworks that are widely adopted and referenced for organizational risk management: The Committee of Sponsoring Organizations of the Treadway Commission (2004) and AS/NZS 31000:2009 (2009)

The Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2004) defines risk as a probability that a potential event may have an impact on the organization's ability to achieve its objectives, whereas AS/NZS 31000:2009 (2009) defines risk as "the effect of uncertainty on objectives."

Both definitions mention the negative impacts on objectives; nevertheless, the term defined by AS/NZS 31000:2009 (2009) suggests the positive impacts and the probability of loss from uncertainty that may affect the objectives of an organization.

COSO (2004) appointed PricewaterhouseCoopers (PwC) to write the international version of the Enterprise Risk Management Framework. PwC (2004) defined risk as an uncertainty that has a negative impact on the ability to achieve objectives or goals of an organization, whereas opportunity means uncertainty that has a positive impact on an organization's objectives or goals.

COSO (2004) defined Enterprise Risk Management (ERM) as follows: 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 manager risks to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives."

The Stock Exchange of Thailand (2008) noted that COSO's definition of ERM is intentionally given in a broad context for many reasons. It incorporates fundamental concepts that organizations or business enterprises adopt to manage their risks, and it can be applied to every organization, industry, and sector. The definition of ERM given by COSO (2004) focuses on achieving objectives of an organization. Additionally, it provides a guideline to identify enterprise risk management effectiveness.

Gordon and Loeb (2006) defined ERM as a comprehensive management process of an organization regarding uncertainty, emphasizing identifying and managing events that hinder an organization from achieving its objectives. They referred to ERM as an organizational management approach that can be applied to and implemented by every level of an organization.

Ittner and Larcker (2001) offered the idea that from the managerial accounting perspective, ERM is within the value-based management concept. It provides an integrated framework for assessing and managing an enterprise with a clear objective to create long-term value for an organization.

Many Thai scholars have given a definition of risk management. Narumon Saardchom (2007) for example defined "comprehensive organization risk management" as a management approach to speculating and mitigating the loss from uncertainty that may affect an organization so that such an organization can achieve its objectives more efficiently.

Hataichanok Jarana (2007) defined "risk management" as the management of factors and control of processes and activities by mitigating an opportunity that an

organization may be damaged, so the level of risk and the extent of possible future damage are within the level that an organization can accept, assess, control, and examine systematically, while adhering to achieving its objectives or goals.

The definition of risk management given by Chaiyaset Promsri (2007) is the process of protecting the power and acquired assets of an enterprise by mitigating an opportunity of loss from uncontrollable events. In addition, risk management is a process that leads to good decision by providing a thorough understanding of risk and possible outcomes. The management of an enterprise in every industry needs to be alert to the risks to the enterprise and the impacts of risk that may affect its profit.

Metha Suwannasarn (2001) considered risk management as the management of activities and work procedures to mitigate the possibility of loss to be within the risk appetite and magnitude that an organization can accept, assess, and investigate. Holmes (2002) described risk management as the process of cautiously operating the activities of an organization to explore opportunities for benefit by increasing the opportunity for positive impact and mitigating the possibility of negative impacts. Likewise, Shrives and Linsley (2003) suggested that risk management involves considering the possibility of both an upside and a downside, instead of the downside only.

In conclusion, risk management is not only a process aimed to manage the risks that are thought to be negative impacts from uncertainty to be within an acceptable level, but positive impacts also need to be addressed in order to prevent business loss, and to be reasonably assured when operating to achieve the objectives of an organization.

3.2 Frameworks and Theories

PricewaterhouseCoopers (2004) explained some fundamental concepts of enterprise risk management, reflecting COSO's definition of ERM as follows:

1) It is a process-Enterprise risk management is a tool for reaching a goal, not the goal itself. It is not limited to any specific event, but a process capable of change at any time in compliance with the operations and resource utilization of an organization.

2) It is people driven Enterprise risk management is not just a policy, a survey or a paper. It is realized when employees throughout an organization implement it.

3) It is applied to strategy development- Management needs to consider the risks associated with the strategies of the organization.

4) It is adopted across an organization- Enterprise risk management should be implemented at every level and in every work unit, including reviewing the comprehensive risks of the organization.

5) It defines risk appetite- Risk management is designed to manage risks to be within the risk appetite of an organization to achieve its vision or mission.

6) It provides reasonable assurance- Risk management provides reasonable assurance to an organization's board of directors and executives; however, it does not guarantee that all risks are eliminated.

7) It enables objective achievement- Risk management is a tool for achieving objectives in different aspects, such as strategies, operations, and reporting and compliance.

One of the internationally-accepted risk management frameworks is the Enterprise Risk Management-Integrated Framework issued by The Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2004). It is a significant tool that provides a perspective on risks as well as a means to devising risk management methodology systematically.

COSO's (2004) risk management framework consists of 8 interrelated components:

1) Internal Environment

The management needs to establish a risk management philosophy and define risk appetite. The internal environment is a foundation of how the personnel in the organization view risk and control, as well as how to manage them. The core of every business is people, which include the characteristics, integrity, ethical values, and competence of each person and his or her work environment.

2) Objective Setting

The management determines objectives before identifying the potential events that may have an impact on achieving objectives. ERM ensures

that the management has a process for setting objectives and the chosen objectives support and align with the mission of an organization and are compatible with its risk appetite.

3) Event Identification

The management identifies the internal and external events that may affect and organization in achieving its objectives. Events must be identified as risks, opportunities or both. The management needs to bring opportunities back to the strategy or objective-setting process.

4) Risk Assessment

Risks are analyzed to set a basis for how they should be managed. Risks are associated with potentially-affected objectives; thus, the likelihood and impact of inherent risks and residual risk must be considered.

5) Risk Response

The people in an organization identify and assess possible responses to risks: avoid, reduce, share, and accept. The management decides on a set of actions to align risks with the entity's risk tolerance and risk appetite.

6) Control Activities

Policies and procedures are established and enforced to ensure that the selected risk responses are implemented effectively.

7) Information and Communication

Relevant information is identified, captured, and communicated in a format and time frame that enables people to carry out their responsibilities. Information is needed at all levels to identify, assess, and respond to risks. Effective communication occurs in a broader sense, flowing down, across, and up the organization.

8) Monitoring

The entirety of ERM is monitored and modified as necessary to enable the organization's ability to respond to all events and to adapt to changing situations. Monitoring is conducted through ongoing management activities or separate evaluations, or both.

Eight components of risk management align with objectives, as shown in Figure 3.1

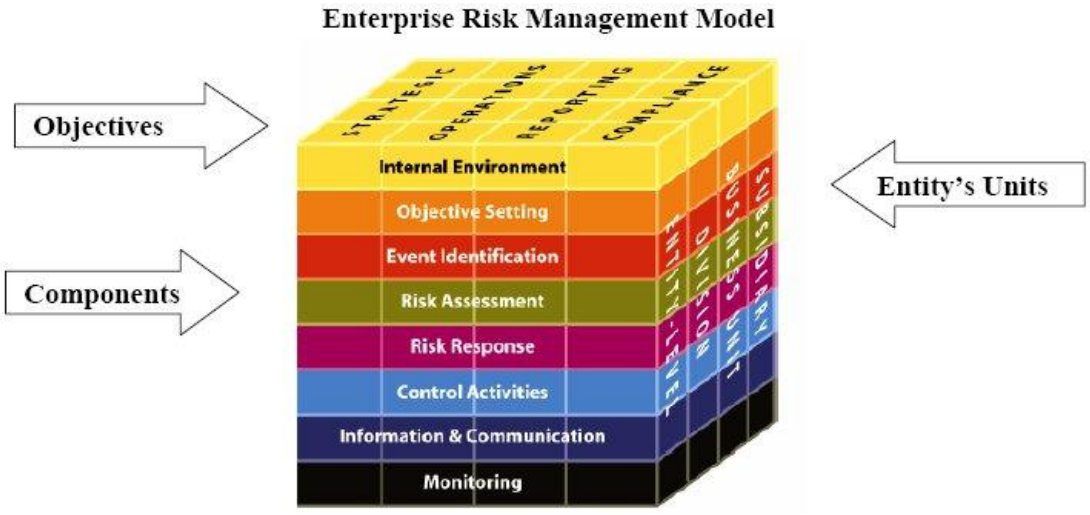

Figure 3.1 Alignment between the Objectives and Components of Risk Management
Source: COSO, 2004.

The top side of the cube in Figure 3.1 displays four objectives; strategic, operations, reporting, and compliance, while eight components are shown on the front and the entity's units are on the side.

Each component can serve all four objectives. Every component is important for an entity to achieve its objectives. Risk management may be the responsibility of an entire organization or of any unit in the entity. The existence of all eight components and how effectively the components function identify the effectiveness of an entity's risk management. The components of risk management are considered criteria for assessing the effectiveness of the entity's risk management.

Enterprise risk management according to COSO's (2004) framework, which is referenced as a best practice among state enterprises in Thailand and is a basic risk management guideline that SET suggests for listed enterprises to adapt to their contexts, consists of 6 procedures: 1) objective setting, 2) event identification, 3) risk assessment, 4) risk response, 5) control activities, and 6) monitoring.

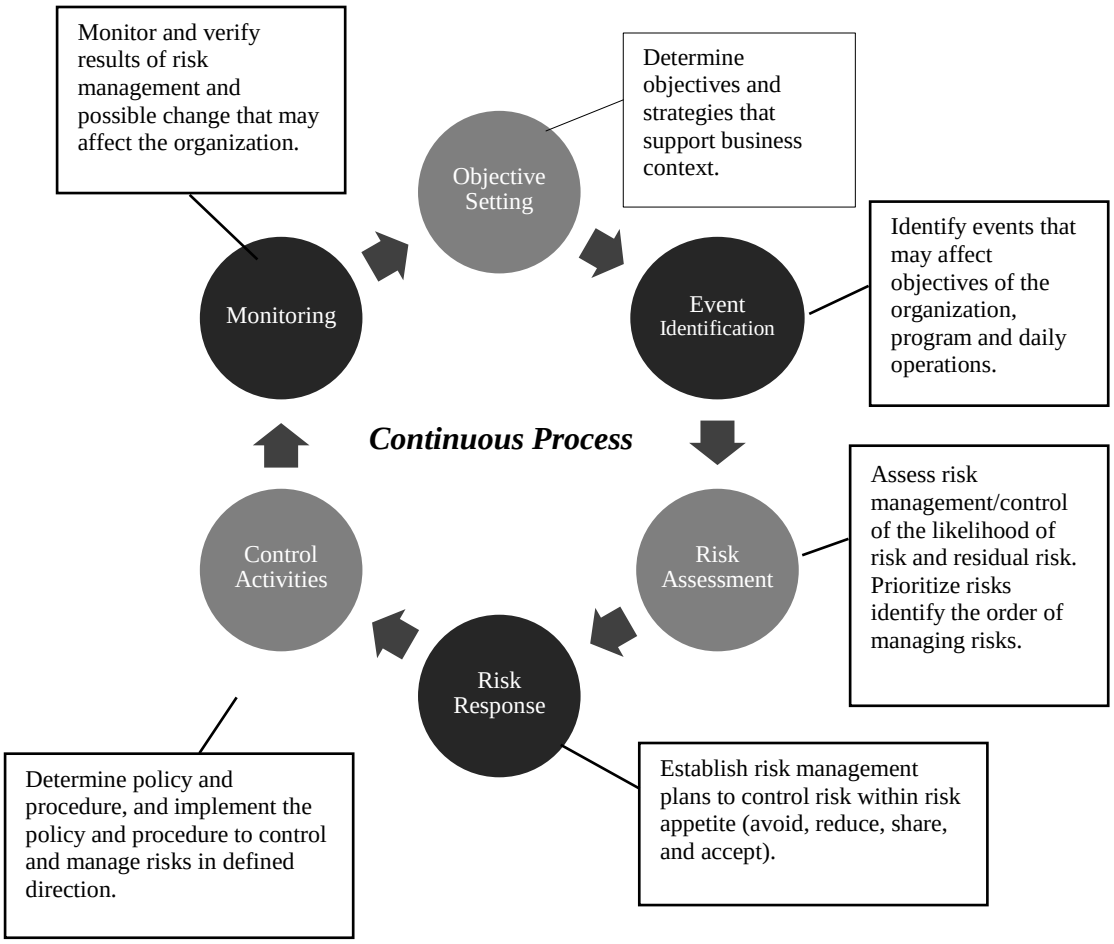

Figure 3.2 COSO Risk Management Framework

Source: Stock Exchange of Thailand, 2008.

The risk management frameworks commonly adopted are from two sources; the COSO Framework (2004) by The Committee of Sponsoring Organizations of the Treadway Commission and the AS/NZS ISO 31000:2009 (2009) standard. Both frameworks have similar concepts and essence. The difference is in the language and the distinctive attribute of the AS/NZS ISO 31000 framework as a combination of various best practice frameworks; i.e., The Canadian Standard Association (CSA) Guideline CAN/CSA-Q530, the COSO framework and the Australia/New Zealand risk management standard AS/NZ 4360.

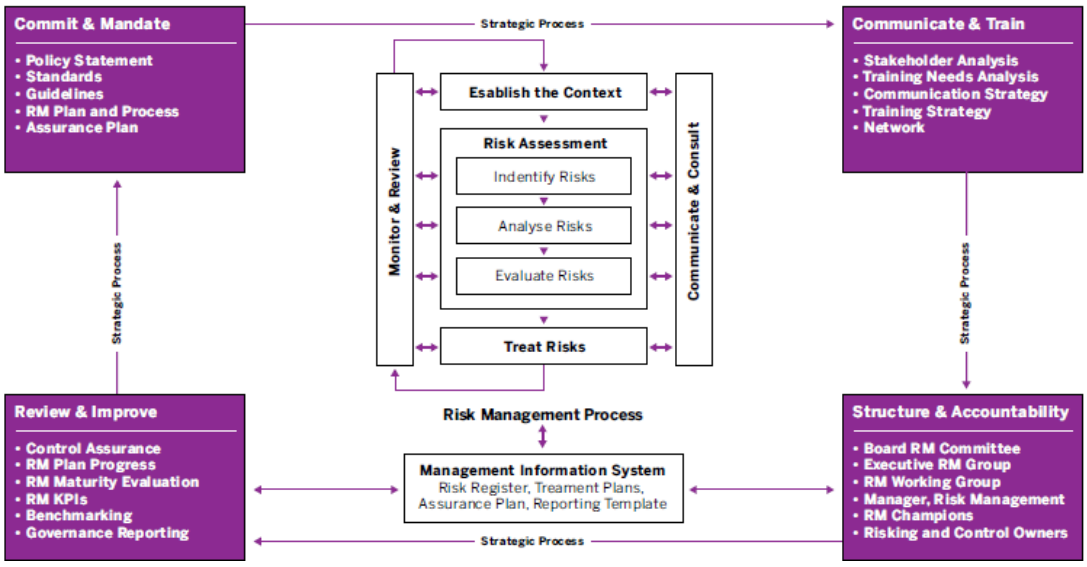

Figure 3.3 AS/NZS ISO 31000 Risk Management Framework

Source: Fraser and Simkins, 2010.

The AS/NZS ISO 31000 presents novel concepts (Shortreed, 2010) as follows:

1) It updates COSO's risk management framework to better accommodate future events through five processes: establishing the context, risk assessment, treating the risks, communication and consultation, and monitoring and reviewing. COSO's framework consists of eight components and six processes: objective setting, event identification, risk assessment, risk response, and control activities and monitoring, as displayed in Figure 3.1 the risk management process.

2) It offers official risk management and ERM frameworks applicable to assessing the development of risks and the risk management of an entity.

3) The standard provides an approach for an organization to consider both the positive and negative impacts of risks or uncertainty in achieving its objectives.

4) The entity needs to be capable of adapting a risk management framework so that it is suitable and useful to the entity's monitoring process and business structure.

5) It is a principle-based standard, rather than a performance-based one.

6) It explicitly specifies that the entity builds upon ERM to establish a profile and framework for development, integrating risk management in its routine business operations.

7) It addresses the delegation of accountability on risk management by appointing a risk owner. The annual performance of a risk owner partially depends on the competence to manage risks.

From figure 3.3 portrays four key success factors of risk management:

1) Roles and responsibilities of the board of directors and top-executives-They must be committed to establishing a risk management system and applying ERM a part of good governance.

2) Risk management must be aware of and participated in by the decision-makers of the entity. Middle management adopts it to support the strategic decisions of the top management.

3) The linkage between risk management as a part of the organization and IT management must be clear.

4) The risk management committee cooperates with the audit committee, employee committee, and other committees as required.

A comparison of the COSO ERM framework and AS/NZS ISO 31000:2009 (2009) made by Gjerdrum and Peter (2011) revealed that the main processes of these two frameworks are similar. However, COSO emphasizes internal control, particularly the internal environment.

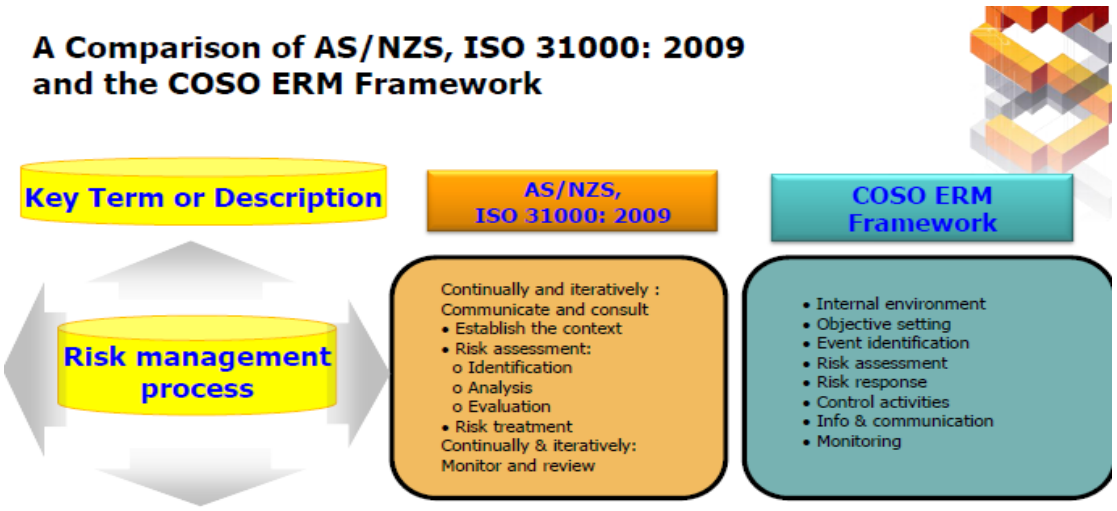

Figure 3.4 A Comparison of the AS/NZS ISO 31000:2009 and COSO ERM Framework

Risks can be classified into many categories, depending on the levels of details. Uthai Tanlamai and Pornpipat Juta (2007) compiled the categories of risks identified by various researchers, as shown in Table 3.1. The table illustrates that Shaw (2003) is the researcher that has classified risks into nine categories, more than other researchers. Meanwhile, operational risk was identified the most often.

Table 3.1 Risks Classification

Categories of Business Risk	**Reference**							
	CAS, 2003	**COSO, 2003**	**Lam, 2003**	**Shaw, 2003**	**Holmes, 2002**	**Culp, 2001**	**Miccoli, Hively, and Merkley, 2001**	**Krittapho l and Tanlamai , 2002**
Hazard risk	✓							
Business risk				✓	✓		✓	✓
Financial risk	✓			✓	✓			

Table 3.1 (Continued)

Categories of Business Risk	Reference							
	CAS, 2003	**COSO, 2003**	**Lam, 2003**	**Shaw, 2003**	**Holmes, 2002**	**Culp, 2001**	**Miccoli, Hively, and Merkley, 2001**	**Krittaphol and Tanlamai, 2002**
Operational risk	✓	✓	✓	✓	✓	✓	✓	✓
Strategic risk	✓				✓			
Organizational risk							✓	
Market risk		✓	✓	✓		✓	✓	
Liquidity risk						✓		
Credit risk		✓	✓	✓		✓	✓	
Insurance risk							✓	
Investments in Securities risk								✓
Privacy risk				✓				
Political risk				✓				
Legal/regulatory risk				✓		✓		
Environmental risk				✓				
Program and Project risk					✓			
Technological risk					✓			
Other risk						✓		✓
Total (Categories)	4	3	3	9	6	6	6	4

Source: Uthai Tanlamai and Pornpipat Juta, 2007.

In 2007, The Economist Intelligence Unit (EIU) surveyed 218 executives around the world concerning their approach to risk management and their perception of the key challenges and opportunities. The respondents were distributed among a wide range of industries and regions, with one-third from Asia, Australia, North America, and southern Europe. Almost 50 percent of the respondents were from businesses with an annual revenue of more than US$ 500 million. All respondents were responsible for making strategic decisions regarding the risk management in their organizations, and six percent were C-level executives or board-level executives.

This research suggests that risk management has placed more attention on the hidden dangers of non-traditional risks. Risk managers have the perception that their organization can manage traditional risks such as credit risk, market risk, and financial risk, reasonably. However, they are less confident about, and worry more about, non-traditional risks, for example, human capital risk, regulatory risk, reputation risk, and information technology (IT) risk, as displayed in Figure 3.5.

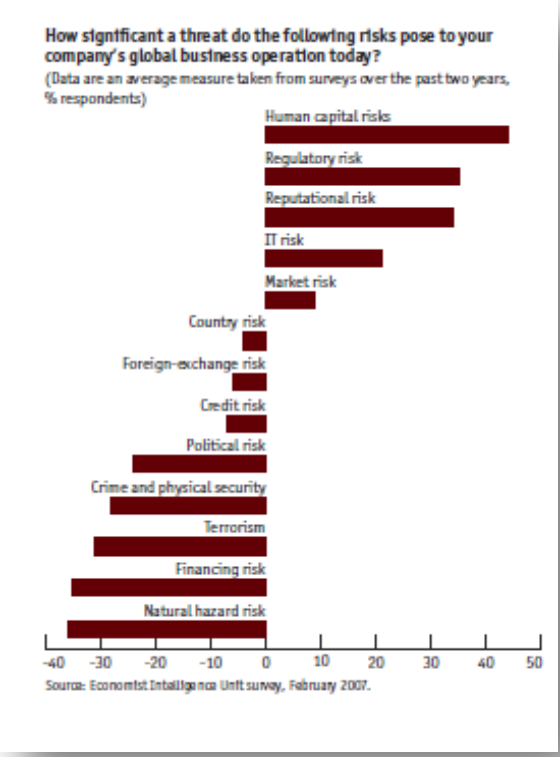

Figure 3.5 Levels of Significance of Risks Posing on Business Operation

Source: EIU, 2007..

TRIS (2011) allows the state enterprises in Thailand freedom to follow any guideline to identify their risks. State enterprises may adopt the Ministry of Finance's guideline, the new COSO framework, or the criteria established by the Bank of Thailand for state enterprises in the financial institution sector. These three guidelines classify risks as follows:

1) The Ministry of Finance identifies risks in four categories: financial risks, operational risks, business risks, and event risks.

2) The New COSO framework classifies risks into four aspects, as S-O-F-C, that is, strategic risks, operational risks, financial risks, and compliance risks.

3) The Bank of Thailand classifies risks into five aspects: strategic risks, market and liquidity risks, credit risks, operational risks and compliance risks.

The theories that are often applied to explain why it is essential for an entity to implement enterprise risk management are the agency theory and the signaling theory. The agency theory was proposed by Jensen and Meckling (1976). The concept of the theory is that an individual cannot solely manage his or her own business, especially when it has flourished into a big company. Thus, the owner has to raise funds from investors or from people interested in the business. When more stakeholders become involved in the business, the management approach needs to change by hiring a person or a professional administrator to manage the business in order to generate the highest possible value-added for the entity. The agency theory is based on an assumption similar to that of transaction cost theory regarding the concepts of bounded rationality and opportunism.

The agency theory explains the relationship between two parties: a principal authorizes an agent to manage the business. As long as the management (the agent) makes decisions that generate the highest return on investment and in a manner that creates the highest benefits for the stockholders (a principal), the agency relationship between stockholders and the management is effective. Whenever stockholders' benefits and objectives disagree with those of the management, an agency problem arises.

Sillapaporn Srijunpetch (2008) suggested that though the agent in the agency theory is completely committed to generating the highest value-added for the enterprise and stakeholders without taking the stockholders' benefits for himself or

herself or his or her associates, there is a possibility that an agent may pose different problems; for example, an agent may lack knowledge, perform in a mediocre way, and take the entity's interests for his or her own benefit.

An enterprise adopting the concept of the separation between the owner and management often faces problems, since the management does not hold full responsibility and may take advantage by taking the benefits of the stockholders and other stakeholders as his or her own. Some problems that exist in an entity adopting the agency theory include the following:

1) Conflict of interest -An agent takes his or her benefit over his or her responsibilities.

2) Moral hazard problem -A principal can never be confident that an agent is performing with his or her best effort or at full caliber.

3) Adverse selection problem -A principal can never have confidence that an agent's competency aligns with the incentive he or she receives.

The agency theory explains that for an entity to be efficient where the management is not an owner, there must be a system to prevent misconduct by monitoring the behaviors or performance of the agent, appointing an independent committee, and offering bonding for an agent for preferred behaviors, such as giving rewards when goals are attained.

Uthai Tanlamai and Pornpipat Juta (2007) explained the effort to apply the agency theory in order to explain why it is necessary for an entity to implement risk management that the theory suggests stockholders are determined to monitor performance of the manager in order to maximize benefits of stakeholders. Therefore, the manager must try to satisfy stockholders by proving to them that he or she has worked properly to protect their benefits. Risk management, as an element of good governance, assures the stockholders that the manager has promoted the employment of strategies to protect benefits and to create value-added for stockholders.

The risk management in state enterprises in Thailand is not entirely voluntarily implemented, unlike in private sector. If the agency theory is applied to analyze the introduction of a risk management criterion to evaluate the performance of state enterprises, the explanation can be that it is an effort to prevent the probability of agency problems by implementing a monitoring tool. It is also an endeavor to

encourage state enterprises (an agent) to achieve their objectives/policies so that the Ministry of Finance as a major stockholder can be assured that the agent is performing in the direction in which the benefits of stockholders are protected and value-added is created.

Another theory that can explain why enterprises realize the necessity to practice risk management is the signaling theory. This theory offers the idea that an agent conveys information about his or her credibility to another party (a principal). This theory is based on the asymmetric information concept presented by Spence (1973). He proposed that an agent and a principal can solve the asymmetric information problem by sending a signal or important piece of information to another party.

Thanakorn Makaew (2001) quoted in Spence's theory of signaling (1973), indicating that it is about an individual, an enterprise or a government that has more information and is trying to send a signal to another party in order to avoid an adverse selection situation and a gap in information that can lead to expenses. Thanakorn Makaew (2001) referenced Spence's (1973) early job-market signaling model. The model involves a situation in which a job applicant tries to create a leverage over other applicants by sending a signal by dressing smartly for an interview or mentioning a leading college that he graduated from. In a product market, a manufacturer sends signals to consumers through advertisements. Sometimes the advertisement may not provide any information to consumers at all, as the manufacturer just wants to show that the company can afford an advertisement and that they are trustworthy. Signaling theory can explain when an entity chooses to pay a dividend rather than using the fund on tax-free capital gain; it is because that entity wants to send a signal to emphasize its capability to general a profit.

Uthai Tanlamai and Pornpipat Juta (2007) concluded that the signaling theory of Spence (1973) can be applied to explain the necessity of ERM. An enterprise may want to send a signal to the market that it has a competitive advantage and more expertise regarding risk management than others. Risk management sends a signal to the market that the entity is robust and practices good corporate governance. The message assures stockholders that their profits are protected against unexpected volatility.

3.3 Research on the Critical Success Factors Related to Risk Management

Two leading global consultants, KPMG (1999) and PricewaterhouseCooper (2004) have given recommendations on the critical success factors for risk management.

KPMG (1999) studied the risk management practice of organizations in public and private sectors by interviewing 18 entities in different countries, for example, Australia, France, Germany, and Switzerland. They proposed a best practice based on their findings as follows:

1) People: every person in an organization is a risk manager.

2) Risk management champion: top management must champion risk management.

3) Communication: open communication channels must be established.

4) Working group: a team and working group for risk management should be appointed.

5) Language: Language should be simple and used generally in business.

6) ERM unit: A dedicated unit must be established to work on ERM.

7) Results communication: the results of risk management must be communicated.

8) Internal audit: the internal audit unit and/or audit committee must assist in the risk management process.

9) Guidelines: advice or a manual must be available.

10) Training: the management should undergo training in order to understand risks.

11) Tools and technics: processes, tools and technics should be versatile, for example, business risk maps, modeling tools, workshops and Internet/intranet.

PricewaterhouseCoopers (2004) recommended that a guideline for risk management excellence consist of 12 components as follows:

1) Employing risk management as a strategic tool.

2) Aligning and integrating risk management into the existing operational process of the organization, as well as identifying risk management as a

procedure during the development of a business plan, budget planning, investment decisions, and project management.

3) Covering overall operational risks and strategic risks, unlike traditional risk management, which focuses only on compliance risk.

4) Support from the CEO and senior management. It is crucial that the CEO and top-level executives support risk management and emphasize the benefits of risk management, and are responsible for and participate in risk management.

5) The definition of risk management is commonly understood and shared within the entity.

6) The process of continuously identifying, analyzing, managing, monitoring, and reporting risks must be in place and implemented across the organization.

7) The entity must be committed to identifying and managing the changes that are the results of enterprise risk management.

8) Communication about risks must be ongoing, emphasizing the importance of risk management, risks that must be managed immediately, and necessary the revision of operation plans.

9) Risk must be evaluated for both qualitative, aspects such as reputation, and quantitative aspects, such as loss, revenue, or probably increased expenses.

10) Employing training and human resource management as a tool to distribute information on risk management, the responsibilities of each person, and to promote good practice.

11) Appointing a dedicated unit or a person responsible for risk management to assist in the implementation of risk management, and to develop the risk management competency of staff.

12) Having internal auditors, as they have an important role in assuring stakeholders that the entity has an internal control system that is efficient and effective in managing risks

COSO (2004) appointed PwC to compose the international edition of the Enterprise Risk Management - Integrated Framework, which was published in

September 2004 and accepted as a crucial and global standard guideline for enterprise risk management. PwC identified eight critical success factors for ERM as follows:

1) Support From the Top:

The success of ERM in any organization depends on the commitment, support, and participation in the process of the organization's top management. The board of directors and senior executives must give priority to ERM. Initially, the CEO or highest leader of the organization initiates ERM by enforcing it as a policy and obligates the executives to apply risk information when making decisions.

2) Use Common Terminology for General Understanding Across the Organization

The terminology on risks and risk management commonly understood across the organization enables efficiency in identifying the objectives, policies, and process for risk identification and risk assessment, as well as determining an appropriate risk management methodology. When an organization has established a clearly-defined risk management framework and policy, the management and staff speak the same language and share the same goal in managing risks.

3) Continuous implementation of ERM: An organization successful in risk management is one that applies risk management continuously and across the organization.

4) Change Management

Whenever a new process or managing system is introduced, change management is necessary. Likewise, the executives and staff must be informed of changes and of the impacts on them after risk management is implemented.

5) Effective Communication

It is important to communicate about risks effectively so the management receives accurate information in a timely way, enabling them to manage risks according to priorities or changes or according to emerging risks. Effective communication enables the executives to monitor their risk management plans consistently, and the information is used to improve organizational management and manage risks in order to optimize the possibility of achieving the objectives. Communication about risk management strategies and their implementation is crucial, since it accentuates the linkage between risk management and strategies. When the staff understands its

responsibilities regarding risk management, it generally accepts the process, leading to the success of ERM. Senior executives, the CEO, and the board of directors should verbally support the communication process and by their actions.

6) Risk Management Evaluation

Risk management should be evaluated according to two dimensions: impact and opportunity. Effective risk management reduces risks to be within the risk appetite of the entity. Evaluation requires performance indicators, which may be determined at enterprise, department, or personal levels, and may be applied in conjunction with procedures for human resource management.

7) Training and the Human Resource Mechanism

Training is necessary for the board of directors, executives, and every employee of the entity to understand the risk management framework and the responsibilities of each person in managing and communicating about risks. Training must be designed to address the levels of responsibility for risk management as well as the knowledge and risk management already practiced in the organization. New staff members should be trained to build awareness of their responsibilities regarding risk and risk management. Performance evaluation can be a significant tool for promoting the responsibility of each individual by identifying the accountability for risk management in the job description. The elements identifying the risk management effectiveness for which each person should be assessed for performance include responsibilities and roles in promoting risk management.

8) Monitoring Risk Management

The last critical success factor for risk management is establishing an appropriate monitoring process. The monitoring process should cover reporting and process verification, the commitment of top executives and the regularity of their participation, the roles of the CEO in promoting and monitoring risk management, and the application of evaluation criteria for risk management.

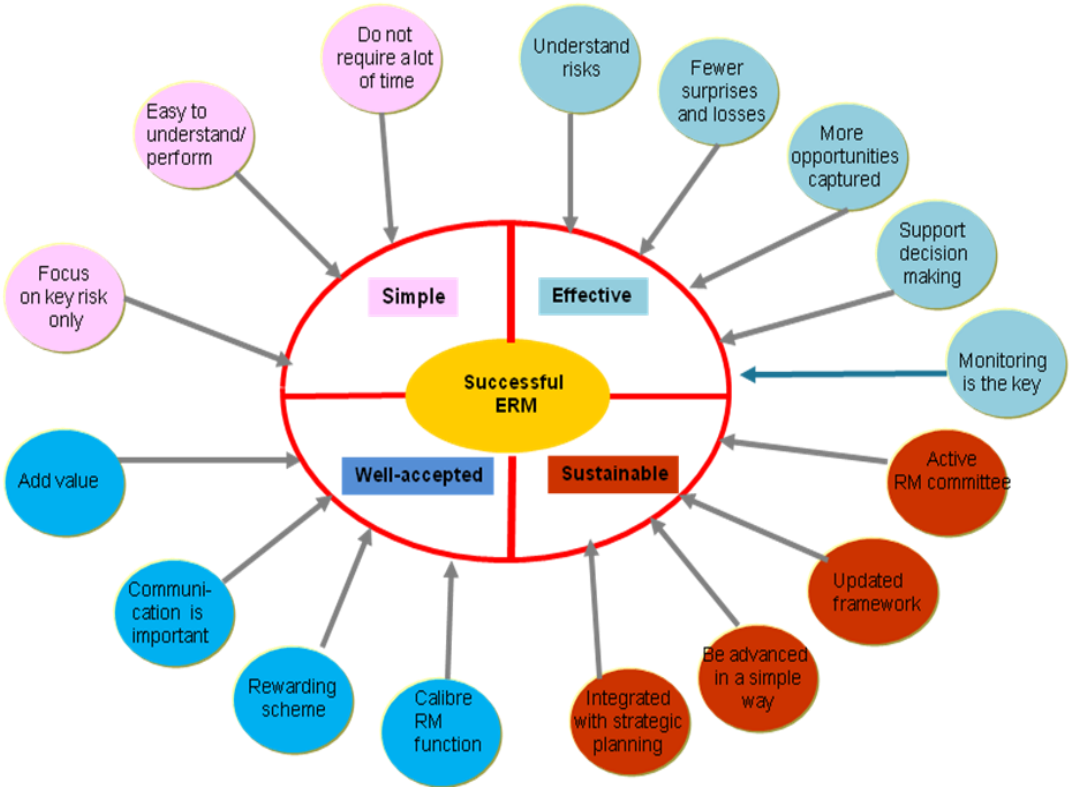

Figure 3.6 Success Factors for Risk Management

Source: PricewaterhouseCoopers, 2008.

Research conducted by Beaseley, Clune and Hermanson (2005) studied the factors associated with risk management implementation by surveying 123 organizations worldwide that were members of the Institute of Internal Auditors (IIA). The study found that ERM implementation had a significant positive correlation with the presence of the chief risk officer (CRO), board independence, apparent support of ERM from the CEO and CFO, quality and type of auditor, entity size, and the industry (i.e., entities in banking, education, and insurance industries. Meanwhile, it was found to have a negative correlation with the country of domicile (i.e., US or non-US enterprises). The results suggest that fewer US enterprises implement ERM than non-US enterprises, as illustrated in Table 3.2.

The research was conducted using a survey of chief audit executives that were members of the IIA. The respondent rate was 10.3 percent, analyzed with the ordinal logistic regression model.

Table 3.2 Results of Analysis Using the Ordinal Logistic Regression Model

ERM STAGE $= \bar{f}$[CRO, BOD INDEP, CEO REQUEST, CFO REQUEST, BIG4, LNREV, BANKING, EDUCATION, INSURANCE, USBASED]

Variable	Research question	Exp. sign	Coefficient	*Z* Stat	*p*-Value*
CRO	RQ1	+	1.712	3.65	0.00
BOD INDEP	RQ2	+	0.021	2.59	0.01
CEO REQUEST	RQ3	+	0.413	2.36	0.01
CFO REQUEST	RQ3	+	0.295	1.76	0.04
BIG4	RQ4	+	1.806	2.73	0.00
LNREV	RQ5	+	0.131	1.37	0.09
BANKING	RQ6	+	1.764	2.92	0.00
EDUCATION	RQ6	+	1.064	1.56	0.06
INSURANCE	RQ6	+	1.476	2.05	0.02
USBASED	RQ7	−	−2.509	−5.08	0.00

Source: Beasley, Clune and Hermanson, 2005.

Note: Pseudo R-Square=28%, Model Chi-Square (10df)=100.66,p<0.0001, Variable definitions: see

*p-Values are one-tailed.

The results from a survey conducted by the Economist Intelligence Unit (EIU) in 2007 suggests that the most critical factor for successful risk management is a strong culture and awareness of risks across the organization, followed by clear risk appetite, a well-defined system for monitoring of ongoing risks, and support from the executive board, as shown in Figure 3.7.

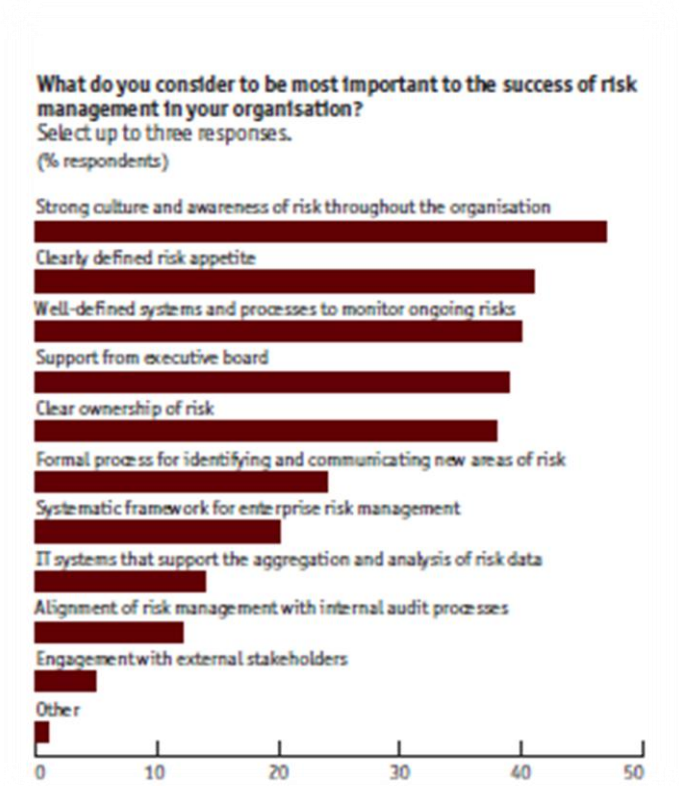

Figure 3.7 Success Factors for ERM

Source: Economist Intelligence Unit, 2007.

In addition, the EIU survey revealed that the appointment of a chief risk officer (CRO) to gear the entity toward success in risk management is favorable. It pointed out that most companies have an appointed CRO, whose responsibility is to develop and implement risk management. The approach is commonly adopted in the financial sector, where two-thirds of the companies have already appointed a CRO or plant to appoint one.

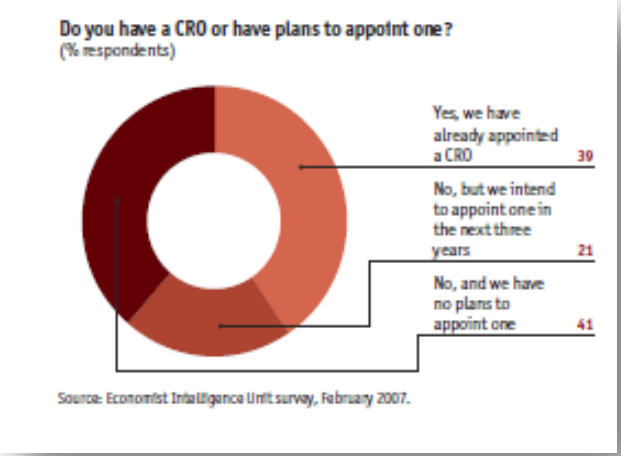

Figure 3.8 Numbers of Companies with a CRO or that have a Plan for Such an Appointment

Source: Economist Intelligence Unit, 2007.

Prapawadee Na Ranong and Wariya Phuenngam (2009) studied the critical success factors for risk management among financial institutions in Thailand and found seven factors that could be identified according to order of importance, from most important to least important: 1) commitment and support from top management, 2) communication, 3) information technology, 4) culture, 5) trust, 6) organizational structure, and 7) training. Their comparison of the critical success factors proposed by other studies is illustrated in Table 3.3.

Table 3.3 A Comparison of Critical Success Factors from Different Studies

Critical Success Factor	Grabowski and Roberts (1999)	Daniel Galorath(2006)	Anthony Carey(2001)	Farida Hasanali(2002)	NSW Department of State and Regional Department (2005)
1 Commitment and Support from top management		Top-level management support		Leadership	
2 Communication	Communication		Verifying your judgments		
3 Culture	Organizational Culture			Culture	
4 Organizational Structure	Organizational Structuring and Design		Change management	Structure, roles, and responsibilities	Setting clear objectives and guidelines for risk management
5 Training			Embedding risks-developing of risk training course		Training staff appropriately
6 Information Technology				Information technology infrastructure	
7 Trust	Trust				
8 others		Acknowledgment that risk is reality	The importance of sound judgment	Measurement	Implementing systems for monitoring and reviewing risks.
		Commitment to identify and manage risks	Identification issues		Allocating adequate resources
			Keep control of your reputation		
			Assessing the importance of risks		
			Remuneration issues		

Source: Prapawadee Na Ranong and Wariya Phuenngam, 2009.

Yaraghi, and Langhe (2011) studied the critical success factors for risk management among various business corporations in Sweden by analyzing the factors in three stages: readiness, implementation, and administration. They concluded that determining the strategy was the most critical success factor for risk management in all three stages. Other critical success factors included the organizational culture, structure, and the support of top management.

Table 3.4 Impacts of Critical Success Factors at the Readiness Stage

	Test value = 3.5					
	t	df	Sig. (two-tailed)	Mean difference	95% confidence interval of the difference	
					Lower	Upper
Business type	2.647	27	0.013	0.26786	0.0602	0.4755
Communication	4.994	27	0	0.58929	0.3472	0.8314
Consultants	1.8	27	0.083	0.10714	–0.015	0.2293
Documentation	3	27	0.006	0.25	0.079	0.421
Education	4.044	27	0	0.46429	0.2287	0.6998
Environment	4.35	27	0	0.53571	0.283	0.7884
General management skills	2.925	27	0.007	0.28571	0.0853	0.4862
Leadership	1.411	27	0.17	0.08929	–0.0405	0.2191
Organizational culture	2.375	27	0.025	0.19643	0.0268	0.3661
Organizational structure	5.087	27	0	0.69643	0.4155	0.9773
Performance reporting	2.92	27	0.007	0.30357	0.0903	0.5169
Process design	2.92	27	0.007	0.30357	0.0903	0.5169
Project management skills	2.364	27	0.026	0.21429	0.0283	0.4003
Resources	3.472	27	0.002	0.39286	0.1607	0.625
Responsibility	2.664	27	0.013	0.23214	0.0533	0.4109
Reward and recognition system	1	27	0.326	0.05357	–0.0563	0.1635
Strategy	6.142	27	0	0.73214	0.4876	0.9767
Team-building	2.077	27	0.047	0.16071	0.0019	0.3195
Top management	3.753	27	0.001	0.42857	0.1943	0.6629

Source: Yaraghi and Langhe, 2011**.**

Table 3.5 Impacts of Critical Success Factors at the Implementation Stage

	Test value = 3.5					
	t	df	Sig. (two-tailed)	Mean difference	95% Confidence interval of the difference	
					Lower	Upper
Business type	2.077	27	0.047	0.16071	0.0019	0.3195
Communication	5.729	27	0.000	0.67857	0.4355	0.9216
Consultants	2.646	27	0.013	0.25000	0.0561	0.4439
Documentation	2.664	27	0.013	0.23214	0.0533	0.4109
Education	4.672	27	0.000	0.58929	0.3305	0.8481
Environment	3.211	27	0.003	0.37500	0.1354	0.6146
General management skills	4.345	27	0.000	0.51786	0.2733	0.7624
Leadership	3.472	27	0.002	0.39286	0.1607	0.6250
Organizational culture	3.473	27	0.002	0.37500	0.1535	0.5965
Organizational structure	5.775	27	0.000	0.75000	0.4835	1.0165
Performance reporting	4.076	27	0.000	0.42857	0.2128	0.6443
Process design	4.672	27	0.000	0.58929	0.3305	0.8481
Project management skills	4.054	27	0.000	0.50000	0.2469	0.7531
Resources	6.142	27	0.000	0.73214	0.4876	0.9767
Responsibility	2.920	27	0.007	0.30357	0.0903	0.5169
Reward and recognition system	2.121	27	0.043	0.14286	0.0047	0.2810
Strategy	8.370	27	0.000	0.85714	0.6470	1.0673
Team-building	3.487	27	0.002	0.35714	0.1470	0.5673
Top management	5.738	27	0.000	0.71429	0.4589	0.9697

Source: Yaraghi and Langhe, 2011.

Table 3.6 Impacts of Critical Success Factors at the Administration Stage

	Test value = 3.5					
					95% Confidence interval of the difference	
	t	df	Sig. (two-tailed)	Mean difference	Lower	Upper
Business type	2.091	27	0.046	0.19643	0.0037	0.3892
Communication	5.347	27	0.000	0.64286	0.3962	0.8896
Consultants	2.375	27	0.025	0.19643	0.0268	0.3661
Documentation	2.375	27	0.025	0.19643	0.0268	0.3661
Education	4.994	27	0.000	0.58929	0.3472	0.8314
Environment	3.789	27	0.001	0.48214	0.2211	0.7432
General management skills	4.388	27	0.000	0.46429	0.2472	0.6814
Leadership	2.925	27	0.007	0.28571	0.0853	0.4862
Organizational culture	3.759	27	0.001	0.41071	0.1865	0.6349
Organizational structure	6.181	27	0.000	0.78571	0.5249	1.0465
Performance reporting	3.759	27	0.001	0.41071	0.1865	0.6349
Process design	4.662	27	0.000	0.57143	0.3199	0.8229
Project management skills	2.664	27	0.013	0.23214	0.0533	0.4109
Resources	4.710	27	0.000	0.62500	0.3527	0.8973
Responsibility	3.198	27	0.004	0.35714	0.1280	0.5863
Reward and recognition system	2.077	27	0.047	0.16071	0.0019	0.3195
Strategy	8.334	27	0.000	0.91071	0.6865	1.1349
Team-building	2.929	27	0.007	0.32143	0.0962	0.5466
Top management	6.142	27	0.000	0.73214	0.4876	0.9767

Source: Yaraghi and Langhe, 2011.

Uthai Tanlamai and Pornpipat Juta (2007) found that among the critical success factors for risk management in Thai state enterprises, the tone at the top was the most critical factor, whereas corporate culture and the readiness of human resources were the second and third critical factors. Additionally, a significant relation was found between the risk management score (RM score) and the factors influencing the implementation of risk management, such as the organizational structure design (r = 0.315, p = 0.012) and information technology governance (r = 0.449, 0 = 0.001).

Another factor having an influence on the cooperation of everyone in the entity in implementing risk management is the incentives offered by state enterprises. The performance evaluation results of some state enterprises do not link with incentives or bonuses for the board and staff; thus, they lack motivation to achieve a high evaluation score and do not exert their best effort, in particular as risk management is a new idea. It is necessary that everyone learn and diligently collaborate so that risk management becomes more concrete.

Table 3.7 Correlation Coefficient of the Critical Success Factors for Risk Management

Variable	Mean, SD, n	1	2	3	4	5	6
1.Risk Management Score	2.48, 1.12, 51	1.000					
2.Governance unit	4.24, 0.86, 45	0.127	1.000				
3. Rule and regulation	3.81, 0.70, 43	-0.017	0.383**	1.000			
4. Design of org. structure and duty	3.84, 0.99, 45	0.315*	0.199	0.319*	1.000		
5.Top management support	4.84, 0.37, 45	0.010	0.204	-0.032	-0.022	1.000	
6. Human resources	4.34, 0.75, 44	0.099	0.037	0.157	0.321*	0.246	1.000
7. Corporate culture	4.36, 0.74, 45	0.102	0.128	0.254	0.372**	0.208	0.529**
8.Information technology governance	4.23, 0.71, 44	0.200	0.029	0.137	0.362**	0.127	0.452**
9. Risk management tools	4.05, 0.65, 43	0.074	0.041	0.053	0.242	0.123	0.144
10.Professional RM Trainings	3.96, 0.67, 45	0.042	0.178	0.140	0.301*	0.416**	0.128
11.Internal audit unit existed	3.59, 0.69, 45	-0.151	0.148	0.405**	0.205	-0.039	0.102
Variables		**7**	**8**	**9**	**10**	**11**	
7. Corporate culture	4.36, 0.74, 45	1.000					
8.Information technology governance	4.23, 0.71, 44	0.449**	1.000				
9. Risk management tools	4.05, 0.65, 43	0.181	0.401**	1.000			
10.Professional RM Trainings	3.96, 0.67, 45	0.147	0.048	0.201	1.000		
11.Internal audit unit existed	3.59, 0.69, 45	0.209	0.039	0.091	0.288*	1.000	

* p<=.05; ** p<= .01

Source: Uthai Tanlamai and Pornpipat Juta, 2007.

Natiya Mongkolsawat (2010) developed a meter to measure the success of ERM from a survey where the sample group comprised state enterprises, financial institutions, insurance companies. and asset management companies. The results of the ERM success meter accuracy test against the scores for risk management evaluation by the SEPO revealed seven meters that are significantly related to the SEPO's risk management evaluation score, i.e. use of a common language for general understanding, a change management process, effective communication, risk management evaluation, awareness of the risk management of the risk owners, organizational operations, and risk appetite.

TRIS Corporation (2012) stated there are 3 important drivers for risk management. The first aspect is a process that may follow broadly accepted frameworks or standards such as the COSO ERM framework, ISO 31000:2009, COBIT, or Business Continuity Management (BCM); second is that people rely on 3 crucial skills: the core competency consisting of interpersonal skills, personal skills and business skills, conceptual skills and technical skills; and the third is technology.

Figure 3.9 Risk Management Drivers

Source: TRIS Corporation, 2012.

Recent literature, both practical literature and academic literature, has emphasized risk culture as an important soft-side factor for the success of risk management. KPMG (2011) identified risk culture as one of the critical components of effective risk management besides procedures such as risk identification and assessment, risk response, monitoring and reporting, and risk governance.

Figure 3.10 Components of Effective Risk Management
Source: KPMG, 2011.

The literatures reviewed in this chapter can be summarized to compare the proposed critical success factors for risk management, as shown in Table 3.8.

Table 3.8 Comparison of the Critical Success Factors for Risk Management from the Literature Review

Critical Success Factors for Risk Management	**KPMG (1999)**	**PWC (2004)**	**Beasley (2005)**	**EIU (2007)**	**Na Ranong and Phuen ngam (2009)**	**Yaraghi (2011)**	**Tanlamai and Juta (2007)**	**Mongkol sawat (2010)**
Support from top management	✓	✓	✓		✓	✓	✓	
Effective communication	✓	✓			✓	✓		✓
Training and human resource mechanism	✓	✓			✓		✓	
Risk culture				✓	✓	✓	✓	

Table 3.8 (Continued)

Critical Success Factors for Risk Management	KPMG (1999)	PWC (2004)	Beasley (2005)	EIU (2007)	Na Ranong and Phuen ngam (2009)	Yaraghi (2011)	Tanlamai and Juta (2007)	Mongkol sawat (2010)
Common language for general understanding	✓	✓						✓
Auditor Internal audit unit/quality of auditor	✓		✓				✓	
Risk management monitoring		✓		✓		✓		
Risk management evaluation		✓				✓		✓
Organizational structure					✓	✓	✓	
Variety of methodology, tools, and technics	✓						✓	
Change management		✓						✓
Independence/ support from the committee			✓	✓				
Type of industry			✓			✓		
Clarity of risk appetite/ ownership of risks				✓				✓
Awareness				✓				✓
Good information technology					✓		✓	
Manual	✓							

Table 3.8 (Continued)

Critical Success Factors for Risk Management	KPMG (1999)	PWC (2004)	Beasley (2005)	EIU (2007)	Na Ranong and Phuen ngam (2009)	Yaraghi (2011)	Tanlamai and Juta (2007)	Mongkol sawat (2010)
Everyone is an enterprise risk manager	✓							
Appointing a team and working group	✓							
Adhering to risk management		✓						
Appointing a CRO			✓					
Size of entity			✓					
Trust					✓			
Strategy						✓		
Skills of the management						✓		
Compliance unit							✓	
Performance of entity								✓

In conclusion, the critical success factors/drivers for risk management can be classified into 2 main categories 1) the hard side such as process, system, tools, and technology; and 2) the soft side such as skills, culture, and risk governance.

This research focuses on the comparative study of the critical factors from both categories. The factors on the hard side selected for the study were the size of the entity, investment in IT and the human resources associated with risk management, and the risk management organizational structure. As for the soft side, the author focused on risk culture, which has become a subject of many recent studies, in an attempt to make this factor concrete, visible, and measurable so that the findings

would enable the enterprise to achieve the desired risk culture. The author believes that a good risk culture enhances the efficiency in managing risks, and eventually has a positive impact on organizational performance. This factor shall be discussed in depth in the next section.

The author has given a definition of each hard side factor selected for study; the size of the entity, investment in IT and the human resources associated with risk management, and the risk management organizational structure as follows:

1) Size of the entity is the size of the state enterprises determined by the value of their total assets, classified into three sizes: large, medium, and small. A large means that the value of total assets is more than 50,000 million baht, medium size has the value of total assets less than 50,000 million baht but more than 5,000 million baht, and small size means that the value of total assets is less than 5,000 million baht.

2) Investment in risk management information technology (IT) means the cost of establishing an IT system to support the risk management of the enterprise.

3) Investment in human the resources associated with risk management means the expenses allocated for training to develop the awareness and knowledge of human resources regarding risk management so that they support the risk management of the entity effectively. This factor was measured from the expenses spent on training per person per annum.

4) Risk management organizational structure means the factors related to establishing a work unit or appointing a person to take responsibility for risk management in order to create effective risk management, for example, establishing a dedicated risk management unit and appointing a chief risk officer (CRO).

3.4 Risk Culture Literature

The idea of risk culture has gained attention and has been broadly discussed as being a critical driver for effective enterprise risk management. Though the framework, process, and risk management standards are essential, the organization cannot be assured that risks are sufficiently managed to achieve the defined strategic objectives without the presence of another important factor, the behaviors of the people in the organization (IRM, 2012a).

A stronger risk culture is related to less loss, and promotes better management of the outcomes (PwC, 2012). A risk culture significantly affects the decisions regarding strategic risk management and, as a result, has an impact on the performance of the organization. An inappropriate risk culture can be a barrier to achieving objectives. In the worst case, it may lead an organization to serious defamation and financial damages. Recent business collapses and scandals often have risk culture as a root problem or main cause.

In order to comprehend the idea of risk culture, it is necessary to understand the basic meaning of culture. Culture is the attributes expressed by a particular group of people at a particular time, developed by a group of people in a shared boundary and period. It is shared values, patterns of thoughts, and awareness. The culture of each organization can be observed from anthropological and psychological points of view as well as those of art, history, and the behaviors and emotions of the group members. Organizational culture is an essential factor in defining the strategies, objectives, and practices of an entity that enables efficiency and effectiveness (Schein, 1999).

Organizational culture is a component of the internal environment-the attributes within the entity that affect the people, management, and the organization. It is important as it influences how the staff thinks, feels, and performs its duty (William, 2008). Since organizational culture is rigid and incapable of change in a short period of time, it allows people from outside to understand the attitudes and behaviors of the organization. Organizational culture reflects the characteristics of the organization (Bowditch and Buono, 2004).

Organizational culture can be classified into 3 levels (Schein, 1999): artifacts, shared values, and shared assumptions. Artifacts sit at the bottom level, and can be seen, heard, and touched, for example, language, attire, and tradition and ritual. The next level is shared values, which constitute the preferences of the organization's members. They are beliefs that should exist in the organization. Generally, the shared values of a group such as strategies, objectives and philosophy are generated by a group leader. The culture at the top level is the shared assumptions; that is, what the members of the organization instinctively express comprises beliefs, awareness, thinking, and feelings. This level of culture is deeply instilled among the group members.

Organizational culture influences performance and attachment to the organization. Different cultures result in different levels of performance and attachment to the organization (Peters and Waterman, 1982). A research by Hellriegel, Slocum and Woodman (2001) studying the direct relationship between organizational culture and performance found that organizational culture has an long-term influence on the performance of the organization and is one of the critical factors for the success or failure of the organization. An organization culture that hinders performance is often found. However, an organizational culture can be reasonably developed by the intelligence of the employees and executives, who understand and support the culture, changing it to a culture that increases performance.

Bungartz (2010) classified risk culture into 3 levels following Schein's model:

1) Artifacts and creations: This is the lowest level. Risk culture as defined according to the meaning of culture at this level means the tangible components of risk management, such as having a risk manual, a risk manager, a risk management committee, published frameworks and guidelines for risk management, risk management IT, and risk reporting and risk workshops. The existence or non-existence of these components allows for the assessment of the risk culture and the visibility of the organization's risk culture.

2) Values: Risk culture at this level means the values that define the behavioral and ethical standards of employees. The principles, undocumented practices, and restrictions that employees adhere to come from values. Oftentimes, these values can be partially observed from the behaviors of the organization's employees.

3) Basic assumptions: Culture at this level is considered a foundation of organizational culture. Employees unconsciously express these attributes. Risk culture identified as basic assumptions is awareness, thoughts and feelings of the employees about risks.

Risk culture has been a subject of interest recently, leading to many articles written by risk management consultants, from practitioners and from academic points of view. CARR (2012) has compiled the definitions of risk culture suggested by several consultants as displayed in Table 3.9.

Table 3.9 Definitions of Risk Culture from Selected Literature

	Definition	Source
Practice Literature	The combined set of individual and corporate values, attitudes, competencies and behavior that determine a firm's commitment to and style of operational risk management	Basel Committee (2011)
	…the general awareness, attitude, and behavior of its employees and appointed representatives toward risk and the management of risk within the organization	FSA (2006)
	…the norms and traditions of behavior of individuals and of groups within an organization that determine the way in which they identify, understand, discuss, and act on the risks the organization confronts and the risks it takes	IIF (2009)
	…the values, beliefs, knowledge and understanding about risk shared by a group of people with a common purpose, in particular the employees of an organization or of teams or groups within an organization	IRM (2012)
	…the system of values and behaviors present throughout an organization that shape risk decisions. Risk culture influences the decisions of management and employees, even if they are not consciously weighing risks and benefits.	KPMG (2010)
	…the norms of behavior of individuals and groups within an organization that determine the collective ability to identify, understand, openly discuss, and act on the organization's current and future risks. It is the last line of defense in grave situations.	McKinsey (2010)
	…organizational behaviors and processes that enable the identification, assessment, and management of risks	PWC (2009)

Table 3.9 (Continued)

	Definition	Source
Academic Literature	relative to objectives ranging from compliance to operational, financial, strategic	
	…the norms and traditions of behavior of individuals and groups within an organization that determine the way in which they identify, understand, discuss and act on the risks that the organization confronts and takes	Towers Watson (2011)
	The organization's propensity to take risks as perceived by the managers in the organization	Boseman and Kingsley (1998)
	A risk culture is based on particular beliefs and assumptions. These can be clustered according to specific cultural tenets; namely risk, integrity, governance and leadership, decision-making, empowerment, teamwork, responsibility and adaptability… These tools are expressed in everyday workplace practices via attitudes and behaviors and, when they are expressed by leaders, they serve as powerful (human) culture-embedding mechanisms.	O' Donovan (2011)

Source: CARR, 2012.

Many consultants with expertise in risk management have attempted to lay out frameworks and models to present the dimensions and critical factors of risk culture, making intangible risk culture measurable for the organization to manage until the desired risk culture is achieved. It is believed that a desired risk culture has positive impacts on organizational performance. The dimensions of risk culture proposed by various consultants can be presented as follows:

McKinsey and Company (2010) presented a risk culture framework as displayed in Figure 3.11. They suggested 10 factors indicating the failure of risk culture, clustered into 4 groups.

1) Transparency of risk comprises risk signaling communication, clarity of risk tolerance, and level of insight

2) Acknowledgment of risk comprises cautious confidence, constructive challenge of ideas, attitudes and actions, and openness about risks

3) Responsiveness of risk comprises the attention to respond to risk and speed of response

4) Respect for risk comprises compliance, cooperation instead of playing games for the benefits of one's own unit regardless whether the organization's damage is higher than its risk appetite

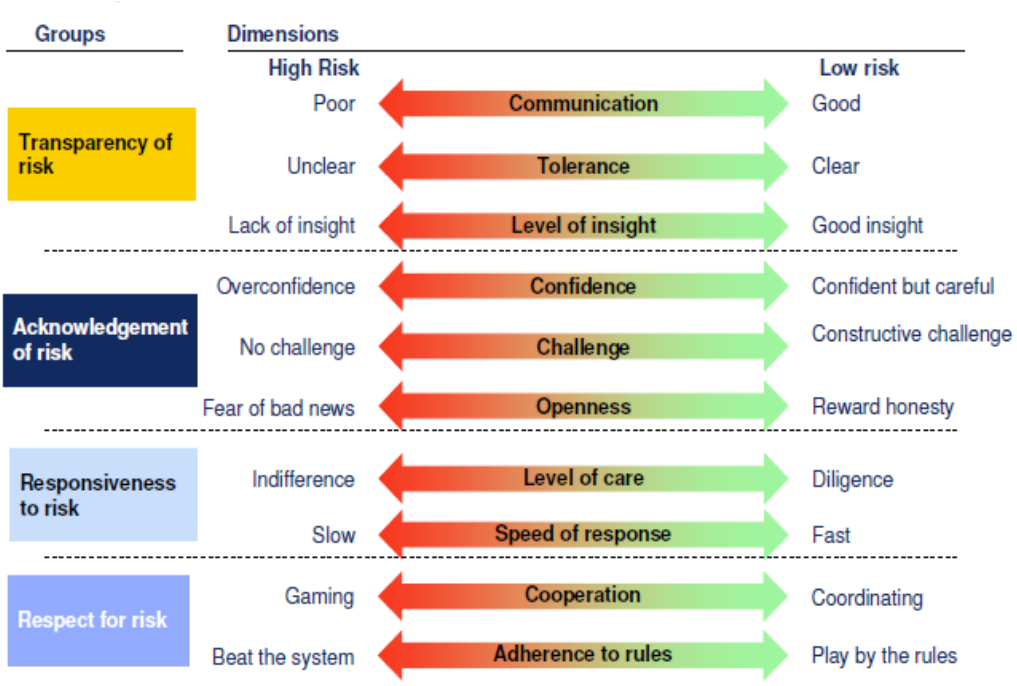

Figure 3.11 McKinsey's Risk Culture Framework

Source: McKinsey and Company 2010.

Deloitte (2010) developed a risk management framework consisting of 4 risk culture influencers and 16 indicators as follows:

1) Organization: This factor addresses how the organization's environment is structured and what it values. The four indicators are strategies and objectives, values and ethics, policies processes and procedures, and risk governance.

2) Relationships: This addresses the way in which the people in the organization interact with others. The four indicators under this influencer are challenges, management, leadership, and communication.

3) Motivation: This explains the reasons why people manage risks in the way they do. The indicators under this influencer are performance management, risk orientation, incentives, and accountability.

4) Risk competence: Risk competence describes the competency of the organization to manage overall risks. The indicators here include knowledge, skills, learning, recruitment, and induction.

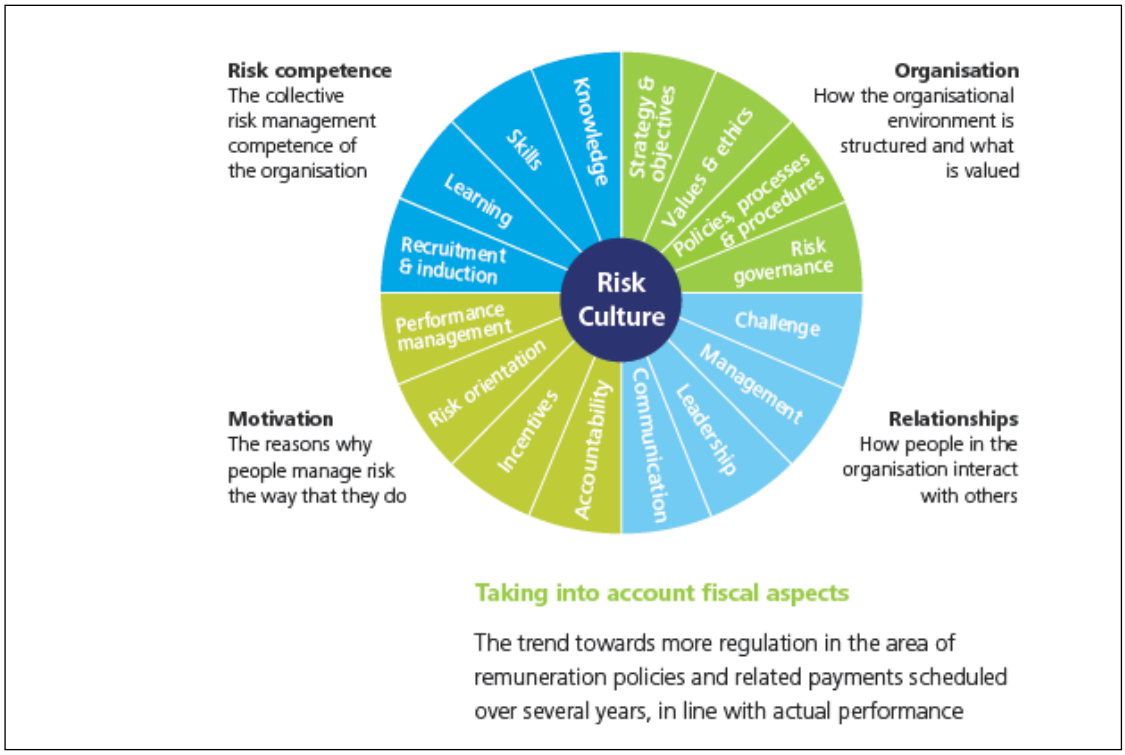

Figure 3.12 The Risk Culture Framework of Deloitte

Source: Deloitte, 2011**.**

KPMG (2011) proposed that there are three major factors influencing risk culture:

1) Tone at the top: Does the organization perceive risks as an important activity in achieving its objectives?

2) Risk ownership: Have risk ownership, risk management activities, and risk appetite been clearly defined?

3) Risk facilitation: Does the organization have a process in place to help the risk owner in applying policies and tools for decision making?

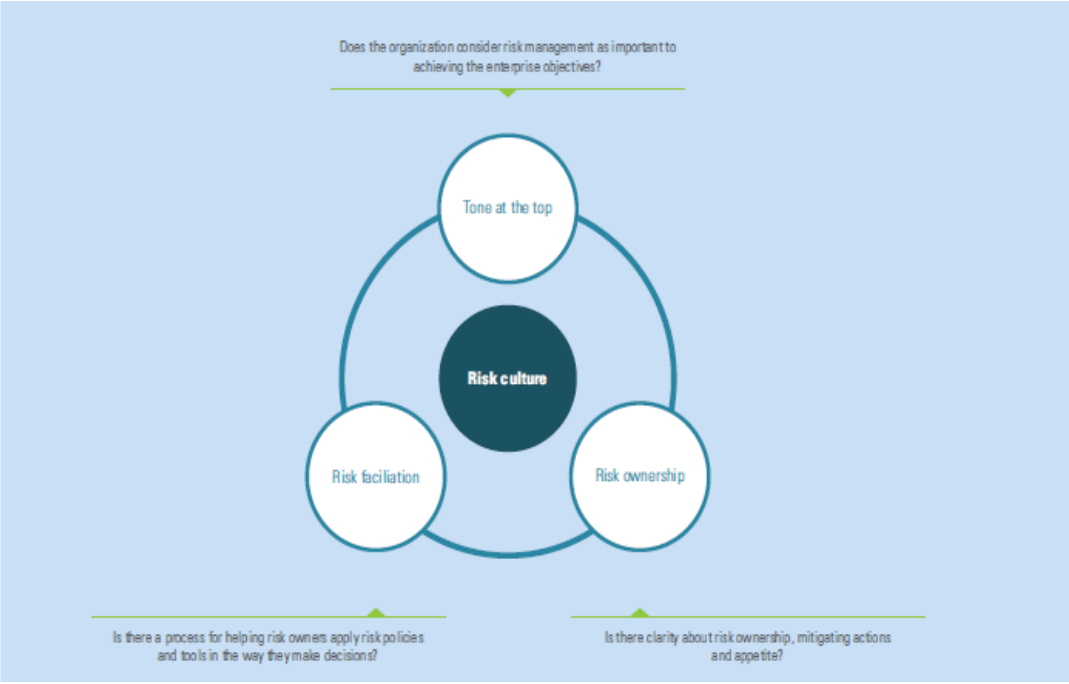

Figure 3.13 Factors Influencing the Risk Culture Proposed by KPMG
Source: KPMG, 2011.

PwC (2012) identified the critical indicators of effective risk management in a risk culture survey with four attributes and eight sub-attributes as follows: 1) Leadership and strategy consists of integrity and ethical values, and communication mission and objectives. 2) Accountability and reinforcement consist of the assignment of authority and responsibility, and human resource policies, practices and performance measurement, including motivation. 3) People and communication consist of the quality of information and communication, and commitment to competence (training). 4) Risk management and infrastructure consist of risk identification and assessment (tools and processes), and the establishment of reliable process and efficient control

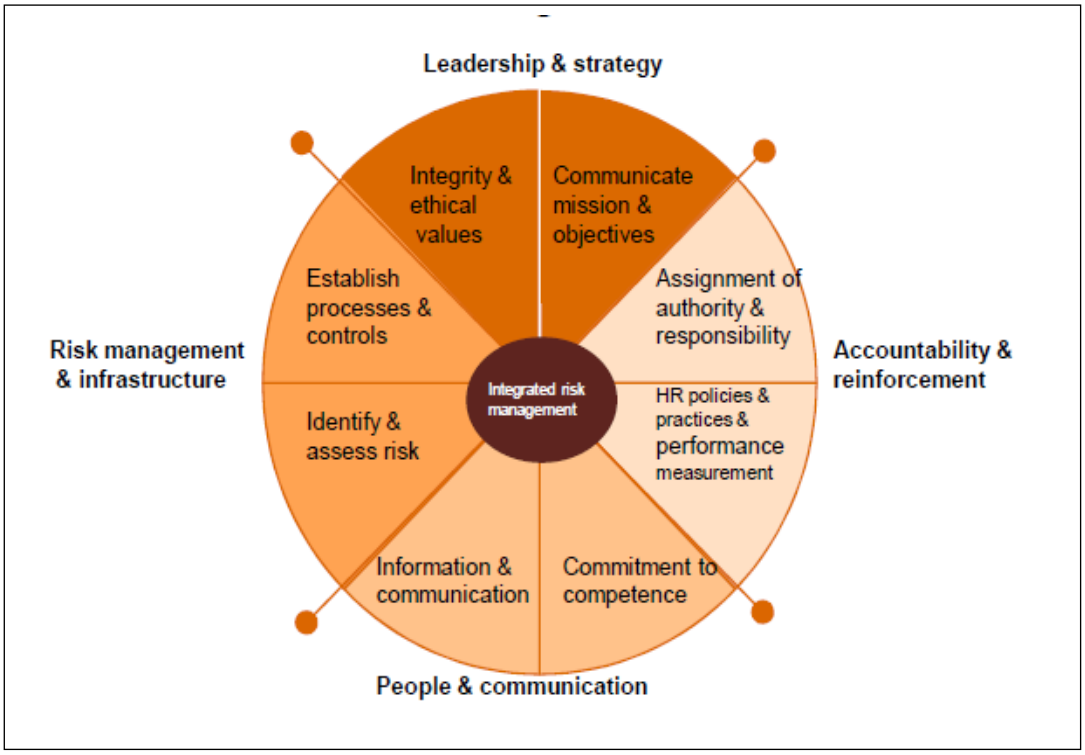

Figure 3.14 Critical Attributes for Effective Risk Management Identified by PwC
Source: PwC, 2012.

IRM (2012b) has developed a model of risk culture dimensions for the self-diagnosis and self-assessment of risk culture strength, and for gap analysis. The model serves to address the strengths, weaknesses, and necessary measures to improve risk culture. IRM identified eight aspects of risk culture in four areas:

1) Tone at the top comprises two aspects: risk leadership with clarity of direction, and dealing with bad news.

2) Governance comprises clarity of accountability for managing risk, and the transparency and timeliness of risk information.

3) Decision comprises well-informed risk decisions, and rewarding risk management and linking performance to risk management.

4) Competence comprises the availability of resources and the empowerment of risk management personnel, and the embedding of risk management skills across the organization.

Figure 3.15 Risk Culture Model by IRM

Source: IRM, 2012a.

IRM (2012a) defines risk culture factors as well as four areas of risk culture as follows:

1) Risk culture describes the values, beliefs, attitudes, knowledge, and understanding of risk and risk management shared by a group of people with a common purpose within an organization. The risk culture may be concrete or an abstract embedded within an organization and unconsciously expressed. It is inherent but subject to change. The risk culture comprises four key elements: tone at the top, governance, competency, and decision making.

2) Tone at the top means the attitude of the organization's top executives toward the support of risk management. The tone at the top is determined by two aspects: risk leadership and dealing with bad news.

(1) Risk leadership describes the clarity of the risk management support of top executives, the expectations and trust in risk management clearly and concretely expressed by top executives, the establishment of the clear risk management strategic direction of an organization, as well as the capability of top executives in communicating expectations and trust to employees across an organization for correct understanding.

(2) Dealing with bad news means that top executives encourage risk information communication as well as early, open, and straightforward disclosure of bad news across an organization in order to assure that risks/bad news are handled

in a timely way. Top management supports and rewards employees that identify and communicate organizational risks for immediate management. Dealing with bad news also suggests the capabilities of top executives in learning and utilizing both successful and failed risk decisions to create the competitive advantage of the organization.

3) Governance means the risk management based on good governance, comprising two elements: accountability and governance of function managing risks, and the transparency of risk information.

(1) Accountability means that risk management accountability and risk ownership are clearly defined and communicated across the entity. Risk accountability is identified in a job description and the performance targets of the risk owners. The risk management unit performs an advanced role to assure that risk information is efficiently communicated.

(2) Risk transparency means the risk information is transparently revealed and timely communicated across the organization. The interchange of knowledge about risk management, both successful and fairly effective cases, happens within the organization.

4) Competency describes the competence of employees working on ERM that enables effective risk management, comprising the resources of the unit managing risks and the risk skills of the staff.

(1) Risk resources describe the availability of resources and the readiness of the risk management unit to be a valuable facilitator in fostering strategic thinking about the risks threatening the business, and in building an efficient risk culture. The risk management unit receives full support from top executives to perform. Other units in the organization consider the risk management unit accountable and acceptable, supporting its operation to achieve objectives and the mission efficiently.

(2) Risk skills mean that the organization encourages risk skill development as an advanced strategy by providing training and programs to raise the awareness of risks. The organization acknowledges that risk competency and caliber are valuable assets, and develops and promotes a risk champion structure throughout the entity for more effective risk management.

5) Decision making describes the decisions about the risk of an organization, comprising informed risk decisions and rewarding appropriate risk taking.

(1) Risk decisions mean that the risk information is incorporated into every important business decision of an organization and the process of devising business plans. The risk appetite of an organization is clearly communicated and acknowledged. Risk information is revealed in a transparent manner for executives to apply for timely decisions.

(2) Rewarding appropriate risk management suggests that the organization applies a performance management process as a tool to give incentives and rewards to employees that understand and appropriately manage the risk challenges of the organization, as well as punishes inappropriate risk management, for instance, being overly risk averse or overly risk seeking. The capability to manage important risks is considered a crucial skill and is a criterion in succession planning.

The different concepts of risk culture reviewed in this section are summarized in Table 3.10.

Table 3.10 Summary of Indicators for Risk Culture from the Literature Review

McKinsey (2010)	Deloitte (2010)	KPMG (2011)	PWC (2012)	IRM (2012)
Transparency of Risk 1) Communication 2) Tolerance 3)Level of Insight	Organization 1) Strategy& Objectives 2) Values & Ethics 3) Policies, processes & procedures 4) Risk Governance	Tone at the Top	Leadership & Strategy 1) Integrity& Ethical Values 2) Communicate Mission & Objectives	Tone at the Top 1)Risk Leadership 2) Dealing with Bad News
Acknowledgement of Risk 1) Confidence 2) Challenge	Relationships 1) Challenge 2) Management 3) Leadership	Risk Ownership	Accountability & Reinforcement 1)Assignment of Authority &	Governance 1)Accountability 2)Transparency

Table 3.10 (Continued)

McKinsey (2010)	Deloitte (2010)	KPMG (2011)	PWC (2012)	IRM (2012)
3)Openness	4)Communication		Responsibility 2)HR Policies & Practices & Performance Measurement	
Responsiveness to Risk 1) Level of Care 2) Speed of Response	Motivation 1) Performance Management 2)Risk Orientation 3)Incentives 4)Accountability	Risk Facilitation	People & Communication 1)Information & Communication 2)Commitment to Competence	Decision 1)Informed Risk Decision 2)Reward
Respect for Risk 1) Cooperation 2) Adherence to Rules	Risk Competence 1)Knowledge 2)Skill 3)Learning 4)Recruitment & Induction		Risk Management & Infrastructure 1)Establish Processes & Controls 2)Identify & Assess Risk	Competency 1)Risk Resources 2)Risk Skills

Bozeman and Kingsley (1998) attempted to determine if there is a variation in risk culture of public and private sectors, particularly regarding the issue claiming that executives in the public sector tend to avoid risks more than those in the private sector. The study did not suggest a difference; nevertheless, it found critical factors that influence risk culture. Organizations with red tape, a weak linkage between performance and promotion, and organizations related to or having a tight connection with elected government officials tend to be overly risk averse.

For this research, the author employed the framework proposed by IRM (2012b) to establish independent variables for risk culture analysis since it is the latest model that covers the critical areas proposed by academics and consultants reviewed in this chapter. IRM's framework is clear, easy to comprehend, and is uncomplicated. This model focuses only on cultural components, unlike other frameworks that

include factors for process. Further, IRM includes the influence of elected government officials on important decisions of an organization in the decision making area. This study aligns with the concept as it is conducted with state enterprises, where risk decisions may be influenced by politics.

The definition of risk culture in this study comprises three dimensions: tone at the top, governance, and decision. Competency is assessed separately as risk skills. The author defined each factor as follows:

1) Risk culture means the values, beliefs, attitudes, behaviors, knowledge, and understanding about risk and risk management shared by a group of people with a common purpose within an organization. Risk culture can be concrete or an abstract embedded in an organization and unconsciously expressed. It is inherent but capable of change. Risk culture is measured according to three critical factors: tone at the top, governance, and rewarding good decision making.

(1) Tone at the top means the attitude of an organization's top executives toward risk management.

(2) Governance means risk management based on the good governance concept.

(3) Decision making and rewarding appropriate decision **making** means decisions about the risks of an organization and rewarding for appropriate risk taking.

2) Competency means the competence of people whose work relates to the risks of an organization that enables efficient risk management.

3.5 Research Related to the Influences of Risk Management on Organizational Performance

The research papers on the relation between risk management effectiveness and performance or value-added for an organization are limited, partly because risk management is a new concept. In addition, identifying appropriate proxies for the evaluation of risk management effectiveness is a primary restriction in exploring such a relationship. The results from research on the impact of risk management on adding

value to an organization or improving performance have not provided definite conclusions; both positive relations and insignificant relations were found.

McShane, Nair and Rustambekov (2011) stated that research on the relation between ERM and performance is not only scarce, but the findings are variant so a conclusion on the relation between the two factors cannot be reached. One of the reasons may be limitation in identifying appropriate proxies. Their research applied the risk management ranking of insurance companies, rated by Standard and Poor, to evaluate the degree of effectiveness by assessing risk culture, risk controlling, new risk management, risk models, and strategic risk management. The value of an entity was evaluated using Tobin's Q. The controlled variables in the research were the size of the entity, financial leverage, systematic risk, profitability, cash flow volatility, grown opportunities, and complexity. The researchers found a positive relation between the higher ranking of traditional risk management (TRM) and enterprise value. However, they did not find value-added in enterprise value when the ranking of the ERM of the entity was higher than the TRM ranking or during the transition to ERM.

Beasley, Pagach and Warr (2008) applied the CRO appointment as a proxy to measure ERM effectiveness, assessing the reactions of the capital market on the CRO appointment. The results from financial and non-financial firms differed. Financial firms showed benefits from risk management, whereas non-financial firms displayed positive relations to the size of an entity and the volatility of recent incomes, but revealed negative relations to leverage and the cash flow to debt ratio. Nevertheless, the researchers pointed out the limitations of applying the CRO appointment as a proxy, stating that it may not cover the total boundary of risk management effectiveness.

Hoyt and Liebenberg (2011) also employed the CRO appointment as a proxy for risk management effectiveness. This research found a positive relation between enterprise value and the CRO appointment.

Gordon, Loeb and Tseng (2009) developed their own ERM index to study the relations between the performance of an enterprise and ERM. They found that the relation between ERM and performance was contingent upon key entity-specific factors.

Wang, Li and Zhou (2009) studied risk management effectiveness in order to find out if financial risk management increases the enterprise value. They studied non-ferrous metal listed companies in China and found that the results supported the hypothesis that risk management can increase enterprise value using Tobin's Q for the measure. The researchers also discovered factors that cause a company to perform better regarding financial risk management in the form of derivatives, including lower capital flexibility, higher financial distress cost, being larger in scale, and having higher ownership concentration and better profitability.

Tseng (2007) studied the effectiveness of risk management on the performance of the high-performing firm. The study found that the relation between performance and risk management was contingent upon an appropriate relation between risk management and five critical factor: environmental uncertainty, industry competition, firm size, firm complexity, and monitoring by the firm's board of directors. The researcher developed indicators for the evaluation of risk management effectiveness from the definition of the four objectives given by COSO.

In 2007, the Economist Intelligence Unit (EIU, 2007) surveyed 218 top executives around the world concerning their approach to risk management and their perception of the challenges and opportunities facing the organization. The EIU (2007) found at present that risk management is a core area of business practice, driven by the board and embedded at every level of the organization. In addition, the objective of implementing risk management is not only to avoid losses, but also to promote a reputation and enhance the competitive advantage of the organization.

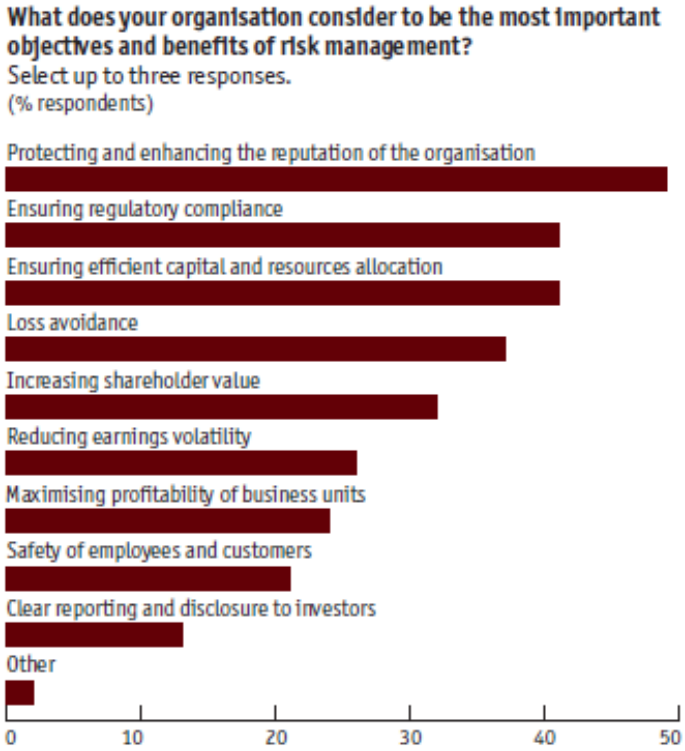

Figure 3.16 Benefits of Risk Management as Surveyed by EIU

Source: EIU, 2007.

In Thailand, research by Uthai Tanlamai and Pornpipat Juta (2007) indicated that the benefits that the state enterprises in Thailand gain from risk management are the reduction of potential financial losses, the systematization of the work process, and corporate image.

Table 3.11 Correlation Coefficient of Benefits from Risk Management

Variable	Mean, SD, N	1	2	3	4	5	6
1.Risk Management Score	2.48, 1.12, 51	1.000					
2. Systematize business process	1.44, 0.59, 45	0.122	1.000				
3. Create risk awareness	1.27, 0.66, 45	0.187	0.535**	1.000			
4. Create better corporate image	1.31, 0.60, 45	0.278*	0.335*	0.446**	1.000		
5. Create earning growth	0.96, 0.71, 45	0.036	0.451**	0.932**	0.414**	1.000	
6. Sustain level of earning	1.04, 0.74, 45	0.150	0.494**	0.570**	0.473**	0.805**	1.000
7. Improve liquidity	0.89, 0.65, 45	0.063	0.522**	0.478**	0.401**	0.608**	0.495**
8. Better cost control	0.93, 0.72, 45	0.155	0.492**	0.490**	0.469**	0.474**	0.371**
9. Reduce workload	0.40, 0.85, 43	0.082	0.301*	0.191	0.046	0.263	0.199
10. Reduce potential financial losses	1.51, 0.55, 45	0.180	0.590**	0.592**	0.418**	0.264	0.369**
11. Achieve organizational KPI	1.07, 0.81, 45	0.075	0.244	0.094	0.140	0.189	0.157
Variables	**Mean, SD, N**	**7**	**8**	**9**	**10**	**11**	
7. Improve liquidity	0.89, 0.65, 45	1.000					
8. Better cost control	0.93, 0.72, 45	0.514**	1.000				
9. Reduce workload	0.40, 0.85, 43	0.214	0.374**	1.000			
10. Reduce potential financial losses	1.51, 0.55, 45	0.392**	0.324*	0.223	1.000		
11. Achieve organizational KPI	1.07, 0.81, 45	-0.015	0.313*	0.296*	0.407**	1.000	

* p<=.05; ** p<= .01

Source: Uthai Tanlamai and Pornpipat Juta, 2007.

Note: *p<=.05

**p<=.01

Furthermore, Uthai Tanlamai and Pornpipat Juta (2007) studied the values of risk management criteria on the performance of state enterprises in Thailand in order to assess the effectiveness of risk management regarding state enterprises using the risk management score evaluated by the TRIS Corporation as a proxy. The analysis results showed that the state enterprises achieving a high score for risk management in the previous year generated higher return on assets the year after, as well as the increased competency of employees in generating higher benefits for the entity. In addition, the state enterprises receiving a high score exhibited a high cost of risk management. In conclusion, by establishing concrete risk management in state enterprises and applying it to create value-added for the organization, state enterprises can generate higher profits; however, the cost of risk management is also high.

The study included the dimensions of performance evaluation, types of measures, and example of indicators, as shown in Table 3.14. The researchers stated that despite the attempts to distinguish dimensions and types of measures and indicators, identifying appropriate categories and indicators is contingent upon the objectives of the entities. Practically, difficulties in finding data to apply as an

indicator, the availability of data, and the reliability of data must be taken into consideration.

Table 3.12 Dimensions of Performance, Types of Measures, and Financial and Non-financial Indicators

Dimensions of Performance	Types of Measures	Selected Financial and Non-financial Indicators
Competitiveness	▪ Relative market share and position ▪ Sales growth ▪ Measures of the customer base	Customer satisfaction, market share, sales growth, Number of new services
Financial performance	▪ Profitability ▪ Liquidity ▪ Capital Structure ▪ Market Ratio	Net profit, net income, ROI, sales, operating income
Quality of service	▪ Reliability ▪ Responsiveness ▪ Aesthetics/ appearance ▪ Cleanliness/ tidiness ▪ Comfort ▪ Friendliness ▪ Communication ▪ Courtesy ▪ Competence ▪ Access ▪ Availability ▪ Security	Product quality, Number of customer complaint, Number of service being interrupted, Service lead time
Flexibility	▪ Volume flexibility ▪ Delivery speed flexibility ▪ Specification flexibility	Capacity utilization
Resource utilization	▪ Productivity ▪ Efficiency	Employee efficiency
Innovation	▪ Performance of the innovation process ▪ Performance of individual innovations	Number of employee suggestions

Source: Uthai Tanlamai and Pornpipat Juta, 2007.

Chadathorn Phuakhom (2010) conducted a survey to examine if effective ERM is related to the financial performance of an organization, and which components of the COSO's risk management framework affected financial performance the most. The research population included the audit committee, the finance and accounting department manager, the accounting division manager, the internal audit division manager, and the internal auditor. The results suggested that objective setting has a positive impact on the return on assets (ROA) and the return on equity (ROE) the most. Objective setting is a crucial preliminary condition that can predict the profitability of an enterprise.

3.5.1 Risk Management Effectiveness

A review of the literature on the influence of risk management on the performance of an organization revealed that researchers employ different indicators to measure the level or effectiveness of risk management, from basic indicators such as CRO appointment and the effectiveness indicators adapted from the four objectives defined in COSO framework to complicated and standardized indicators such as the risk management ranking rated by Standard & Poor, which measures risk culture, risk control, new risk management, risk models, and the strategic risk management dimension.

In Thailand, the SEPO, acting for the Ministry of Finance, has developed indicators to measure the risk management of state enterprises since 2004 and has continuously improved those indicators. Risk management evaluation criteria comprise two parts. The first part follows the COSO ERM framework, while the second part aims to improve the efficiency of risk management, i.e. good IT management, and setting a risk-management support environment and culture as discussed in Chapter 2 Section 2.2 Organizational management Evaluation Criteria – Risk Management.

For this research, the author applied the risk management evaluation score rated by TRIS Corporation Limited (TRIS), the SEPO's consultant, as an indicator for the risk management variable. This study defined risk management efficiency in terms of the evaluation score for risk management performed by state enterprises as appraised by TRIS under the evaluation system of the Ministry of Finance. The evaluation scores were classified into level 1 – level 5, where level 1 means minimal risk management, up to level 5, where risk management is embedded as a part of the culture leading to value-added for the organization.

3.5.2 Performance

The majority of research on performance evaluation measure financial operating performance, for instance, return on assets (ROA), return on equity (ROE), and firm value applies Tobin's Q ratio (applied to listed companies).

Academics have studied tools for organization performance evaluation since 1960. The balanced scorecard (BSC), a tool commonly employed for organization

evaluation, was developed in early 1990s by Robert Kaplan and David Norton to assess every aspect of the strategic performance of an organization. Enterprise executives previously focused on financial indicators only when they evaluated performance. The BSC evaluates four perspectives of measurement and evaluation:

1) The financial perspective
2) The customer perspective
3) The internal process perspective
4) The learning and growth perspective

As for Thai state enterprise evaluation, the SEPO has defined factors for measuring the effectiveness of the performance of state enterprises in three areas, as mentioned in Chapter 2, which are the following:

1) Policy observance
2) Performance of the organization

(1) Financial performance, selected from six basic indicators, as follows:

Financial indicator	Objectives
1. EVA	1. To measure profitability and/or asset management
2. ROA	2. To measure asset management
3. Profitability: EBITDA, profit margin, etc.	3. To measure profitability
4. Human Productivity: net profit/ personnel	4. To measure profitability
5. Cost: cost/ personnel, cost/ unit product or serviced, etc.	5. To measure profitability with cost controlled
6. Debt Service Coverage Ratio (DSCR)	6. To measure solvency

(2) Non-financial performance is measured from the indicators reflecting the performance of state enterprises, mission fulfillment, and the standard indicators of the industry. Non-financial performance indicators are limited to no more than five indicators, as illustrated in the following example.

(Non-financial Indicators)

(1) Human Productivity/Productivity

(2) Utilization

(3) Loss/Defect

(4) Quality of product/service

(5) Etc.

3) Organizational management comprises the following:

(1) Board of directors' roles and responsibilities

(2) Risk management

(3) Internal control

(4) Internal auditing

(5) Information technology management

(6) Human resource management

The BSC perspectives were adopted to develop indicators and to evaluate the performance of state enterprises.

Though the balanced scorecard applies to both financial and non-financial drivers as well as leading indicators, it does not concentrate on measuring the value-added for the entity. Moreover, it is not applicable to the ranking of the components of the BSC (SEPO, 2010). Hence, the Ministry of Finance has introduced economic value management (EVM) and economic profit (EP) to evaluate state enterprises concurrent with the BSC since 2006. The EP and EP drivers center on creating value-added for an organization; nevertheless, they only function as lagging indicators, lacking focus on non-financial drivers. Implementing the BSC in conjunction with appropriate EP evaluation provides indicators for appraisal for every aspect of performance, enabling state enterprises to prioritize activities that create the highest value-added, and determining clear goals to generate the highest value-added for the enterprise and investors in both short and long terms.

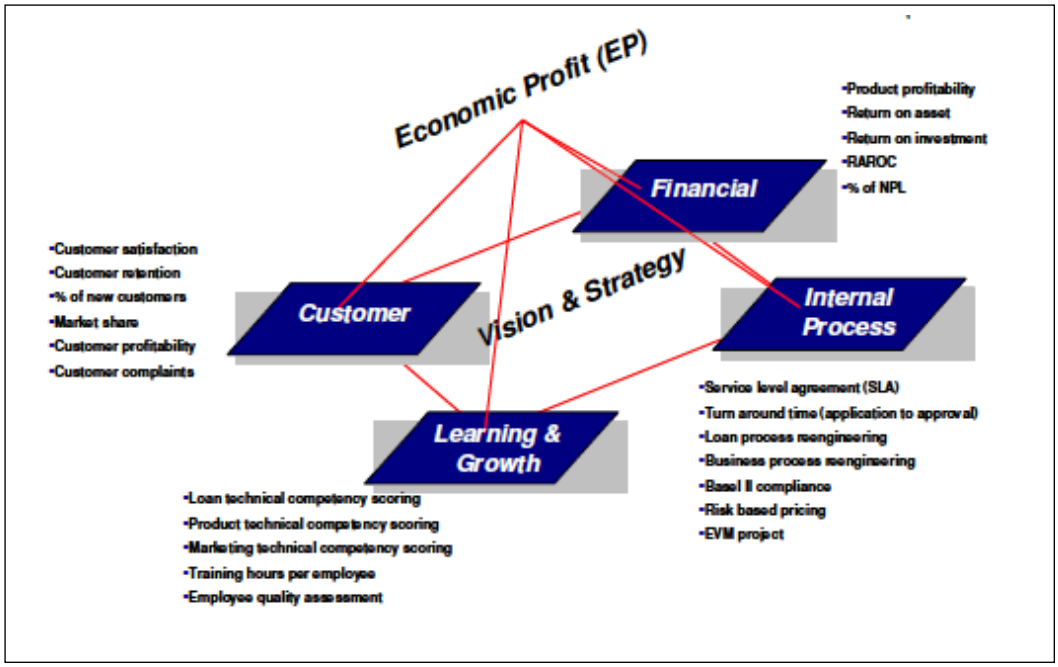

Figure 3.17 Balanced Scorecard (BSC) and Economic Profit (EP) Perspective
Source: SEPO, 2010.

Economic profit is measurement of the financial value of an enterprise in EVM, accentuating the capital of an enterprise by measuring the net operating profit after taxes against the invested capital in order to find how much the organization has generated. EP is the profit that an enterprise has generated that is higher than expected by creditors and stockholders. It can be calculated using the following formula:

EP=NOPAT–(Invested Capital × WACC)

where NOPAT is net operating profit after taxes.

Invested capital is the total amount of money that has been endowed to a company by the debt holders and stockholders.

WACC is shortened from the weighted average cost of capital, the average of the minimum rate of return which a company must earn for all of its security holders to compensate for risks that the investors take, both in debts and capital.

Adjustment is the accounting adjustment for generating an economic financial statement in compliance with the enterprise value-adding evaluation.

As for the variables on performance, since the SEPO has not published the EP of each state enterprise, the author applied an overall evaluation score for each area

assessed by TRIS as indicators. The three evaluated areas were: 1) policy compliance, 2) financial and non-financial performance, and 3) organizational management. Listed enterprises were evaluated for the two latter areas only.

The author defined performance as the financial and non-financial outcomes of the main operational activities of state enterprises, emphasizing financial competency comprising: 1) the score of the overall operation of state enterprises undertaken by the Ministry of Finance evaluation system, 2) return on equity, and 3) cost to income.

1) The state enterprise performance evaluation score means the evaluation score of each state enterprise that undertook the performance evaluation system initiated by the Ministry of Finance, as appraised by TRIS Corporation (2002). It is the summation of the score from 3 areas: policy compliance, financial and non-financial performance, and the organizational management for non-listed state enterprises. The scores for the listed state enterprises came from the two latter areas since they are not assessed for policy compliance. The scores were classified into levels 1 to 5, where 1 was the lowest and 5 was the highest.

2) Return on equity (ROE) means the amount of net income returned as a percentage of the stockholders' equity, or net profit divided by the stockholders' equity.

3) Cost to income means the operating cost as a percentage of the operating income, or expenses divided by income.

CHAPTER 4

CONCEPTUAL FRAMEWORK

The conceptual framework for this research comprises two components, as illustrated in Figure 4.1. One component includes the factors related to risk management effectiveness, which are the size of the entity, investment in risk management information technology, investment in the human resources associated with risk management, the organizational structure, risk competency, and risk culture. The other component is risk management effectiveness, which is related to the performance of state enterprises.

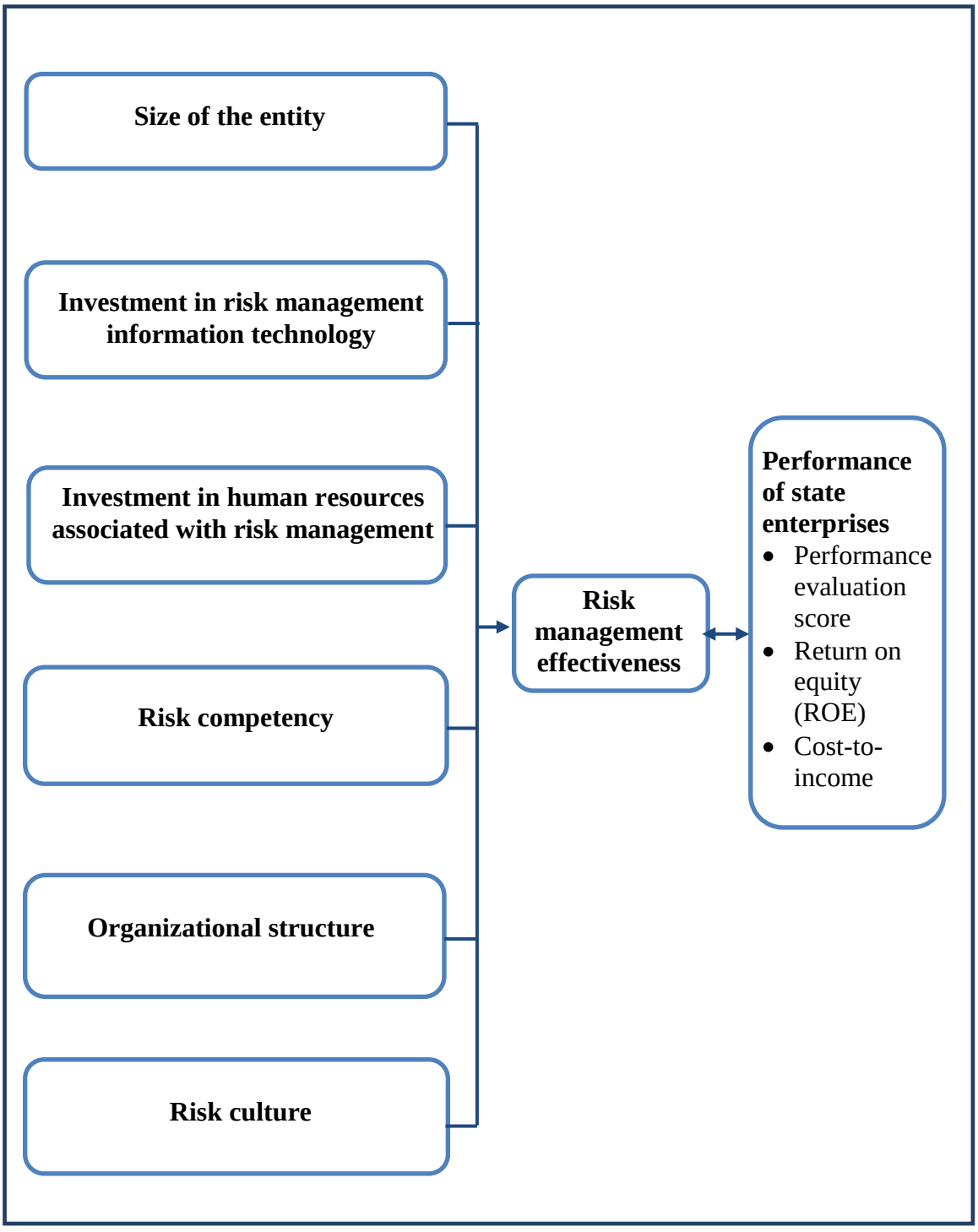

Figure 4.1 Conceptual Framework

This study set out to prove the following three hypotheses:

Hypothesis 1: The size of an entity, investment in risk management IT, investment in human resources associated with risk management, organizational structure, risk competency, and risk culture are factors that have a positive relation with risk management effectiveness.

Hypothesis 2: The size of an entity, investment in risk management IT, investment in human resources associated with risk management, organizational structure, risk competency, and risk culture are factors that have positive impacts on risk management effectiveness.

Hypothesis 3: Risk management effectiveness has a positive relation with the performance of state enterprises.

Operational definitions:

1) Size of an entity means the size of state enterprises determined by the value of their total asset, classified into three sizes: large, medium, and small. Large means that the value of total assets is more than 50,000 million baht, medium size has the value of total assets less than 50,000 million baht but more than 5,000 million baht, and small size means that the value of total assets is less than 5,000 million baht.

2) Investment in risk management information technology (IT) means the cost of establishing an IT system to support the risk management of an organization, measured according to the total value of investment from the year in which the state enterprise began to participate in the SEPA evaluation system to the year before this research was conducted.

3) Investment in human resources associated with risk management means the expenses allocated for staff training in the areas related to enterprise risk management.

4) Risk competency means the competence that enhances the effective risk management of state enterprise personnel, whose responsibilities are related to enterprise risk management.

5) Organizational structure means that the risk management unit that enhances effective risk management is clearly defined in the structure of the organization, for example, a dedicated risk management unit and a chief risk officer (CRO) appointment.

(1) A dedicated work unit means that a work unit is set up to specifically handle risk management.

(2) Chief risk officer (CRO) appointment means that an organization appoints a chief risk officer (CRO) to take responsible for developing and implementing risk management to achieve effectiveness..

6) Risk culture means the values, beliefs, attitudes, knowledge, and understanding of risk and risk management shared by a group of people with a common purpose within an organization. Risk culture may be concrete or an abstract embedded within the organization and unconsciously expressed. It is inherent but subject to change. This research measured risk culture according to three critical dimensions; tone at the top, governance, and rewarding appropriate decision making.

(1) Tone at the top means the attitudes of an organization's top executives toward risk management.

(2) Governance means risk management based on good governance.

(3) Decision making and rewarding appropriate decision making means the act of making decisions about the risks of an organization and rewarding for appropriate risk taking.

7) Risk management effectiveness refers to the evaluation score of risk management performed by state enterprises that have undertaken the appraisal system initiated by the Ministry of Finance, as evaluated by TRIS Corporation Limited. The scores were classified into levels 1 to 5, where level 1 means minimal risk management, up to level 5 where risk management is embedded as a part of the culture leading to value-added for the organization.

8) The performance of state enterprises means the financial and non-financial outcomes that reflect the operations of state enterprises. This research emphasizes financial capability by assessing: 1) the score of the overall performance of the state enterprises undertaking the Ministry of Finance's evaluation system, 2) return on equity, and 3) cost-to-income.

(1) The score of the overall performance of state enterprises means the evaluation score of each state enterprise undertaking the Ministry of Finance's evaluation system, as appraised by TRIS Corporation Limited. The evaluation score is

the summation of the scores from three areas: policy compliance, financial and non-financial performance, and organization management for non-listed state enterprises. The scores for the listed state enterprises came from the two latter areas since they were not assessed for policy compliance. The scores were classified into levels 1 to 5, where 1 was the lowest and 5 was the highest.

(2) Return on equity (ROE) means the amount of net income returned as a percentage of shareholders' equity, or net profit, divided by the shareholders' equity.

(3) Cost-to-income means the operating cost as a percentage of the operating income, or expenses divided by income.

CHAPTER 5

RESEARCH METHODOLOGY

This chapter discusses the research methodology employed to prove the conceptual framework and hypotheses presented in Chapter 4. The first section describes the research population and sampling**.** Data collection is explained in section 5.2, and the last section explains the data analysis. The research design and methodology for this study were based on quantitative and qualitative research.

5.1 Population and Sampling

The population for this study was every state enterprise undertaking the state enterprise performance appraisal (SEPA) system. According to the information provided by the SEPO, 54 state enterprises were evaluated under the SEPA system at the end of 2013.

The sampling for the purpose of proving the hypotheses can be identified by the data collection methods.

5.1.1 Questionnaire

Two sets of questionnaire were delivered to every state enterprise in 9 sectors of business.

1) Set A-A questionnaire for the risk management unit was delivered to the entire population.

2) Set B-A questionnaire designed for the executive of each state enterprise asking about risk culture. The purposive sampling technic was used, targeting a group of executives at the department level of each state enterprise.

5.1.2 In-depth Interview

The executives from three state enterprises undertaking the SEPA that implemented best practice on risk management, out of seven entities in Group A,

from three business sectors, were selected for an interview. The state enterprises chosen for the case study were PTT Public Company Limited (PTT) from the energy sector, Aeronautical Radio of Thailand Ltd. (AEROTHAI) from the transportation sector, and the Bank for Agriculture and Agricultural Cooperatives (BAAC) representing the financial institution sector.

5.2 Data Collection

The collection of both primary and secondary data was conducted through a questionnaire and in-depth interview as follows.

5.2.1 Secondary Data Collection

Secondary data consisting of the results of risk management evaluation, the overall performance appraisal of state enterprises, and risk management appraisal criteria were taken from a database verified by the SEPO and TRIS, a consultant commissioned by the SEPO to evaluate the performance of state enterprises. The data were studied to develop a questionnaire for the executives and in-depth interview planning.

Since state enterprises have gradually undertaken the SEPA system, which incorporates risk management across performance evaluation criteria, the latest available secondary data from the year 2013 on risk management effectiveness, which was a variable for the first part of the research framework, were unavailable for some enterprises. Hence, this study applied evaluation scores for the risk management category from the last year before those state enterprises transitioned to the new system in lieu.

The variables for risk the management effectiveness and performance of state enterprises used to examine the correlation as defined in the second component of the research framework were the data for the entire state enterprise sector during 2004-2013. The number of state enterprises having evaluation scores for risk management varies in each year as more enterprises are transitioning to the SEPA system, where risk management is not a specific category of performance evaluation.

5.2.2 Primary Data Collection was conducted using two methods.

1) Through a questionnaire consisting of open-ended and close-ended questions in order to acquire diverse and complete answers, covering as many issues within the framework as possible. The questionnaire was used to collect data on the independent variables, which were six factors that were considered to have an impact on risk management effectiveness as proposed in the first component of the conceptual framework.

2) An in-depth interview conducted with the executives in charge of the risk management of state enterprises in the sample group, which were three state enterprises implementing best practice regarding risk management out of seven enterprises identified as Group A, representing three business sectors. The selected state enterprises were PTT Public Company Limited (PTT) from the energy sector, Aeronautical Radio of Thailand Ltd. (AEROTHAI) from the transportation sector, and the Bank for Agriculture and Agricultural Cooperatives (BAAC) representing the financial institution sector. An in-depth interview was the tool used to support the results of the quantitative research in proving the hypotheses of this study.

The data collection period was from October 2014 to February 2015.

5.3 Statistical Analysis

5.3.1 Questionnaire Analysis

A data analysis was performed using SPSS for Windows Version 16 software to determine the following statistics.

1) To analyze the characteristics of the variables using descriptive statistics, percentage, mean, and maximum, minimum, and standard deviation

2) To answer objective 1 of this research by proving hypothesis 1. The relation between the factors and risk management effectiveness was examined by applying analysis of variance (ANOVA) to test the nominal independent variables, and Pearson correlation coefficient (r) was used to measure the interval independent variables and the ratio scale.

3) To prove hypothesis 2 in order to find an answer to objective 1 by exploring the influences of the various factors on risk management effectiveness,

applying stepwise regression for multiple regressing analysis, and finding the standardized regression coefficient (*ß*), which determined the influence of the independent variable on the dependent variable

4) To prove hypothesis 3 in order to answer objective 2 by finding the Pearson correlation coefficient (r) between risk management effectiveness and the performance of the state enterprises in Thailand.

5.3.2 Interview Analysis

The in-depth interviews conducted with a risk management director or a representative of each state enterprise were documented and recorded in order to analyze the concerned points.

5.4 Variables, Operational Definitions, and Proxies

Table 5.1 Variables, Operational Definition, Questions/Proxies, and Level of Measurement

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
1. Size of an entity means the size of state enterprises determined by the value of their total asset, classified into three sizes; large, medium and small. Large means the value of total asset is more than 50,000 million baht, medium size has the value of total asset less than 50,000 million baht but more than 5,000 million baht, and small size means the value of total asset is less than 5,000 million baht.	Beasley (2005)	Total asset of the enterprise in 2013	Ratio Variable
2. Investment in risk management information technology (IT) means the cost of establishing an IT system to support enterprise risk management.	Na Ranong (2009) Tanlamai (2007)	Amount of funds invested in establishing IT to support risk management from the year the state enterprise undertook the SEPA evaluation system to the year before this research was conducted.	Ratio Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
3. Investment in human resources associated with risk management means the expenses allocated for training of staff in areas related to enterprise risk management.	KPMG(1999) PWC(2004) Na Ranong (2009) Tanlamai (2007)	Training/seminar expenses per person per annum the organization spent the previous year	Ratio Variable
4. Risk competency means the competence that enhances the effective risk management of state enterprise personnel whose responsibilities are related to enterprise risk management.			
1) Engagement in main working group means the risk management unit has responsibility as a part of the main working groups of the enterprise.	IRM (2012)	1) Does the risk management unit have responsibilities in the main working groups of your organization?	Nominal Variable
2) Risk officer appointment means the organization defines the role of the risk officer in its structure and appoints risk officers across the entity.	COSO (2004)	2) Does your organization include a risk officer in its structure and appoint risk officers across the enterprise?	Nominal Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
3) The opinions of the people in the organization regarding risk management competency means the degree of opinions of the people in the entity regarding the risk competency of the organization.	COSO (2004) Deloitte (2010) McKinsey (2010) KPMG (2011) PWC (2012) IRM (2012)	3) To what extent do you agree that the risk management unit is resourceful and skillful? 4) To what extent do you agree that the risk management unit is trustworthy and accepted by other units throughout the organization? 5) To what extent do you agree that your organization thoroughly supports the development of the advanced risk management skill of staff by providing training and development programs? 6) To what extent do you agree that your organization is insightful concerning risk management?	Interval Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
		7) To what extent do you agree that the risk management competence of your enterprise is commonly accepted as an essential skill for the organization?	
5. Risk management organizational structure means that a risk management unit that enhances effective risk management is clearly defined in the structure of the organization, for example, a dedicated risk management unit and a chief risk officer (CRO) appointment.			
1) Dedicated risk management unit appointment means that a work unit is assigned to dedicatedly handle risk management.	Tanlamai (2007)	Does your organization designate a dedicated risk management unit?	Nominal Variable
2) A chief risk officer (CRO) appointment means that the organization appoints a chief risk officer (CRO) to be responsible for developing and implementing risk management to achieve effectiveness.	Beasley (2005)	Does your organization have a chief risk officer (CRO)?	Nominal Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
6. Risk culture means the values, beliefs, attitudes, knowledge, and understanding about risk and risk management shared by a group of people with a common purpose within the organization. Risk culture may be concrete or an abstract embedded within the organization and unconsciously expressed. It is inherent but is subject to change. This research measured risk culture according to three critical dimensions: tone at the top, governance, and rewarding appropriate decision making.			
1) Tone at the top means the attitudes of the organization's top executives toward risk management**.**	COSO (2004) Deloitte (2010) McKinsey (2010) KPMG (2011) PWC (2012) IRM (2012)	1) Frequency of risk management committee meetings the previous year 2) Frequency of the CEOs attending risk management committee meetings the previous year 3) Frequency of top executives (first, second, and third most senior executives) attending risk management committee meetings the previous year	Nominal Variable /Interval Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
		4) Opinions on attitudes of the enterprise's top executive on risk management support, comprising 6 questions: 1) To what extent do you agree that your CEO clearly supports and gives priority to risk management?; 2) Has your CEO defined risk management strategies with clear and concrete objectives?; 3) Can your CEO communicate to ensure proper understanding throughout the enterprise?; 4) Does your CEO encourage transparent, direct, and rapid information disclosure across the enterprise?; 5)	

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
		Does your CEO encourage early disclosure of the organization's bad news?; 6) Is your CEO highly capable of learning from both successful and missed risk management decisions, as well as applying knowledge to create a competitive advantage for the organization?	
2) Governance means risk management based on good governance.	COSO (2004) Deloitte (2010) McKinsey (2010) KPMG (2011) PWC (2012)	1) Does your organization delegate accountability in managing risk? 2) Does your organization clearly define the operational objectives of risk owners?	Nominal Variable / Interval Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
	IRM (2012)	3) Does your organization transparently disclose its risk information? 4) Are the financial statements of your organization timely? 5) The opinions on risk management applying the good governance principle comprised 4 questions: 1) To what extent do you agree that the risk management unit has an advanced role in assuring the organization that risk information is efficiently communicated?; 2) Is the risk information of the organization transparently disclosed?; 3) Is the risk information communicated in a	

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
		timely way throughout the organization; 4) Is knowledge on risk management, both the successful and missed cases, efficiently exchanged across the organization?	
3) Decision making and rewarding appropriate decision making mean the act of making decisions about the risks of an organization and rewarding appropriate risk taking.	Bozeman, B. and Kingsley, G. (1998) COSO (2004) McKinsey (2010) Deloitte (2010) PWC (2012) IRM (2012)	The opinions on risk decisions and rewarding appropriate risk management comprised 4 questions: 1) Is risk information integrated in the important business decisions and business planning of the organization?; 2) Are important business decisions affected by political influence?; 3) Does your organization apply risk management-	Nominal Variable / Interval Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
		related indicators for performance evaluation and reward people that are insightful about the risks challenging the entity and manage those challenges appropriately?; and 4) Does your organization include risk competency as a criterion for succession planning?	
7. Risk management effectiveness refers to the evaluation scores of risk management performed by state enterprises that have undertaken the appraisal system initiated by the Ministry of Finance, as evaluated by TRIS Corporation Limited. The scores were classified into levels 1 to 5, where level 1 means minimal risk management,	SEPO (2012)	Scores of risk management evaluation as appraised by TRIS Corporation Limited for the years 2004 - 2013	Interval Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
up to level 5 where risk management is embedded as a part of the culture leading to value-added for the organization.			
8. The performance of state enterprises means the financial and non-financial outcomes that reflect the operations of state enterprises. This research emphasized financial capability by assessing the following: 1) the score of the overall performance of state enterprises undertaking the Ministry of Finance's evaluation system; 2) return on equity; and 3) cost-to-income.			
1) The score for the overall operation of state enterprises means the evaluation score of each state enterprise undertaking the Ministry of Finance's evaluation system, as appraised by TRIS Corporation Limited. The evaluation score is the summation of the scores from three areas: policy compliance, financial and non-financial performance, and organization management for non-listed state enterprises. The scores for the listed	SEPO (2013)	State enterprise evaluation score, which is a summation of the scores from 3 areas: policy compliance, financial and non-financial performance, and organization management as appraised by TRIS Corporation Limited for the years 2004 – 2013	Interval Variable

Table 5.1 (Continued)

Variable and Operational Definition	Reference	Question/Proxy	Level of Measurement
state enterprises came from two latter areas since they were not assessed for policy compliance. The scores were classified into levels 1 to 5, where 1 was the lowest and 5 was the highest.			
2) Return on equity (ROE) means the amount of net income returned as a percentage of the shareholders' equity, or net profit divided by the shareholders' equity.	Tanlamai and Juta (2007) SEPO (2013) EIU (2007) Accenture (2011)	Return on Equity (ROE) ratio for the years 2004 – 2013	Ratio Variable
3) Cost to income means the operating cost as a percentage of operating income, or expenses divided by income.	SEPO (2013) Tanlamai and Juta (2007)	Cost-to-income ratio for the years 2004 – 2013	Ratio Variable

CHAPTER 6

RESEARCH RESULTS

This chaper presents the qualitative and quantitive results of the research. The analysis of descriptive statistics, correlation, and multiple regressions provides answers to objective 1-3 of the research, while the results of in-depth interview analysis answer objective 4.

6.1 Quantitative Analysis

6.1.1 Quantitative Analysis-Finding Answers to Objective 1

6.1.1.1 General Information

The questionnaire was delivered to 57 state enterprises, and 36 enterprises returned the responded copies, resulting in a 63% response rate. Table 6.1 displays the numbers of respondents by business sector.

Table 6.1 Number and Percentage of Respondents by Sector of State Enterprises

Business Sector	Total Number of State Enterprises		Respondent		
	Number	Percentage	Number	Percentage	Percentage of Total
1. Engergy	4	7	4	11	7
2. Transport	11	19	9	25	16
3. Communication	4	7	3	8	5
4. Agriculture	6	11	3	8	5
5. Public Utility	6	11	5	14	9
6. Social and Technology	5	9	2	6	4

Table 6.1 (Continued)

Business Sector	Total Number of State Enterprises		Respondent		
	Number	Percentage	Number	Percentage	Percentage of Total
7. Industry and Trade	8	14	4	11	7
8. Natural Resource	3	5	2	6	4
9. Financial Institution	10	17	4	11	7
Total	57	100	36	100	63

Among the samples in the nine sectors, most respondents represented the transport sector (25%). The number of respondents in the public utility sector was second at 14%. Enterprises in two sectors, natural resource and the social and technology sectors, responded the least, both at 6%.

Table 6.2 Variables, Abbreviations, and Level of Measurement Applied for Analysis

Variable	Abbreviation	Level of Measurement
Dependent variable		
Risk management effectiveness	RMS	Interval
Independent variable		
Asset	AS	Ratio
nvestment in risk management IT	INIT	Ratio
Investment in human resources associated with risk management	INHRTRA	Ratio
Risk competency		

Table 6.2 (Continued)

Variable	Abbreviation	Level of Measurement
Engagement in main working	CPPARTI	Nominal
Risk officer appointment	CPRO	Nominal
Risk management competence	CPSURVEY	Interval
Organizational structure		
Dedicated work unit appointment	STRMD	Nominal
A chief risk officer (CRO)	STCRO	Nominal
Risk culture		
Tone at the top		
Frequency of risk management committee meetings	CUTFRMC	Nominal
Frequency of the CEO attending risk management committee meetings	CUTFCEO	Nominal
Frequency of top executives (first, second and third most senior executives) attending risk management committee meetings	CUTF123	Nominal
Risk culture - tone at the top	CUTSURVEY	Interval
Governance		
Risk management responbility delegation	CUGJD	Nominal
Clarity of targets	CUGTAR	Nominal
Risk information disclosure	CUGTRAN	Nominal
Timeliness of financial statements	CUGUPD	Nominal
Risk culture - governance dimension	CUGSURVEY	Interval
Business decisions and rewarding		
Risk culture - business decision and rewarding dimension	CUDSURVEY	Interval

6.1.1.2 Descriptive Statistical Analysis of a Single Variable for the Dependent vDriables

Table 6.3 Descriptive Statistics for a Single Variable: Average, Minimum, Maximum, and Standard Deviation of the Dependent Variable for Risk Management Effectiveness

Variable	Quantity	Average	Minimum	Maximum	Standard deviation
Risk management effectiveness	36	3.28	1.0	4.68	0.95

he risk management effectiveness of the 36 state enterprises in 2013 was determined by the risk management evaluation score, classified into levels from 1 to 5, where 1 meant minimal implementation of risk management and 5 meant substantial risk manament. The average was 3.28. The highest score was 4.68, achieved by PTT Chemical PLC., and the lowest score was 1.

6.1.1.3 Descriptive Statistical Analysis of a Single Variable for the Vindependent Variables

Table 6.4 displays 7 interval and ration variables among the 18 independent variables applied for the research.

Table 6.4 Descriptive Statistics of a Single Variable: Average, Minimum, Maximum, and Standard Deviation of 5 Interval and Ratio Independent Variables for Risk Management Effectiveness

Variable	Quantity	Percent of Respondents	Average	Minimum	Maximum
Asset (million baht)	36	100	254,712	190	2,514,771

Table 6.4 (Continued)

Variable	Quantity	Percent of Respondents	Average	Minimum	Maximum
Investment in risk management IT (Baht)	15	42	15,708,600	100,000	100,000,000
Investment in human resources associated with risk management	28	78	19,398	1,750	140,000
Risk competency					
Risk management competence	36	100	3.37	1.5	4.78
Risk culture					
1) Tone at the top dimension of risk culture	36	100	3.78	1	4.88
2) Governance dimension of risk culture	35	97	3.80	2.25	4.77
3) Business decision and rewarding dimension of risk culture	35	97	2.94	1	4.41

Note: The number of variables for risk competency, tone at the top dimension of risk culture, the governance dimension of risk culture, and the business decision and rewarding dimension of risk culture included sets of questionnaires collected from a sample group comprised of the vice president of each state enterprise.

Table 6.4 reveals the details of each variable as follows.

Asset The total assets of the 36 state enterprises were worth 254,712 million baht; the highest amount of assets was valued at 2,514,771 million baht and the least was 190 million baht.

Investment in risk management IT Only 15 state enterprises answered the question about this factor, equaling a 42% response rate. Overall, the state enterprise investment in IT ranged from hundred thousands baht to a hundred million baht; the highest amount of investment was a hundred million baht and the lowest was 100,000 baht. On average, investment in IT was valued at 16 million baht, with 12 state enterprises expending more than one million baht on their IT system.

Investment in human the resources associated with risk management Table 6.4 reveals that 28 enterprises (78% response rate) answered the question about investment in training and seminars. On average, state enterprises spent 19,398 baht/person/annum on training, varying from thousands of baht to hundred thousands of baht. The lowest training expenditure was 1,750 baht/person/annum, and the highest was 140,000 baht/person/annum. The difference may have been due to the fact that currently risk management is not in the early phase, which requires intensive training to build knowledge and basic understanding of the system. It has been longer than 10 years since the Ministry of Finance incorporated risk management into the performance evaluation system in 2004.

Risk competency of the people in the organization The response to this factor was 100%. Additional results on the attitudes and opinions on risk competency revealed that the average risk competency score of state enterprises was 3.37. Additional answers were from the respondents in the sample group-the vice president of state enterprises-answering questions that employed a Likert scale, where 1 meant strongly disagree and 5 meant strongly agree. The lowest score given to this factor was 1.50, and the highest was 4.78.

Risk culture Risk culture was measured in 3 dimensions: tone at the top, governance, and business decisions and rewarding.

The response rate for questions about the tone at the top dimension was 100%. The results from the questionnaire delivered to state enterprise vice president employing a Likert scale to the measure attitdues and opinions on this dimension

revealed that the risk culture of state enterprises was at a good level, scoring 3.78. The highest score was 4.88 and the lowest score was 1.

The average score for the governance dimension of risk culture was 3.80, highest among the 3 dimensions of risk culture. None of the state enterprises was rated at 1. The lowest score for this dimension was 2.25, while the highest was 4.77. The respondents represented 97% of the sample.

The lowest and highest scores for business decisions and rewarding were 1 and 4.41 respectively. The average was 2.94, the lowest among the 3 dimensions of risk culture. The respondents represented 97% of the sample.

In addition to the 7 variables exhibited in Table 6.4, the research applied 11 independent nominal variables. Table 6.5 analyzes vpercentage of these 11 variables according to the existence of risk competency, risk management organizational structure, and risk culture, where 1 represented the existence and 0 meant that the factors do not exist.

Table 6.5 Descriptive Statistics of a Single Variable: Percentage of Nominal Independent Variables for Risk Management Effectiveness in 3 Dimensions

Variable	**State Enterprise Without Factors Relating to Risk Management Effectiveness**		**State Enterprise With Factors Relating to Risk Management Effectiveness**	
	Quantity	**Percentage**	**Quantity**	**Percentage**
1) Risk competency				
(1) Engagement in main working group	1	3	34	97
(2) Risk officer	5	14	31	86
2) Risk management organizational structure				
(1) Dedicated work unit appointment	7	19	29	81

Table 6.5 (Continued)

Variable	State Enterprise Without Factors Relating to Risk Management Effectiveness		State Enterprise With Factors Relating to Risk Management Effectiveness	
	Quantity	**Percentage**	**Quantity**	**Percentage**
(2) Chief risk officer (CRO) appointment	19	56	15	44
Risk culture				
Tone at the top				
1) Frequency of risk management committee meetings *	2	6	34	94
2) Frequency that the CEO attending risk management committee	4	11	32	89
3) Frequency of senior management (1^{st} – 3^{rd} most senior executives) attending risk management committee	4	11	32	89
Governance				
4) Risk management responsibility	1	3	35	97
5) Clarity of targets	2	6	29	94
6) Risk information	2	6	34	94
7) Timeliness of financial statements	5	14	31	86

Note: * Frequency of risk management committee meeting variable: No = once a year and biannually, Yes = quarterly and regularly

Frequency of CEO attending risk management committee meeting variable: No = <50%, Yes = >50%

Frequency of senior management (1^{st} – 3^{rd} most senior executives) attending risk management committee meeting variable: No = <50%, Yes = >50%

Table 6.5 suggested that more than 80% of the state enterprises possessed factors that enabled the effectiveness of risk management; namely competency, organizational structure, and risk culture, with the exception of the CRO appointment component of organizational structure. Less than half of state enterprises (44%) appointed a CRO, and more than half (56%) had not appointed a CRO in the organization.

6.1.1.4 Correlation Analysis of Nominal Independent Variables

In order to prove hypothesis 1, ANOVA was applied to analyze the correlation between risk management effectiveness and the nominal independent variables for risk competency, risk management organizational structure, and risk culture.

Table 6.6 Correlation Analysis of Risk Competence, Organizational Structure, Risk Culture, and Efficiency of Risk Management Employing the ANOVA Model

Source	SS	DF	MS	F	Sig
CPPARTI * RMS	0.462	1	0.462	0.495	0.487
CPRO*RMS	8.895	1	8.895	13.485**	0.001
STRMD*RMS	3.120	1	3.120	3.714	0.063
STCRO*RMS	1.170	1	1.170	1.494	0.231
CUTFRMC*RMS	5.336	1	5.336	6.923*	0.013
CUTFCEO * RMS	9.240	1	9.240	14.241**	0.001
CUTF123 * RMS	4.322	1	4.322	5.386*	0.027
CUGJD * RMS	5.336	1	5.336	6.923*	0.013
CUGTAR * RMS	4.139	1	4.139	4.719*	0.038
CUGTRAN * RMS	4.022	1	4.022	4.954*	0.033
CUGUPD * RMS	13.697	1	13.697	26.884**	0.000

Note: * Statistical significance at the.05 level

** Statistical significance at the .01 level

The nominal independent variable analysis to test hypothesis 1 of this paper revealed the following.

1) The risk competency of the people in the organization likely has positive impact on risk management effectiveness. Table 6.6 suggests that among the independent variables, which were engagement in main working group (CPPARTI) and risk officer appointment (CPRO), only risk officer appointment had a statistically-significant, positive impact on risk management effectiveness (RMS).

2) Good organizational structure probably promotes better risk management effectiveness. Table 6.63 shows that 2 independent variables for this factor, dedicated work unit appointment (STRMD) and chief risk officer appointment (STCRO), did not have any impact on risk management effectiveness (RMS).

3) Risk culture likely has a positive effect on risk management effectiveness. Table 6.6 shows a positive correlation between risk management effectiveness (RMS) and 7 independent variables: frequency of risk management committee meetings (CUTFRMC), frequency with which the CEO attends risk management committee meetings (CUTFCEO), the frequency at which senior management (1^{st}-3^{rd} most senior executives) attends risk management committee meetings (CUTF123), risk management responsibility assignment (CUGJD), clarity of targets (CUGTAR), risk information disclosure (CUGTRAN), and timeliness of financial statements (CUGUPD).

6.1.1.5 Correlation Analysis of the Nominal and Ratio Independent Variables

A correlation matrix was employed for the correlation analysis between the 7 nominal and ratio-independendent variables and risk management effectiveness, as shown in Table 6.7.

Table 6.7 Values of the Pearson Correlation between Independent Variables and Risk Management Effectiveness

		RMS	AS	INIT	INHRTRA	CPSURVEY	CUTSURVEY	CUGSURVEY	CUDSURVEY
RMS	Pearson Correlation	1	.754**	.356*	.086	.581**	.495**	.600**	.636**
	Sig. (2-tailed)		.000	.033	.616	.000	.002	.000	.000
	N	36	36	36	36	36	36	36	36
AS	Pearson Correlation	.754**	1	.079	-.065	.465**	.347*	.379*	.423*
	Sig. (2-tailed)	.000		.648	.708	.004	.038	.023	.010
	N	36	36	36	36	36	36	36	36
INIT	Pearson Correlation	.356*	.079	1	.361*	.114	.067	.237	.132
	Sig. (2-tailed)	.033	.648		.031	.507	.696	.163	.444
	N	36	36	36	36	36	36	36	36
INHRTRA	Pearson Correlation	.086	-.065	.361*	1	.033	.090	-.105	.099
	Sig. (2-tailed)	.616	.708	.031		.850	.602	.542	.564
	N	36	36	36	36	36	36	36	36
CPSURVEY	Pearson Correlation	.581**	.465**	.114	.033	1	.710**	.521**	.579**
	Sig. (2-tailed)	.000	.004	.507	.850		.000	.001	.000
	N	36	36	36	36	36	36	36	36
CUTSURVEY	Pearson Correlation	.495**	.347*	.067	.090	.710**	1	.591**	.504**
	Sig. (2-tailed)	.002	.038	.696	.602	.000		.000	.002
	N	36	36	36	36	36	36	36	36
CUGSURVEY	Pearson Correlation	.600**	.379*	.237	-.105	.521**	.591**	1	.639**
	Sig. (2-tailed)	.000	.023	.163	.542	.001	.000		.000
	N	36	36	36	36	36	36	36	36
CUDSURVEY	Pearson Correlation	.636**	.423*	.132	.099	.579**	.504**	.639**	1
	Sig. (2-tailed)	.000	.010	.444	.564	.000	.002	.000	
	N	36	36	36	36	36	36	36	36

Note: * Correlation was significant at the 0.05 level (2-tailed). ** Correlation was significant at the 0.01 level (2-tailed).

Table 6.7 indicates the correlation between risk management effectiveness and 6 independent variables, which were asset (AS), investment in risk management IT (INIT), risk competency (CPSURVEY), tone at the top dimension of the risk culture (CUTSURVEY), the governance dimension of risk culture (CUGSURVEY), and the business decision and rewarding dimension of risk culture (CUDSURVEY) as follows.

1) Correlation between risk management effectiveness and asset Table 6.7 illustrates a strong positive correlation between risk management effectiveness (RMS) and asset (AS), where r = 0.754 (p = .000).

2) Correlation between risk management effectiveness and the governance dimension, and the business decision and rewarding dimensions of risk culture Table 6.7 indicates a positive correlation at a moderate to strong level between risk management effectiveness (RMS) and the governance dimension of risk culture (CUGSURVEY) and the business decision and rewarding dimension of risk culture (CUDSURVEY), with r = 0.6000 (p = .000) and 0.636 (p = .000) respectively.

3) Correlation between risk management effectiveness and tone at the top dimension of risk culture Table 6.7 suggests a positive correlation at a moderate to strong degree between risk management effectiveness (RMS) and risk competency (CPSURVEY) and tone at the top dimension of risk culture (CUTSURVEY), having r = 0.581 (p = .000) and 0.495 (p = .002) respectively.

4) Correlation between investment in risk management IT and risk management effectiveness Table 6.7 shows the correlation between risk management effectiveness (RMS) and investment in risk management IT (INIT), where r = 0.356 (p = .033), suggesting moderate to low strength of the relationship.

Proving hypothesis 1 revealed that asset (AS), investment in risk management IT (INIT), risk competency (CPSURVEY), and all 3 dimensions of risk culture (CUTSURVEY, CUGSURVEY, CUDSURVEY) had a positive correlation with risk management effectiveness (RMS).

The analysis found no correlation between investment in the human resources associated with risk management (INHRTRA) and risk management effectiveness (RMS). This may have been a limitation resulting from the number of respondents. Since state enterprises do not post the cost of risk management training as a specific expense, the data may be inaccurate.

6.1.1.6 Multiple Regression Analysis

The correlation matrix in Table 6.7 confirms that the correlation between each independent was lower than 0.80 level; therefore, multicollinearity did not exist. To answer objective 2 of the research, multiple regression analysis was applied.

This research employed stepwise regression to examine the linear correlation between vindependent variable (X) and dependent variable (Y), where Y was risk management effectiveness. For this analysis, X comprised 7 variables illustrated in Table 6.7, which were asset (AS), investment in risk management IT (INIT), investment in human resources associated with risk management (INHRTRA), risk competency (CPSURVEY), tone at the top dimension of risk culture (CUTSURVEY), the governance dimension of risk culture (CUGSURVEY), and the business decision and rewarding dimension of risk culture (CUDSURVEY). Table 6.8 displays the results of the stepwise regression analysis.

Table 6.8 Multiple Regression Analysis between Risk Management Effectiveness (RMS) (Dependent Variable) and 5 Factors Affecting Risk Management Effectiveness (Independent Variables)

Model	Variable	R^2	F	Sig of F	Standardized Regression Coefficient (ß)	t	Sig
1	Ln AS	.569	44.901	.000	.754	6.701	.000
2	Ln AS	.691	36.944	.000	.591	5.535	.000
	CUDSURVEY				.386	3.614	.001
3	Ln AS	.760	33.695	.000	.584	6.097	.000
	CUDSURVEY				.354	3.681	.001
	Ln INIT				.264	3.015	.005

As Table 6.8 shows, model 3 best explains the risk management effectiveness variable (RMS) variance (R^2 = .760). The significance level was 0.000

(F = 33.695). Three independent variables-asset (AS), investment in risk management IT (INIT), and the business decision and rewarding dimension of risk culture (CUDSURVEY) forecasted the risk management effectiveness (RMS) dependent variable at 76%. Among the 3 variables having a statistical significance in relation to risk management effectiveness, asset (AS) had most influence (multiple regression coefficient = .584), followed by the business decision and rewarding dimension of risk culture (CUDSURVEY), and investment in risk management IT (INIT), showing multiple regression coefficient values at .354 and .264 respectively.

Other variables, i.e., investment in the human resources associated with risk management (INHRTRA), risk competency (CPSURVEY), tone at the top dimension of risk culture (CUTSURVEY), and the governance dimension of risk culture (CUGSURVEY), did not forecast the risk management effectiveness of the sample.

Five assumptions of the regression equation have been proved, that is e had a mean of zero, the variance of e was constant, e was normally distributed, e was independent of each other, and independent variable x_i and x_j were independent of each other, the regression equation can be employed for efficient prediction (the Durbin-Watson value of the model was 1.935, within the 1.5-2.5 value, and the tolerance and VIF were close to 1).

6.1.2 Quantitative Analysis-Finding Answers to Objective 2

This section concludes the answers to objective 2 of the research, which was to examine the relationship between risk management effectiveness and the performance of state enterprise according to hypothesis 3. The evaluation score for risk management defined as a proxy for risk management effectiveness was first introduced in 2004; therefore, data for the entire state enterprise sector from 2004 to 2013 were used to examine the correlation. However, the number of state enterprises being evaluated for risk management varies each year due to their readiness and transition from the former appraisal system, which evaluated risk management as one area of management, to the present performance appraisal system, State Enterprise Performance Appraisal (SEPA). In 2013, 57 state enterprises were still evaluated for

their risk management (a variable for risk management effectiveness). Those state enteprises can be categorized into 9 sectors as Table 6.9 displays.

Table 6.9 State Enterprises Evaluated for Risk Management as One Area of Performance, Categorized by Sector

Sector	Total Numbers of State Enterprise	
	Number	Percentage
1. Engergy	4	7
2. Transport	11	19
3. Communication	4	7
4. Agriculture	6	11
5. Public Utility	6	11
6. Social and Technology	5	9
7. Industry and Trade	8	14
8. Natural Resources	3	5
9. Financial Institution	10	17
Total	57	100

Table 6.10 Variables, Abbreviations, and Level of Measurement Applied for Analysis: Correlation between Risk Management Effectiveness and Performance Examination

Variable	Abbreviation	Level of Measurement
Dependent Variable		
Performance		
(2) Performance evaluation score	PAS	Interval
(3) Return on equity	ROE	Ratio
(4) Cost-to-income	CTI	Ratio
Inependent Variable		
(5) Risk management effectiveness	RMST	Interval

6.1.2.1 Descriptive Statistical Analysis of a Single Variable

The descriptive statistics of a single variable discussed in this section conclude the data of 10 years, from 2004 to 2013. The dependent variable was the performance of state enterprises, and the independent variable was risk management effectiveness categorized by business sector into 9 sectors as well as by the size of the enterprises as small (S), medium (M), and large (L), where S meant enterprises with assets <5,000 mb, M meant assets ≥ 5,000 mb, and L meant assets ≥ 50,000 mb.

Table 6.11 Descriptive Statistics of a Single Variable: Average, Minimum, and Maximum of Variables for the Relation between Risk Management Effectiveness and Performance Classified by Sector and Size of Enterprises

Sector/Size	PAS			ROE			CTI			RMST		
	Mean	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**
Sector												
1. Energy	4.67	4.51	4.89	14.05	11.58	18.09	92.61	90.28	94.47	4.26	4.10	4.43
2. Transport	3.50	2.46	4.11	0.15	-34.69	14.98	96.99	45.33	160.74	2.69	1.00	3.97
3. Communication	3.54	3.33	3.94	12.95	6.44	19.07	78.58	60.78	91.45	3.09	2.69	3.57
4. Agriculture	2.82	2.58	3.49	4.71	-5.51	16.15	99.09	71.72	139.84	1.66	1.31	2.00
5. Public Utility	3.84	2.76	4.55	10.62	4.61	15.84	80.95	63.42	96.59	3.07	1.96	4.30
6. Social and Technology	3.74	3.34	4.10	4.69	-0.93	14.14	93.28	83.22	102.89	2.44	1.73	3.07
7. Industry and Trade	2.92	1.98	3.69	11.86	0.24	29.14	90.09	81.24	98.21	2.04	1.00	2.8
8. Natural Resources	3.28	3.16	3.39	0.07	-4.8	4.9	108.83	89.43	128.24	2.04	1.82	2.26
9. Financial Institution	3.91	3.19	4.70	6.81	-6.53	16.14	83.63	37.14	128.00	3.13	2.03	4.23
Size												
1. Small (S)	3.15	1.98	4.10	5.45	-4.80	21.55	92.78	56.62	128.24	1.86	1.00	3.07
2. Medium (M)	3.59	2.58	4.11	7.62	-5.54	19.07	95.64	37.14	152.18	2.63	1.84	3.97
3. Large (L)	3.80	2.39	4.89	5.50	-36.64	29.14	87.63	45.33	160.74	3.18	1.53	4.43
Total	**3.57**	**1.98**	**4.89**	**5.49**	**-34.69**	**29.14**	**90.60**	**45.33**	**160.74**	**2.64**	**1.00**	**4.43**

Table 6.11 suggests the details of each variable as follows.

1) Performance evaluation score The average performance evaluation score for the entire state enterprise sector in 2004-2013 was 3.57; the lowest was 1.98 and the highest was 4.89.

Looking at the scores according to sector of business, the energy sector received the highest score at 4.67, while the agriculture sector had the lowest score at 2.82.

Large state enterprises had the highest average score at 3.80, and small enterprises had the lowest average at 3.15.

2) Return on equity (ROE) The average ROE of the entire state enterprise sector for 2004-2013 was 5.49%, with the highest at 29.14%, and the lowest at -34.69%.

According to sector of business, the energy sector generated the highest average (14.05%) and the natural resource sector generated the lowest rate (0.07%).

Looking at the size of enterprises, the medium-size ones had the highest average (7.62%) and the small-size ones had the lowest average (5.45%).

Cost-to-income The average cost-to-income of the entire state enterprise system for 2004-2013 was 90.60%. The highest value was 160.74%, and the lowest was 45.33%.

The sector of business that had the highest cost-to-income was the natural resource sector (108.83%). The communication sector had the lowest rate (78.58%).

Mediud-size state enterprises had the highest average (95.64%), while the large-size ones had the lowest average (91.14%).

3) Risk management effectiveness The average score for the entire state enterprise sector for 2004-2013 was 2.64; the highest was 4.43 and the lowest was 1.

The energy sector had the highest average (4.26). The agriculture sector had the lowest average (1.66).

Large-size enterprises had the highest average (3.18), whereas the small-size ones showed the lowest average (1.86).

6.1.2.2 Correlation between Performance (Dependent Variable) and Risk Management Effectiveness (Independent Variables)

This study employed correlation matrix by applying Pearson correlation coefficients to the dependent variable and the independent variables categorized according to sector of business and size of enterprise.

Table 6.12 Pearson Correlation Coefficients of Performance Evaluation Scores, ROE, Cost-to-Income Variables, and Risk Management Effectiveness

Variable	**1. PAS_t**	**2.Δ PAS**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. Δ RMST**
1. PAS_t	1				
2. Δ PAS	0.325**	1			
3. $RMST_t$	0.729**	0.055	1		
4. $RMST_{t-1}$	0.673**	-0.570	0.900**	1	
5. Δ RMST	0.066	0.249**	0.149**	-0.288**	1
Variable	**1. ROE_t**	**2.ΔROE**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. Δ RMST**
1. ROE_t	1				
2. Δ ROE	0.727**	1			
3. $RMST_t$	0.103*	0.005	1		
4. $RMST_{t-1}$	0.078	-0.007	0.900**	1	
5. Δ RMST	0.049	0.025	0.149**	-0.288**	1
Variable	**1. CTI_t**	**2.ΔCTI**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. Δ RMST**
1. CTI_t	1				
2. Δ CTI	0.561**	1			
3. $RMST_t$	-0.217**	-0.004	1		
4. $RMST_{t-1}$	-0.170**	0.028	0.900**	1	
5. Δ RMST	-0.091	-0.068	0.149**	-0.288**	1

Correlation between the performance appraisal score and risk management effectiveness The data illustrated in Table 6.12 confirm the correlation between the performance appraisal score (PAS) and risk management effectiveness (RMST) at a high level. The present-year appraisal score (PAS_t) had a positive correlation with present-year risk management effectiveness ($RMST_t$) and previous-

year risk management effectiveness ($RMST_{t-1}$) as r = 0.729 (p = .000) and 0.673 (p = .000). Changes in the performance appraisal score (Δ PAS) also had a positive correlation with changes in risk management effectiveness (ΔRMST). However, the relationship was weak (r = 0.249, p = .000).

Correlation between ROE and risk management effectiveness Table 6.12 indicates a very weak positive correlation between the present-year ROE (ROE_t) and the present-year risk management effectiveness ($RMST_t$), having an r value at 0.103 (p = .041).

Correlation between cost-to-income and risk management effectiveness Table 6.12 shows a low negative correlation between present-year cost-to-income (CTI_t) and both present-year risk management effectiveness ($RMST_t$) and previous-year risk management effectiveness ($RMST_{t-1}$), having r values at -0.217 (p = .000) and -0.170 (p = .001).

The relationship between risk management effectiveness (RMST) and all 3 performance proxies, identified by the size of the enterprise and business sector, are illustrated in Table 6.13-6.17.

Table 6.13 Pearson Correlation Coefficients of Performance Variables and Risk Management Effectiveness: Small-Size Enterprises

	Small Size (S)				
Variable	**1. PAS_t**	**2.ΔPAS**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. PAS_t	1				
2. ΔPAS	0.358**	1			
3. $RMST_t$	0.528**	-0.021	1		
4. $RMST_{t-1}$	0.502**	-0.048	0.842**	1	
5. ΔRMST	-0.001	0.051	0.218*	-0.316**	1
Variable	**1. ROE_t**	**2.ΔROE**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. ROE_t	1				
2. ΔROE	0.378**	1			
3. $RMST_t$	0.138	0.012	1		

Table 6.13 (Continued)

Small Size (S)					
Variable	**1. PAS_t**	**2.ΔPAS**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
4. $RMST_{t-1}$	0.144	0.016	0.842**	1	
5. ΔRMST	-0.025	-0.027	0.218*	-0.316**	1
Variable	**1. CTI_t**	**2.ΔCTI**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. CTI_t	1				
2. ΔCTI	0.429**	1			
3. $RMST_t$	-0.050	-0.014	1		
4. $RMST_{t-1}$	-0.082	-0.050	0.842**	1	
5. ΔRMST	0.061	0.081	0.218*	-0.316**	1

Table 6.13 indicates that risk management effectiveness had a positive correlation with only one variable for performance, the performance appraisal score (PAS). Risk management effectiveness was moderately associated with both present-year risk management effectiveness ($RMST_t$) and the previous year's risk management effectiveness ($RMST_{t-1}$), having r values at 0.528 and 0.502 (p = .000) respectively. The ROE and cost-to-income did not have a correlation with risk management effectiveness.

Table 6.14 Pearson Correlation Coefficients of Performance Variables and Risk Management Effectiveness: Medium-Size Enterprises

Medium Size (M)					
Variable	**1. PAS_t**	**2.ΔPAS**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. PAS_t	1				
2. ΔPAS	0.407**	1			
3. $RMST_t$	0.467**	-0.019	1		
4. $RMST_{t-1}$	0.398**	-0.093	0.869**	1	
5. ΔRMST	0.037	0.154	0.045	-0.456**	1

Table 6.14 (Continued

Variable	1. ROE_t	2.ΔROE	3. $RMST_t$	4. $RMST_{t-1}$	5. ΔRMST
1. ROE_t	1				
2. ΔROE	0.402**	1			
3. $RMST_t$	0.050	0.027	1		
4. $RMST_{t-1}$	0.044	0.059	0.869**	1	
5. ΔRMST	0.000	-0.072	0.045	-0.456**	1
Variable	**1. CTI_t**	**2.ΔCTI**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. CTI_t	1				
2. ΔCTI	0.195*	1			
3. $RMST_t$	0.032	0.052	1		
4. $RMST_{t-1}$	0.049	0.019	0.869**	1	
5. ΔRMST	-0.042	0.054	0.045	-0.456**	1

Table 6.14 confirms the positive correlation between risk management effiency and only one variable for performance, the performance appraisal score, similar to the correlation found with small-size enterprises. The difference was the correlation between the present year's performance appraisal score (PAS_t) and the present year's risk management effectiveness ($RMST_t$), and the previous year's risk management effectiveness ($RMST_{t-1}$) was moderate, having correlation coefficient values at 0.467 and 0.398 (p = .000) respectively.

Table 6.15 Pearson Correlation Coefficients of Performance Variables and Risk Management Effectiveness: Large Size Enterprises

	Large Size (L)				
Variable	**1. PAS_t**	**2.Δ PAS**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. PAS_t	1				
2. ΔPAS	0.316**	1			
3. $RMST_t$	0.826**	0.166*	1		
4. $RMST_{t-1}$	0.745**	-0.081	0.865**	1	
5. ΔRMST	0.149	0.473**	0.252**	-0.267**	1

Table 6.15 (Continued

Variable	1. ROE_t	2.ΔROE	3. $RMST_t$	4. $RMST_{t-1}$	5. ΔRMST
1. ROE_t	1				
2. ΔROE	0.733**	1			
3. $RMST_t$	0.213**	0.002	1		
4. $RMST_{t-1}$	0.175*	-0.020	0.865**	1	
5. Δ RMST	0.071	0.042	0.252**	-0.267**	1
Variable	**1. CTI_t**	**2.ΔCTI**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. CTI_t	1				
2. ΔCTI	0.638**	1			
3. $RMST_t$	-0.393**	-0.018	1		
4. $RMST_{t-1}$	-0.306**	0.051	0.865**	1	
5. ΔRMST	-0.165*	-0.131	0.252**	-0.267**	1

According to Table 6.15, risk management effectiveness was associated with all 3 variables for performance. There was a positive correlation at a high level between the present-year performance appraisal score (PAS_t) and risk management effectiveness both for the present year ($RMST_t$) and the previous year ($RMST_{t-1}$), with r values at 0.826 and 0.745 (p = .000) respectively. Meanwhile, changes in the performance appraisal score (ΔPAS) also had a positive correlation with changes in risk management effectiveness (ΔRMST) at a low to medium level, having r values at 0.166 (p = .041) and 0.473 (p = .000).

The risk management effectiveness for present year ($RMST_t$) and the previous year ($RMST_{t-1}$) had a weak positive correlation with the ROE ratio of the present year (ROE_t), with r values at 0.213 (p = .008) and 0.175 (p = .030) respectively.

A negative correlation at a weak to moderate level was found between the present year's cost-to-income (CTI_t) and the risk management effectiveness of the present year (r = -0.393), the previous year's risk management effectiveness (r = -0.306, p=.000), and changes in risk management effectiveness (r = -0.165, p = .042).

Table 6.16 Pearson Correlation Coefficients of Performance Variables and Risk Management Effectiveness: Financial Institution

Financial Institution (F)					
Variable	**1. PAS_t**	**2.ΔPAS**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. PAS_t	1				
2. ΔPAS	0.451**	1			
3. $RMST_t$	0.701**	0.120	1		
4. $RMST_{t-1}$	0.518**	-0.194	0.719**	1	
5. ΔRMST	0.223	0.419**	0.345**	-0.404**	1
Variable	**1. ROE_t**	**2.ΔROE**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. ROE_t	1				
2. ΔROE	0.905**	1			
3. $RMST_t$	0.244*	0.064	1		
4. $RMST_{t-1}$	-0.172	-0.280*	0.719**	1	
5. ΔRMST	0.554**	0.462**	0.345**	-0.404**	1
Variable	**1. CTI_t**	**2.ΔCTI**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
1. CTI_t	1				
2. ΔCTI	0.501**	1			
3. $RMST_t$	-0.228	-0.507	1		
4. $RMST_{t-1}$	0.065	0.229	0.719**	1	
5. ΔRMST	-0.388**	0.383**	0.345**	-0.404**	1

Table 6.16 demonstrates the relationship between risk management effectiveness and all 3 variables for performance. A positive correlation was found for the performance appraisal score, whereas the ROE and cost-to-income had both positive and negative correlation with risk management effectiveness. The present year's performance appraisal score (PAS_t) had a moderate to strong correlation with present-year risk management effectiveness ($RMST_t$) and the previous year's ($RMST_{t-1}$), with r at 0.701 and 0.518 (p = .000) respectively. Changes in the performance appraisal score (ΔPAS) had a moderate correlation with changes in risk management effectiveness (ΔRMST), r = 0.419 (p = .000).

The present year's ROE (ROE_t) had a positive correlation with the present year's risk management effectiveness ($RMST_t$) and changes in risk management effectiveness (ΔRMST) at a weak to moderate level, having r values at 0.244 (p = .040) and 0.554 (p = .000). Changes in the ROE (ΔROE) variable had a correlation with the previous year's risk management effectiveness ($RMST_{t-1}$) and changes in risk management effectiveness (ΔRMST) at a weak to moderate level (r = 0.462, p=.000). This suggests a negative correlation between changes in the ROE (ΔROE) and the previous year's risk management effectiveness ($RMST_{t-1}$), having r at -0.280 (p=.018).

The cost-to-income variable showed a moderate correlation between the changes in risk management effectiveness (ΔRMST) and the present year's cost-to-income (CTI_t) and changes in cost-to-income (ΔCTI). The correlation with the present year cost-to-income (CTI_t) was negative, (r = -0.388, p = .001), while the correlation with changes in the cost-to-income (ΔCTI) showed r at 0.383 (p = .001).

Table 6.17 Pearson Correlation Coefficients of Performance Variables and Risk Management Effectiveness: Non-financial Institution

Non-financial Institution (NF)					
Variable	**1. PAS_t**	**2.ΔPAS**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
6. PAS_t	1				
7. ΔPAS	0.308**	1			
8. $RMST_t$	0.722**	0.044	1		
9. $RMST_{t-1}$	0.687**	-0.025	0.927**	1	
10. ΔRMST	0.019	0.179**	0.098	-0.271**	1
Variable	**1. ROE_t**	**2.ΔROE**	**3. $RMST_t$**	**4. $RMST_{t-1}$**	**5. ΔRMST**
6. ROE_t	1				
7. ΔROE	0.724**	1			
8. $RMST_t$	0.100	0.001	1		
9. $RMST_{t-1}$	0.092	0.003	0.927**	1	
10. ΔRMST	0.015	-0.006	0.098	-0.271**	1

Table 6.17 (Continued)

Variable	1. CTI_t	2.ΔCTI	3. $RMST_t$	4. $RMST_{t-1}$	5. ΔRMST
3. CTI_t	1				
4. ΔCTI	0.569**	1			
3. $RMST_t$	-0.213**	0.001	1		
6. $RMST_{t-1}$	-0.202**	0.001	0.927**	1	
7. ΔRMST	-0.010	0.004	0.098	-0.271**	1

Table 6.17 suggests that risk management effectiveness correlated with the performance appraisal score and cost-to-income variables for performance. This indicates that risk management effectiveness had a positive correlation with the performance appraisal score but a negative correlation with cost-to-income. The risk management effectiveness did not correlate with ROE. The present year's performance appraisal (PAS_t) had a strong relationship with the present year's risk management effectiveness ($RMST_t$) and that of the previous year ($RMST_{t-1}$), having r at 0.722 and 0.687 (p = .000) respectively. Meanwhile, changes in the performance appraisal score variable (ΔPAS) was related to changes in risk management effectiveness (ΔRMST) at a low degree (r = 0.179, p = .001).

The present year's cost-to-income (CTI_t) had a negative relationship with risk management effectiveness of the present year ($RMST_t$) and the previous year ($RMST_{t-1}$) at a low level (r = -0.213 and -0.202, p = .000).

Table 6.18 Pearson Correlation Coefficients Summary

Performance Variable	Risk Management Effectiveness		
	$RMST_t$	$RMST_{t-1}$	ΔRMST
PAS_t	+	+	
ROE_t	+		
CTI_t	-	-	
ΔPAS			+
ΔROE			
ΔCTI			

Table 6.19 Pearson Correlation Coefficients Summary: by Size of Enterprises

Performance Variable	Small (S)			Medium (M)			Large (L)		
	$RMST_t$	$RMST_{t-1}$	$\Delta RMST$	$RMST_t$	$RMST_{t-1}$	$\Delta RMST$	$RMST_t$	$RMST_{t-1}$	$\Delta RMST$
PAS_t	+	+		+	+		+	+	
ROE_t							+	+	
CTI_t							-	-	-
Δ PAS							+		+
Δ ROE									
Δ CTI									

Table 6.20 Pearson Correlation Coefficients Summary: by Business Sector

Performance Variable	Financial Institution (F)			Non-Financial Institution (NF)		
	$RMST_t$	$RMST_{t-1}$	$\Delta RMST$	$RMST_t$	$RMST_{t-1}$	$\Delta RMST$
PAS_t	+	+		+	+	
ROE_t	+		+			
CTI_t			-	-	-	
Δ PAS			+			+
Δ ROE		-	+			
Δ CTI			+			

The data analysis led to the conclusion that risk management effectiveness (RMST) correlated with all 3 variables for performance: performance appraisal evaluation (PAS), return on equity (ROE), and cost-to-income (CTI). Analysis according to the entire state enterprise sector, enterprise size, and business sector suggested a positive correlation between risk management efficiency and the performance appraisal score and ROE; however, the correlation between risk management effectiveness and cost-to-income was negative.

Large-size state enterprises and enterprises in the financial institution sector had a correlation between risk management effectiveness and all three variables for performance, whereas small and medium enterprises showed only a correlation

between risk management effectiveness and the performance appraisal score, but no correlation between risk management effectiveness with ROE and cost-to-income. The only correlation absent from the state enterprises in the non-financial institution sector was the correlation between risk management effectiveness and ROE.

In addition, the performance appraisal score variable, which measured both the financial and non-financial performance of state enterprises, was the only variable showing a correlation with risk management effectiveness regardless of the perspective of analysis.

6.1 **In-depth Interview Analysis**

Objective 3 of this research was to study the best practice in risk management of the three state enterprises undertaking the SEPA system, classified as Group A, that received an appraisal score greater than or equal to 4.5 for criterion 3 on the management section, and an overall score greater than or equal to 4. The selected enterprises represented three business sectors; namely PTT Public Company Limited (PTT) from the energy sector, Aeronautical Radio of Thailand Ltd. (AEROTHAI) from the transport sector, and the Bank for Agriculture and Agricultural Cooperatives (BAAC) representing the financial institution sector.

During January 2015, the researcher interviewed four executives and a person in charge of enterprise risk management at three state enterprises:

1) An executive of PTT Public Company Limited
2) A member of the staff of PTT Public Company Limited
3) Executive No. 1 at Aeronautical Radio of Thailand Ltd.
4) Executive No. 2 at Aeronautical Radio of Thailand Ltd.
5) An executive at the Bank for Agriculture and Agricultural Cooperatives

The interview topics included the following:

1) The suitability of employing a risk management appraisal score evaluated by TRIS Corporation Limited as a criteria for measuring risk management effectiveness of state enterprises
2) Factors that have impacts on risk management effectiveness

(1) Size of the enterprises and business sector

(2) Investment in risk management IT

(3) Investment in human the resources associated with risk management

(4) The risk competency of the people in the organization

(5) Organizational structure

(6) Risk culture

3) Risk management process 4

(1) Problems and barriers challenging risk management

(2) Contributions of risk management

(3) Strategies/processes to improve risk management

(4) Impact of risk management effectiveness on performance

(5) Suggestions for improving risk management effectiveness

The essence of the interviews can be summarized by topic as follows.

Topic 1: The suitability of employing a risk management appraisal score evaluated by TRIS Corporation Limited as a criterion for measuring the risk management effectiveness of state enterprises

The executives and a person responsible for operating the enterprise risk management of the three selected state enterprises suggested that the risk management appraisal score is suitable as a criterion and moderately reflects risk management effectiveness. It is a standard that incorporates assessment of the process and culture, as well as observation of the context of each enterprise.

> "It is acceptable as a criterion, partly because it is applied to every state enterprise. AEROTHAI achieved it most of the time; therefore, it did not cause us any damages. I agree that it is suitable and reflects performance at certain degree. Although it is applied generally to every state enterprise, the context of each enterprise is observed," executive No. 1 of Aeronautical Radio of Thailand Ltd. commented. (2015; Interview)

> "When BAAC were evaluated under that system, we regarded it as a standard, and we tried to improve our performance to meet such standard," an executive of Bank for Agriculture and Agricultural Cooperatives said. (2015; Interview)

There were suggestions however that some criteria should consider the worthiness or value-added of the enterprises in trying to achieve the criteria. It is necessary to compare the complications when working to meet the criteria with the values that the enterprises gain; for instance, the criterion for a strong room requires a balance in the attitudes of the appraiser and the appraisee. The context of the appropriate risk management of each state enterprise should be considered.

> "The levels that TRIS determines become more complex and include more processes as they get higher. Working toward higher levels requires a lot of resources. The question is how much value-added the enterprises receive. Is it worth the effort? Some issues need only basic operations. For example, if our risk concerns cars, we can manage it by having the cars insured. This issue should not require a risk map. It is too complicated. We should weigh between the complication and values that the enterprise receives," the executive of PTT Public Company Limited suggested. (2015; Interview)

> "In my opinion, SEPO should ensure that the appraisers genuinely understand the context of each state enterprise. They should realize where the balance in risk management context of the enterprise is. They should encourage the practicality. That should be the main concern," an executive of Bank for Agriculture and Agricultural Cooperatives recommended. (2015; Interview)

Topic 2: Factors that have impacts on risk management effectiveness

1) Size of the Enterprise and Business Sector

Most interviewees believe that the size of the enterprise does not have a significant impact on risk management effectiveness. They suggested that the state

enterprises' perspective and understanding of the nature of their business lead to effective risk management.

The business sector likely has a greater impact on risk management effectiveness or the difficulties of managing risk than the size of the enterprise. However, some interviewees stated that the sector did not have an impact either—he way in which the enterprises manage their risk is the most important factor.

> "In my opinion, size of the enterprise does not matter. It depends on our perspective and understanding of our organization. For a big enterprise like PTT where there are many subsidiaries, it is necessary to clearly delegate responsibilities to certain units and those units must know where the problems lie and be accountable for the problems. For example, if we only care about getting the production plant run, no matter how big the plant is, we can manage its risk by having the plant insured. Training staff well enough to be able to operate the plant is a basic tool. It is not complicated at all. Meanwhile, a trading company only have a handful of staff but they face many risks. So, they must have models or tools to apply appropriately. The tool at highest level is managing between risks and return. Hence, size does not matter. What matters is the type of risks; what they are facing, how complicate is the risk and what tools they should implement to handle that risk. Different types of business face different risks so required tools are different, from the basic to the advanced. We need to check constantly if we gain more value-added when the tools become more complex; thus, sector of the business has an impact," the executive of PTT Public Company Limited observed. (2015; Interview)

> "Each size has its own strength and weakness. Small enterprises have less complex structure, so managing them is likely easier than managing big enterprises. However, big enterprises are likely more resourceful and ready to invest in a system and tools to manage risks. There are many perspectives to this issue. It cannot be judged by a

single factor. As for sector, it depends on the mission and purpose of the organization. For instance, AEROTHAI deal with safety, so risk management is crucial to us. Simply put, types of industry definitely affect risk management," executive No. 2 of Aeronautical Radio of Thailand Ltd. stated. (2015; Interview)

"Moving forward, an organization needs to give priority to risk management. The bigger the organization, the more necessary it is. Risk management has an impact on the organization regardless of the size. Bigger organizations have to deal with complicated risks in many levels. I do not think size is important. The important thing is how the organization manage their risks. Business sector does not have much effect on risk either. Management is the key. Every business sector has its specific risks. In short, basic elements are not substantial. The essence of it is how the organization manage risks," an executive of Bank for Agriculture and Agricultural Cooperatives commented. (2015; Interview)

2) Investment in Risk Management IT

This issue did not receive much attention from any of the three interviewed state enterprises. They either did not invest heavily in IT support of risk management or did not consider it significantly important to the risk management capability of the organization. Most state enterprises emphasized investing in their main IT system in order to enhance the efficiency of internal control and operation risk like SCADA, the pipeline controlling system of PPT Chemical Public Company Limited. They mostly utilized basic applications such as Microsoft Excel in risk analysis and evaluation. In some cases, the applications or subsystems were developed in-house by their IT office. One example is the early warning system, as discussed in the following:

"The amount of investment is secondary issue. We must identify the problem first, then use IT to solve it. We mostly apply IT to internal control and process control. At PTT, efficiency is a foundation. IT is

essential for operation control. For example, SCADA system used for pipeline control is essential since we need to monitor the pressure and flow of our pipeline system. We need to know whenever there is irregularity and what causes it. The information is crucial for decision making. We invest in core operational risks. The system for that must be real-time," the executive of PTT Public Company Limited explained. (2015; Interview)

A member of the staff of PTT Public Company Limited explained as follows: "I monitor the overview risks of PTT, so for risk management, I use Excel. What application I choose depends on what I am trying to find the answers." (2015; Interview)

"AEROTHAI do not invest heavily in IT. We moderately adopt IT in risk management assessment and risk control. We apply IT for early warning, almost like Chulalongkorn University's war room, but it is not fully implemented. It is partially applied to provide information to the executive in the form of colors; red, yellow, green. We have a plan to implement IT for risk management. The concept is that we input risks for the system to calculate and send the output to MIS. However, we are still studying it. We currently apply IT to monitor risks. If the information is in yellow, we have a meeting to assess the situation. We pay special attention when it is red. It enables us to respond to an emergency. Though we have not fully implement IT in risk management, we can fully respond to emergency since we have our specific procedures," executive No. 1 of Aeronautical Radio of Thailand Ltd. described. (2015; Interview)

Executive No. 2 of Aeronautical Radio of Thailand Ltd. further explained: "We plan to develop the early warning system with out IT department to fully implement it within the next one or two year. Risk management unit will advise their requirement. The system will reduce response time so we can make decision faster." (2015; Interview)

> "We have not invested much in IT that specifically supports risk management. We work with our IT department to develop the system in-house. At the moment, we are considering procuring a software for early warning system. We mostly develop our IT in-house. The bank's IT department developed a system to manage BCM," the executive of Bank for Agriculture and Agricultural Cooperatives said. (2015; Interview)

3) Investment in Human Resources Associated with Risk Management

Most interviewed executives value investment in human resource development in order to forge knowledge and competence, and believe that it must be done continuously. Therefore, state enterprises invest in human resource development rather heavily with the goal to educate personnel across the organization, in addition to people in the risk management unit that are encouraged to update their knowledge regularly. Training and seminars are arranged both internally and externally. Some enterprises visit the organizations implementing best practice in risk management and apply the lessons learned to their operations. Technical operations or processes that require accreditation, such as Business Continuity Management (BCM), are not managed by the enterprises. In such cases, consultants are hired to guide or operate them.

> "We invest a large sum on human resources. People is the most important factor of risk management. Despite all excellent tools you have, decisions must be made by human eventually. If people do not have enough knowledge to make informed decisions, tools are useless. So, investment in human resources is our bank's policy. The risk management committee has emphasized on instilling risk culture organization-wide. It is not necessary for everybody to know every risk of the bank, but they must be aware of risks challenging them. We encourage everyone to review after having a meeting if there is any residual risk, and what are inherent risk of the bank or theirs. We have infused this concept since the beginning, four or five years now. We

have traveled across the country to foster this concept in our branch managers who also have a responsibility as a key risk manager. They need to understand and drive this concept within their branches. Two years ago we appointed Mister and Miss RM of each work unit to support executives in data processing. Decisions are made by executives but Mister and Miss RM perform as if they are a risk officer of their unit. We train them annually. We also have internal communication channel such as intranet and newsletter. Trainings and seminars are provided every year. It is in the training roadmap. We have our own trainers and invite external trainers to teach as well. We use every mode of communication to keep our staff alert of risk management. Risk management department hire consultants only for BCM. For other areas, we utilize external trainers and outside knowledge. We try to learn from other organizations, be it commercial banks or non-financial institutions. We invited members of staff from Bank of Thailand to educate our staff too. This is a significant concept that must be instilled in our people," an executive of the Bank for Agriculture and Agricultural Cooperatives elaborated. (2015; Interview)

"Training people who manage risks is crucial. We have provided regular training every year. Staff must undergo both internal and external trainings," explained executive No. 2 of Aeronautical Radio of Thailand Ltd. (2015; Interview)

Executive No. 1 of Aeronautical Radio of Thailand Ltd. elaborated on this topic further: "We often send our staff to external trainings, but also provide internal training by our own experts every year. Our risk officers stationed at every center are trained yearly. We have human resources development roadmap in place organization-wide. We analyze competency required for risk management and train our risk officers at every center every year. New staff also attend this training. Thus, experienced officers have a chance to refresh their knowledge,

and they can bring their new buddies to learn. Seasoned staff act as mentors until new staff gain more experiences and see trainings as a must. Training is a chance for our staff to exchange their experiences and knowledge among each other." (2015; Interview)

"PTT follow ISO 30001 for risk process, which itself is quite basic. The substance is in the context. Nobody understands our context like we do. Therefore, our staff manages risks the best. Since the context of our risks are not complicated, we have not hired risk management consultant. Consultants are appointed ad hoc. Even though BCM is the plan nobody wants to implement, we need to assure it is effective and functional when it is employed. Hence, we seek accreditation for our BCM policy. Many systems have been certified, such as pipeline system and gas separation plant. If we are to applied for accreditation, we may need consultants to advise on document preparation as there will be a lot of paperwork to do," an executive from PTT Chemical Public Company Limited stated. (2015; Interview)

4) Risk Competency of the People in the Organization

The opinions of the interviewees on the risk competency of people in the organization were that it is a priority of the organization, and that it has a big impact on enterprise risk management effectiveness since people are the most important foundation in developing effective enterprise risk management. For these reasons, all three state enterprises gave priority to activities that improve the competence of the people in the organization. They emphasize training organization-wide as mentioned in topic 2.3, investment in human resources associated with risk management. Besides believing that the staff must be capable and understand its job well, developing skills to improve competency is a process that must be encouraged constantly, particularly since knowledge must be regularly updated to accommodate the ever-changing surrounding situations.

> “People who are good at their jobs naturally manage risks well. It is a responsibility of each person to manage their job. When it comes to risk management processes, it is a responsibility of risk management unit to train our staff. We provide manuals and forms for internal training. However, this comes second to the expertise and competence of people. Primarily, people must truly understand their jobs and good at what they do. We support by provide information and the context of their jobs. Another important element is risk managing methodology. We instill knowledge about risks since the orientation of new staff, taught by trainers from our risk management department. We have a core curriculum and provide trainings by our trainers or external trainers twice a year. Corporate risks are overseen by risk owners who are senior executives, and they cascade the responsibilities to the assistants or assigned teams. We have a meetings with those teams regularly. The plant must also develop their own risk management plan, starting from controlling risks,” the executive of PTT Public Company Limited explained. (2015; Interview)

> “Overall, our risk management personnel are keen at practice but we still need to develop their skills, particularly the theory and concepts,” commented the executive No. 2 of Aeronautical Radio of Thailand Ltd. (2015; Interview)

Besides competency, quantity should not be ignored. The number of staff members in the risk management unit and representative mechanisms, such as appointing adequate risk officers for each unit to manage the workload properly, can have positive impacts on the efficiency of enterprise risk management.

> “In my point of view, risk officers BAAC have at the moment are insufficient. We have about 40, but we need at least 50 – 60 persons. Our business is becoming more complex; therefore, our people must be agile. When deposit increases, our Mister and Miss RM who act as risk

> officers of their unit, shall be responsible for risks that come with increasing deposit. They are risk owners. Each branch must assign a key person to handle this matter, and use the information to make decision with risk management committee of the unit. This scheme requires only few persons. At branch level, we will have every province appoint their risk management and internal control committee, where the branch manager will sit and Mister and Miss RM of the branch will be a secretary of the committee," the executive of Bank for Agriculture and Agricultural Cooperatives said. (2015; Interview)

> "Each of AEROTHAI's center has a risk officer whose job requirement is to have decent knowledge about the roles and responsibilities of own unit and of the organization, because risk officers are not capable of analyzing risks properly if they do not possess the knowledge. Therefore, risk officers must be the person who have worked at their unit for some time," the executive No. 1 of Aeronautical Radio of Thailand Ltd. stated. (2015; Interview)

5) Organizational Structure

The interviews revealed that all three state enterprises assigned dedicated risk management units at the department level. The structure of the risk management of every enterprise was similar, cascading into 3 tiers. The board of directors sits at the top tier over a committee that comes from the representative of the board of directors and the enterprise's top executives. This is a risk management committee. The bottom tier is the working group, comprising the executives and risk management department that performs as a secretary. The working group is tasked with facilitating and laying a risk management framework. The risk management committee, which has representatives from the board of directors, has an important role in driving the effectiveness of risk management. Some state enterprises appoint a chief risk officer (CRO), while some do not since their executive vice president, who oversees risk management, already performs that role.

“At AEROTHAI, risk management unit is a department under the Office and reports directly to the CEO. There is a risk management sub-committee comprising a CEO and every vice president. This sub-committee have bi-monthly meetings. The risk management committee comprises the board of director and the CEO. This committee have a meeting once a month. The board of directors discusses risk management in the meeting quarterly. In my opinion, the board of directors help push risk management forward. They command for prevention and impact analysis whenever there is event risk. This structure functions as if someone helps oversee our performance from operational level to the top level,” the executive No. 2 of Aeronautical Radio of Thailand Ltd. commented. (2015; Interview)

The executive No. 2 of Aeronautical Radio of Thailand Ltd. explained further, “AEROTHAI have not appointed a CRO. Our vice president already oversees the operation, so we do not need a CRO.” (2015; Interview)

“At top tier is the board of directors, then it is cascaded to the risk management committee (RMC) consists of three representatives from the board of directors, presidents and executive vice presidents oversee the overall operations. Risk management department serves as a secretary to RMC, monitoring major risks that the Bank of Thailand closely monitors. Monitoring teams are assigned by the type of risks, with a facilitator team coordinating every activity. We have a committee monitoring risks of each unit at department and regional levels. We apply IT for reporting. Everytime the RMC receives a risk report, they inform the board of directors. Risk management department is independent of strategy department. Risk management department is a second line of defense that reports to the management that the president assigns. We do not officially appoint a CRO. There is an advisor, but he is not one of the committee,” the executive of Bank for Agriculture and Agricultural Cooperatives elaborated. (2015; Interview)

> "Risk management department facilitates risk management in the organization. Their primary responsibility is managing corporate risk profile. They must be able to report to the board of directors what risks are challenging PTT. Once we are facing risks, this department monitors, assesses and facilitates so the framework functions well. Our enterprise risk management committee consists of the board of directors. This committee has a meeting quarterly with the senior executive vice president on planning and strategy serves as a secretary. We also have the RMCC or internal risk management committee that convenes a monthly meeting. The chairman of this committee is the senior executive vice president on planning and strategy, and committee members are executive vice presidents while the risk management department manager serves as a secretary," the executive of PTT Public Company Limited explained. (2015; Interview)

6) Risk Culture

Regarding risk culture, most executives and a member of the staff believe that all three dimensions of risk culture exist in their organizations, and that risk culture plays an important role in the success of risk management.

> "Three dimensions of risk culture completely exist at PTT. We have the framework, the board of directors' policy is clear, and responsibilities assignment is rather well-defined. It is established at corporate business function level. Everyone knows their roles and responsibilities, and there is a linkage between results and KPI", the executive of PTT Public Company Limited identified. (2015; Interview)

> "Risk culture exists across AEROTHAI. We implement risk management at department level. There is a risk officer stationed at every operation center around the country", the executive No. 2 of Aeronautical Radio of Thailand Ltd. said. (2015; Interview)

Each enterprise has its own strength in risk culture. For AEROTHAI, the present president pioneered the enterprise's risk management; therefore, the tone at the top was strong and well-accepted by the management and risk management team.

> "Our president wholeheartedly supports risk management as she pioneered risk management before she stepped up as a president. She came directly from this line of work and was the one who shaped risk management in our organization. She always urges me to help make risk management strong and effective in every department. We must analyze our risks and report to her", the executive No. 2 of Aeronautical Radio of Thailand Ltd. said. (2015; Interview)

Some organizations adopt risk as one of the key performance indicators (KPI); for example, BAAC applies it as a KPI of division managers, and PTT identifies risk management responsibility in the job description of each employee. PTT even integrates risk information in business decision making. Risk information and the lessons learnt from both successful and missed risk management are shared within the enterprise.

> "Risk management is indicated in a job description of every employee. Everyone is assigned with their personal KPI. We used to set a KPI for ERM effectiveness, measuring if everyone performs every procedure of risk management from identifying risks, developing a plan and measuring results. We used to apply it to measure performance of executive vice president, but it is obsolete now. We apply these KPI to the results instead; for instance, measuring EVA, profits or project success, or we are challenged by public trust for the time being, so we apply scores to measure KPI. We replaced process score KPI by result KPI since we believe our process is now stable. If our results measurement is strong, risk management would function well. For instance, if a sale unit set their sale target, they need to manage to achieve their target. If they failed, we would not listen to any excuses; therefore, they would perform and achieve their results eventually.

However, we also must consider their efforts too. If they had performed their best, we may lower the punishment", the executive of PTT Public Company Limited explicated. (2015; Interview)

"We have done everything to support risk management. We use rewarding as an inspiration at personal and department levels, both at the central and regional offices. We adopt results of risk management as score of annual performance evaluation. This scheme is applied to division managers as results of their performance on management. It is also applied to their overall performance evaluation, thus affecting the percentage of their raise. It is a strategy to motivate them to pay attention to risk management. We have applied risk management as one of KPIs for 5 years already, focusing on key risk manager and linking to their raise. Everyone receive bonus at the same rate. Though this KPI values only few percent, it can make the difference at about 3-5% in raise. It makes the staff stressful. We conducted a survey asking if this scheme should be canceled, but we found the divisions wish to maintain it because it is an important issue that should be instill in the enterprise", the executive of Bank for Agriculture and Agricultural Cooperatives elaborated. (2015; Interview)

"PTT considers five aspects when we make important decisions, particularly about investment 1. Reasons to do it and strategic fit 2. Our capability 3. Worthiness of financial and non-financial returns 4. The crucial one, risk, and 5. Source of investment. Risk is extremely important. The executives largely discuss risks in the meetings. Uncertainty is significant to PTT. We have a team to analyze price and product before sharing the information with relating parties. The economic research department also share economic data and information. Relating parties then consider if there are threats or uncertainty that are their risks. Then they plan how to manage those risks. Lessons learnt from projects are shared among RMCC", the executive of PTT Public Company Limited described. (2015; Interview)

Despite their outstanding rewarding dimension of risk culture, PTT and BAAC have not advanced to the stage at which risk management is a criterial for succession planning; it is a criterion for promotion though.

> "PTT adopt risk management as an element of competency appraisal during staff promotion consideration", a member of staff of PTT Public Company Limited explained. (2015; Interview)

Topic 3: Risk Management Process

Compared to risk culture, the majority of executives and a member of the staff indicated that the risk management process is not the most important aspect, but it is crucial since it forms a basis for thinking. The most important aspect in their opinion is knowledge, competency, and understanding of risks of the risk owner.

> "Our risk process follows ISO 30001. The process itself is basic. The substance is in the context. Nobody understand our contexts like we do. However, every organization needs to establish their process, procedures and risk culture", the executive of PTT Public Company Limited stated. (2015; Interview)

> "Process is a foundation. When the process is installed, risk culture naturally emerges and gradually develops following the process. The other part of the culture is intentionally created", the executive No. 2 of Aeronautical Radio of Thailand Ltd. suggested. (2015; Interview)

> "We emphasize on people, and that may link to culture. People must genuinely understand and be aware of risk management. As for process and tools, I always instruct the risk management team not to purely apply COSO ERM to people, but ask if they understand and can identify risks, what their risks are, how they manage risk and how they will identify risks in the future. If our people understand the concept, they may jump to further process without having to learn the basic. We

> manage risks to achieve our objectives. We should concentrate on making it strong, stable and sustainable. However, we still need to apply the process to provide a principle", the executive of Bank for Agriculture and Agricultural Cooperatives explained. (2015; Interview)

Topic 4: Problems and barriers challenging risk management

The executives and a member of the staff gave their opinions that the problems and obstacles challenging risk management are qualitative problems of problems connected with risk management, particularly the quality of the plans or measures to manage risks and the outcomes that miss the targets. Mainly the obstacles are not caused by the system or process, but by people that do not have good knowledge or understanding either about their own job or about risk management. Effective communication is essential in forging cooperation between the risk management unit and risk owners. In addition, one obstacle or serious weak point deterring risk management effectiveness caused by people is lack of risk awareness. This issue can be solved by using past information for analysis and by educating people to be capable of detecting unexperienced risks by creating scenarios to prepare staff for new risks.

> "It is just regular problems in routine work, not a serious one. For example, the quality of some plans should be quantified because we need complex analysis of the overall economic impacts. Sometimes we cannot depict it clearly. We are willing to help to achieve the quality at the level we can accept. It is about communication. At the end of the day, it is the end results that matter. If one says risk management is poor, we have to find out the cause. The first thing to check is if it happens because of unexpectation or the absence of awareness, which is the worst weak point. That is extremely serious. However, if it fails because the path we chose was not executed well, it is a lesson learnt for us to study what should be done in the future", the executive of PTT Public Company Limited stated. (2015; Interview)

Topic 5: Contributions of Risk Management

The majority of the executives and a member of the staff thought that the major contribution of risk management was to minimize loss and optimize opportunity so that the organization can efficiently manage uncertainties, risks, and opportunities.

> "The important contribution of risk management is it mitigate damages and impacts. If it is excellently executed, it can provide an opportunity to build upon in terms of business and management. If you understand this point, it can be benefitial", the executive of Bank for Agriculture and Agricultural Cooperatives said. (2015; Interview)

> "Risk management is managing undertainty. There are the upside and the downside of it. If you find the upside, take hold of it but if you find the downside, you have to prevent it. It always come together. Risk management at PTT is not management of only the downside, but also of the opportunity. Threats are definitely the downside, but uncertainty can be both", the executive of PTT Public Company Limited stated. (2015; Interview)

Topic 6: Strategies/processes to improve risk management

The majority of the interviewees agreed that the strategies for the development of risk management must emphasize instilling risk culture enterprise-wide so that everyone makes every decision with risk awareness. Other strategies include process development, such as selecting appropriate risk management tools. Certain executives have plans to streamline the structure of the risk management unit by encouraging cross-functional cooperation between responsible persons from different units of one branch with risk management department in order to achieve more efficient results from the sharing of resources, knowledge, and ideas.

> "Risk culture is a basic element. Risk and return are major issues. My ideal is for everyone at PTT to be aware of risks and returns at all time. I want everyone to have an awareness that every decision has risk and

return tie to it since it will come back to the economic value of the organization. PTT has set up a Black Swan program to encourage our people to speculate about what we have never experienced. Awareness of risks and return is extremely important", the executive of PTT Public Company Limited said. (2015; Interview)

"We will adjust the structure of risk management team. It used to consist of 5 – 6 persons from risk management unit, but the executive who oversees this line of work plans to form a team consisting of representatives of four divisions under the Policy and Strategy department. Not only staff of risk management division perform risk management jobs, but people outside the department can join and learn. This matrix can generates diverse ideas as well as increase manpower. It is sharing of resource, knowledge and idea", the executive No. 2 of Aeronautical Radio of Thailand Ltd. explained. (2015; Interview)

"We start at this department because there are several competent staff who may not have a chance to perform at the best of their extent, so we try to empower them. In addition to making them proud of having big responsibilities, this idea likely brings good results. We do not want a silo structure. We want to encourage sharing, destroying the walls", the executive No. 1 of Aeronautical Radio of Thailand Ltd. added. (2015; Interview)

Topic 7: Impact of risk management effectiveness on performance

The majority of the interviewees believe that risk management effectiveness is related to and has an impact on the performance of the enterprise. However, for organizations that do not aim to make profits, the financial impacts may not be as apparent as the overall performance of the organization. Furthermore, effective risk management is likely to impact future business opportunity and sustainability in addition to present performance.

> "I think it has impacts on performance. The financial impact may not be as apparent as the overall performance of the organization since our mission is not centered on making profits", the executive No. 1 of Aeronautical Radio of Thailand Ltd. commented. (2015; Interview)

> "I agree that the risk management effectiveness has an impact on performance of the enterprise. Ideally, we manage it well that it allows us to see business opportunity", the executive of Bank for Agriculture and Agricultural Cooperatives said. (2015; Interview)

Topic 8: Suggestions for improving risk management effectiveness

The majority of the interviewees had opinions and suggestions on how to improve risk management effectiveness as follows.

1) They approved of applying risk management effectiveness as a performance evaluation criterion under the management category. This movement enhances cooperation across the enterprise and drives the advancement of risk management, particularly when it is linked to incentive.

> "I agree with using risk management effectiveness as a performance evaluation criterion since it is a tool for risk management team to gain cooperation from other departments. It would be even better if they work with risk management team because they genuinely understand and see the benefits. Appraisal score does not affect the bonus, which is paid at fixed rate without linkage to anything. If we associate it with performance, it should have an impact on risk management. The risk management team may not have to work this hard", the executive No. 1 of Aeronautical Radio of Thailand Ltd. commented. (2015; Interview)

2) The sub-criteria that were a combination of process and culture were considered appropriate since people and risk awareness, which have a role in building risk culture, are as important as processes and should be recognized by every organization. The interviewees agreed that risk culture is a crucial part of risk management effectiveness, as suggested by an executive of PTT Public Company

Limited: “Process, procedure and culture are all important. These are components that should exist in every organization.”

3) Some criteria should be reviewed for their worthiness, the capability to create value-added for enterprise risk management, as well as flexibility. Previously, there was a criterion for management stipulating the provision of a strong room which required a lot of investment and may not have been necessary as there are other worthy options. Inappropriate criteria may lead state enterprises to aim for a good score rather than to earnestly manage the risks of the organization. This issue should be considered so that the enterprises optimize their resources for good purposes.

> “Balance between complication and worthiness should be considered during selection of risk management tools. A tool like risk map may not be necessary. We need to consider the complication of managing risks and benefits the organization will gain from the tools”, the executive of PTT Public Company Limited recommended. (2015; Interview)

> “Tools identified in TRIS’s criteria should be flexible. There may be other options but TRIS strictly stipulated it, so every enterprise applies that tool though it may not be appropriate. For example, a strong room should be contingent upon the objective of having it. We have a data center and realtime backup at 3-4 sites; thus, a strong room is not essential. Eventually, every enterprise just tries to achieve good score without actually manage enterprise risks. The government or monitoring office should look into this issue”, a member of staff of PTT Public Company Limited suggested. (2015; Interview)

4) The Ministry of Finance, as an overseeing office, should provide support for knowledge and more practical advice in a more convenient, quick, and timely manner when the enterprises seek advice or ask questions. More workshops should be arranged for state enterprises to be capable of adapting theories to practice. In addition, the MoF should act as a facilitator, encouraging cooperation of state enterprises to share knowledge. At present, some state enterprises have formed an alliance unofficially, such as the state enterprises in Group A.

> "We need more support from the Ministry of Finance on applicable academic knowledge as we only have superficial knowledge at the moment. SEPO do not answer our questions immediately. It would be good to have a team or consultants to assist when state enterprises have problems about the methodology or application. Now they only take the questions and wait for comments from the consultant; hence, we cannot move on. SEPO should be able to answer right away, and not only about risk. As for training, more workshops would be great. In short, SEPO should be capable of being a practical advisor who can provide assistance immediately. State enterprises in Group A are sharing knowledge within the group. We have meetings and setting a group in Line chat application. We do all these without the involvement of MoF or TRIS. We have not had a meeting lately, but we exchange common knowledge through a group in Line application", the executive No. 1 of Aeronautical Radio of Thailand Ltd. explained. (2015; Interview)

5) Regarding the risk management structure, some executives suggested that the structure of the risk management office be independent from the management, following the pattern of the internal audit unit that reports to the audit committee. This pattern enables the organization to operate risk management independently and more efficiently.

> "My suggestion for technical aspect is risk management department should not report to the executive vice president or any president. I see that as dependent. The unit should report to RMC directly, same as the audit committee that is independent. For corporate governance to be efficient, risk management unit must be independent. BAAC have a plan to do so. We hired PwC to study the possibility. They suggestd it should be independent. We cannot rely on specific person, thinking this or that person is trustworthy. By making risk management unit independent, we will get a clear picture. The CEO can compare information from both sides. If I were SEPO, I woud push for risk

management to be a core of every organization. By being a core I mean it must be clearly declared that the structure of risk management must be independent and transparent. This happens at national level so CEOs and the Boards are aware of it and pay attention to it. We must enforce this if we consider risk management crucial. Do not let risk management unit overpowered by influence of anyone. This should be a driving force", the executive of Bank for Agriculture and Agricultural Cooperatives suggested. (2015; Interview)

CHAPTER 7

CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

7.1 Conclusion

This research, titled "Risk Management and Performance of State Enterprises in Thailand," had three objectives: 1) to study the factors that have impacts on the risk management effectiveness of state enterprises in Thailand, i.e. size of the organization, investment in risk management support information technology (IT), investment in the human resources associated with risk management, the risk competency of the people in the organization, and organizational structure and risk culture, by exploring the relationship of these six elements with risk management effectiveness and the performance of the enterprises; 2) to examine the relationship between risk management effectiveness and the performance of state enterprises in Thailand, and 3) to study the best practice in risk management of the three state enterprises chosen for the case study.

The research methodology included primary data collection through a questionnaire delivered to the executives of state enterprises and in-depth interviews, and collection of the secondary data from the database of the State Enterprise Policy Office (SEPO), under the Ministry of Finance. The obtained data were processed for quantitative and qualitative analysis. The results of the study are presented following the objectives of the research.

7.1.1 Factors Affecting Risk Management Effectiveness

The information obtained through the questionnaire from 36 state enterprises identified the characteristics of the dependent and independent variables applied to test the relationships with risk management effectiveness. To answer the first objective of this research, data were analyzed using the descriptive statistical analysis technique.

The average of the dependent variables for risk management effectiveness was 3.28 from the full score of 5. The data on the seven independent variables at interval and ratio scales revealed the following: 1) the average asset of the 36 state enterprises was 254,712 million baht; 2) investment in risk management IT was approximately 16 million baht; 3) investment in the training of the people associated with risk management was 19,398 baht/person/annum; 4) the average score for risk competency was 3.37 from 5; 5) the risk culture variable comprised three dimensions: tone at the top, governance, and business decisions and rewarding. The averages of those three dimensions were 3.78, 3.80, and 2.94 out of 5 respectively.

The research applied 11 variables at nominal scale. The data suggested that the factors associated with good risk management were present in more than 80 percent of the state enterprises. Regarding risk competency, there was participation of the main working groups and the appointment of a risk officer. There were dedicated risk management units that support the organizational structure element. Every component of the risk culture existed, from frequent meetings of the risk management committee, the CEO attending risk committee meetings, top executives attending risk committee meetings, assigning risk owners, defining clear targets, disclosure of risk information, and timeliness of financial statements. The only missing factor was a CRO appointment under the organizational structure. Less than half of the state enterprises (44%) appointed a CRO, whereas more than half the enterprises (56%) had not appointed a CRO in their organization.

7.1.1.1 Correlation between the Six Factors and Risk Management Effectiveness

The information gathered from the questionnaire returned by the 36 state enterprises indicated that all but two factors, investment in the human resources associated with risk management and organizational structure, had a positive relationship with risk management effectiveness.

To test the relationship between the six mentioned factors regarding risk management effectiveness, the researcher determined 18 variables under the six factors comprising 11 independent variables at a nominal level and seven dependent variables at interval and ratio levels. Eleven independent variables were used to test three factors: the risk competency of the people in the organization, organizational

structure, and risk culture. Dependent variables were applied to test five factors: the size of the entity, investment in risk management IT, investment in the human resources associated with risk management, risk competency, and risk culture.

Among the 11 nominal independent variables, risk competency and risk culture were the two variables found to have a statistically-significant correlation with risk management effectiveness. Those two factors included eight variables, consisting of one variable used to test the correlation with risk competency (having a risk officer (CPRO)) and seven variables for risk culture, comprising frequency of risk management committee meetings (CUTFRMC), the frequency at which the CEO attended risk management committee meetings (CUTFCEO), the frequency at which senior management (1st – 3rd most senior executives) attended risk management committee meetings (CUTF123), risk management responsibility assignment (CUGJD), clarity of targets (CUGTAR), risk information disclosure (CUGTRAN), and the timeliness of financial statements (CUGUPD) as illustrated in Table 7.1.

Table 7.1 Summary of the Variables Affecting Risk Management Effectiveness: Nominal Independent Variables

Independent Variable	Dependent Variable	F	Sig
CPRO	RMS	13.485	0.001
CUTFRMC	RMS	6.923	0.013
CUTFCEO	RMS	14.241	0.001
CUTF123	RMS	5.386	0.027
CUGJD	RMS	6.923	0.013
CUGTAR	RMS	4.719	0.038
CUGTRAN	RMS	4.954	0.033
CUGUPD	RMS	26.884	0.000

Seven independent variables at interval and ratio levels showed a positive relationship between risk management effectiveness and four factors: the size of the entity, investment in risk management IT, risk competency, and risk culture.

The only factor that did not display a positive correlation was investment in the human resources associated with risk management, comprising six variables, which were asset (AS), investment in risk management IT (INIT), risk competency (CPSURVEY), tone at the top dimension of risk culture (CUTSURVEY), the governance dimension of risk culture (CUGSURVEY), and the business decision and rewarding dimension of risk culture (CUDSURVEY).

Table 7.2 Summary of Variables Affecting Risk Management Effectiveness: Interval and Ratio Independent Variables

Independent Variable	Relationship with Risk Management Effectiveness (RMS)	r	p
AS	+	.754	.000
INIT	+	.356	.033
CPSURVEY	+	.581	.000
CUTSURVEY	+	.495	.002
CUGSURVEY	+	.600	.000
CUDSURVEY	+	.636	.000

7.1.1.2 Influences of Variables on Risk Management Effectiveness

This study employed regression analysis and found that three interval and ratio independent variables among the seven variables could explain the variance of risk management effectiveness (RMS) at the rate of 76 percent. The three variables having a statistical significance in relation to risk management effectiveness were asset (AS), investment in risk management IT (INIT), and business decisions as a rewarding dimension of risk culture (CUDSURVEY). Among these three variables, asset (AS) had most influence on risk management effectiveness, followed by the business decision and rewarding dimension of risk culture (CUDSURVEY) and investment in risk management IT (INIT), as illustrated in Table 7.3.

Table 7.3 Summary of Multiple Regression Analysis of Variables Affecting Risk Management Effectiveness

Independent Variable	Dependent Variable	Standardized Regression Coefficient (ß)	t	p
Ln AS	RMS	.584	6.097	.000
CUDSURVEY	RMS	.354	3.681	.001
Ln INIT	RMS	.264	3.015	.005

7.1.2 Correlation Between Risk Management Effectiveness and Performance

This research examined the relationship between the variables for risk management effectiveness and the performance of state enterprises, applying data on 57 state enterprises during 2004-2013 to meet the objective 2 of the research.

The variable for risk management effectiveness was developed from the risk management evaluation score (RMST). The variables applied to measure performance comprised the performance appraisal score (PAS), return on equity (ROE), and cost-to-income (CTI).

Employing descriptive statistics to explain the characteristics of the dependent and independent variables for the sample, the average of the dependent variables for risk management effectiveness evaluation of 57 state enterprises was 3.57. State enterprises in the energy sector had the highest average, while the agriculture sector had the lowest average. From the size of the enterprise perspective, large enterprises had the highest average, and small enterprises had the lowest average.

The average of the dependent variable for ROE was 5.49, with the energy sector having the highest average and the natural resources sector having the lowest average. Considering the size of enterprises, the medium-size ones had the highest average whereas the small-size ones had the lowest average.

On average, cost-to-income was 90.60%. Examining by sector, the natural resources sector showed the highest average and the communication sector held the

lowest value. Medium-size enterprises had the highest average while the large-size enterprises had the lowest cost-to-income average.

The entire state enterprise sector had an average of 2.64 scores at independent variable for risk management effectiveness. The highest average by sector was in the energy sector, and the lowest was found in the agriculture sector. Large-size state enterprises showed the highest average, while small-size enterprises had the lowest average.

The multiple regression analysis revealed a positive correlation between risk management effectiveness and the performance appraisal score and ROE, whereas the correlation between risk management effectiveness and cost-to-income was found to be negative.

Large state enterprises and those in the financial institution sector displayed a correlation between risk management effectiveness and performance in all three variables.

7.1.3 Case Study of the State Enterprises Implementing Best Practice in Risk Management

In order to verify the results of the quantitative analysis in order to find answers to objectives 1 and 2 of this study, the author conducted in-depth interviews with executives of three state enterprises implementing best practice in risk management, which ere PTT Chemical Public Company Limited from the energy sector, Aeronautical Radio of Thailand Ltd. from the transport sector, and the Bank for Agriculture and Agricultural Cooperatives from the financial institution sector. The interviews disclosed that the majority of the executives that oversaw the risk management of the selected enterprises agreed that the size of an entity and investment in risk management IT were factors unlikely to be associated with risk management effectiveness. They suggested that the factors likely to have positive a relationship with risk management effectiveness were investment in the human resources associated with risk management, organizational structure, and risk competency and risk culture. In their opinions, risk competency and risk culture had a greater impact on the efficiency of risk management compared to the other two factors.

Regarding the questions asked during in-depth interviews to answer objective 3 of the research, the majority of the executives and a member of the staff agreed that risk management effectiveness had positive impacts on the performance of state enterprises. However, the financial impact might be indiscernible at non-profit centric organizations. Furthermore, risk management effectiveness not only affected present performance, but also created future business opportunity.

7.2 Discussion

This research employed qualitative and quantitative statistical methods to find the answers to objective 1 of the research, which examined the relation between six factors and risk management effectiveness as well as the impacts of those factors on the effectiveness of risk management. Each method yielded both similar and different findings. Nevertheless, the conclusion can be drawn that all six factors had positive impacts on risk management effectiveness as displayed in Table 7.4. The six factors having a positive impact on the effectiveness were large state enterprises, state enterprises that invest more in risk management IT and human resource development with higher competency of personnel, better organizational structure and risk culture perform better in risk management.

Table 7.4 Analysis of the Relationship between the 6 Factors and Risk Management Effectiveness Employing Different Statistical Techniques

Statistical Analysis Technique	**Relationship between Risk Management Effectiveness and 6 Factors**					
	Asset (AS)	**Investment in IT (INIT)**	**Investment in Human Resource Development (INHRTRA)**	**Risk Competency**	**Structure**	**Risk Culture**
Quantitative Method						
ANOVA				✓ (CPRO)	×	✓ (CUTFRMC. CUTFCEO,

Table 7.4 (Continued)

Statistical Analysis Technique	Relationship between Risk Management Effectiveness and 6 Factors					
	Asset (AS)	**Investment in IT (INIT)**	**Investment in Human Resource Development (INHRTRA)**	**Risk Competency**	**Structure**	**Risk Culture**
						CUTF123, CUGJD, CUGTAR, CUGTRAN, CUGUPD)
Correlation	✓	✓	×	✓ (CPSURVEY)		✓ (CUTSURVEY) (CUGSURVEY) (CUDSURVEY)
Multiple Regression	✓	✓	×	×		✓ (CUDSURVEY)
Qualitative Method						
In-depth interview	×	×	✓	✓	✓	✓

Note: ✓ Positive relationship found

× Relationship not found

Table 7.4 illustrates the agreement in every statistical technique employed for the factors that had a positive correlation with risk management effectiveness. The correlations found the most in the analysis of risk culture emphasized the significance of the relationship. The intensity of the relationship lessened regarding the risk competency of the people in the organization, the size of the entity, investment in IT, organizational structure, and investment in the human resources associated with risk management. The relation of risk management effectiveness with organizational structure and investment in human resources was discovered only through the in-depth interviews. The interviewed executives commented that state enterprises with a higher ratio of members of the board of director sitting in a risk management

committee could manage risk better. Furthermore, more effective risk management was found in the state enterprises that established three tiers of a risk management organizational structure; namely, the state enterprise committee, the risk management committee consisting of members of the board of directors and the management, and the internal working group consisting of the organization's management.

The cause of the difference between the results of quantitative and qualitative analysis regarding the relationship between risk management effectiveness and the six factors affecting risk management may be a limitation of statistical methods such as the data collection for the quantitative analysis of investment in IT and human resources. The majority of the state enterprises had not implemented a financial data collection system for investment in risk management that clearly recorded or distributed the cost of each activity. Further, only a few respondents provided information on investment in IT. The measurement of organizational and risk culture is complicated. Quantitative measurement did not facilitate in-depth analysis like the qualitative method, which provided more details. On the contrary, the qualitative method applied to the asset variable might have been influenced by the opinions of the interviewees, compared to the accountability of the empirical data collected using the quantitative method.

The differences in the sample group used for the quantitative and qualitative analysis should be considered when comparing the results of both methods. The data collected for the quantitative methods belonged to the entire state enterprise sector; thus, the data reflected an overview picture of the state enterprises in Thailand. The researcher selectively collected the information from three state enterprises practicing best practice in risk management to serve the objective of the research in exploring the factors that these three leading enterprises consider to have an impact on the effectiveness of risk management. The purpose of employing this method was to provide other state enterprises with a shortcut to improve their risk management effectiveness by learning from the best.

Table 7.5 answers objective 2 of this research, which aimed to examine the relationship between risk management effectiveness and the performance of state enterprises. The results from both the qualitative and quantitative research methodology confirmed the relationship as displayed in the table. The state

enterprises that performed more effective risk management showed better performance than the enterprises practicing less effective risk management, as reflected by the variables for the performance appraisal score, ROE, and cost-to-income. In addition, the large state enterprises and those in the financial institution sector displayed correlations of risk management and performance in every variable tested.

The in-depth interviews disclosed that the majority of the executives supported the findings from the quantitative analysis. The interviews also indicated that the relationship between risk management effectiveness and financial performance might not be apparent in enterprises whose mission is not to generate financial benefits. Most importantly, state enterprises with better effectiveness in risk management performed better than enterprises showing less effective risk management at present, and had more future business opportunities.

Table 7.5 Analysis of the Relationship between Risk Management Effectiveness and the 3 Variables for Performance

Statistical Analysis Technique	**Relationship between Risk Management Effectiveness and 3 Variables for Performance**			**Remarks**
	PAS	**ROE**	**CTI**	
Quantitative Method				
Correlation	+	+	-	All 3 variables found in large state enterprises and financial institution sector
Qualitative Method				
In-depth interview	+	+	-	Having a positive impact on future business opportunities

7.3 Theoretical Contribution

The theoretical contributions of this research are as follows.

1) This research provides empirical evidence supporting the theoretical explanation of the agency theory in the context of the state enterprise in Thailand. The positive correlation between risk management effectiveness and the performance of the organization found in this study illustrates that in the organization where the owner is not the management, as in state enterprises, a monitoring mechanism such as risk management assures the principal, in this case the stockholders, that the agent (the executives of state enterprises) is managing the enterprise by determining to generate benefits and create value-added for the stockholders.

2) This study provides empirical evidence supporting the COSO (2004) enterprise risk management framework in the context of state enterprises in Thailand. It confirms that besides the continuous implementation of the risk management process, the success factors for risk management framework include elements of risk culture, for instance, support from the executives and effective communication. The qualitative analysis of the case study revealed that the three dimensions of risk culture—tone at the top, governance, and business decisions and rewarding—were significant in relation to risk management effectiveness.

7.4 Recommendations

This research leads to policy recommendations that may be useful to monitoring agencies, state enterprises, and future researchers. The State Enterprise Policy Office (SEPO) may adopt the findings to establish a framework for evaluation and to determine criteria for risk management appraisal, as well as developing a roadmap and improving the quality of risk management operations in order to optimize the performance of state enterprises.

The state enterprises may utilize the findings from this research for resource allocation and development of plans for operations that have impacts on risk management in order to achieve performance targets effectively. The policy recommendations can be identified by stakeholders as follows.

1) Recommendations for Monitoring Agencies that supervise and determine policies and measures on managing and developing state enterprises such as the State Enterprise Policy Office

(1) The findings from the research can be applied to the development of an appraisal system and criteria to assess risk management by emphasizing the factors proven to have impacts on or have a relationship with risk management effectiveness. The state enterprises can adopt the system and criteria as guidelines for their risk management. Risk culture is a critical element of risk management that should be emphasized apart from process. Every statistical analysis method employed in the research indicated that in order to improve the quality of risk management operations, people in the organization need to be aware of risks when making any decision.

The other five factors-size of the entity, investment in risk management IT, the risk competency of the people in the organization, investment in the human resources associated with risk management, and risk management organizational structure-cannot be ignored despite only certain statistical analyses suggesting a relationship between these factors and risk management effectiveness.

(2) The results displaying a relationship between risk management effectiveness and the performance of state enterprises should be adopted to drive better performance by improving risk management effectiveness beyond the standard average as quickly as possible. This should be a priority, particularly with state enterprises in the financial institution sector since it can have a high impact on both financial and non-financial outputs. Though financial contributions are not apparent in state enterprises in other sectors, they have a significance regarding overall performance. The reason why financial contributions are obscure in sectors other than that of the financial institution may be because it is not the mission of some enterprises in other sectors to generate profits, or they may be established to serve social service purposes.

(3) A database for state enterprise performance should be updated to render benchmarking data of significant information such as economic profit (EP) in order to enhance research and study or to distribute the information to interested agencies. Moreover, the database should be accessible to the public.

(4) In-depth interviews allow monitoring agencies to obtain valuable recommendations. For example, the performance appraisal system used to evaluate state enterprises should be flexible and suitable to the evaluated enterprises. In addition, the appraisal criteria should calculate the worthiness of the activity in comparison with investment to achieve such criteria.

The average performance evaluation score for risk management that is lower than standard, and the importance of risk management effectiveness in relation to performance, reflect the urgent need for the monitoring agencies to champion better risk management rather than only determining the criteria and hiring TRIS Corporation Ltd. to be the appraiser. The Ministry of Finance as a monitoring agency should support state enterprises by providing knowledge and practical advice more efficiently. State enterprises should receive answers to their questions in a timely manner. Additionally, monitoring agencies should design workshops to guide state enterprises in how to adapt theories and concepts to practice.

2) Recommendations to the Board of Directors and Executives of State Enterprises

(1) The board of directors and executives of state enterprises should give priority to developing policies and plans for risk management that will drive the performance of the organization. The results of the research identified risk management as one of the management tools that affect the performance of state enterprises, both for enterprises in the financial institution and non-financial institution sectors. The results indicate that risk management is associated with the capability to generate profits, management of expenses, and the overall performance from the non-financial perspective of state enterprises, in particular the entities in the financial institution sector and large enterprises.

(2) The information taken from this study should be utilized to allocate resources and to develop plans to improve the efficiency of risk management, particularly in forging a risk culture in the organization besides focusing on process. Other factors found to be associated with or having impacts on risk management effectiveness should not be dismissed. In addition to enabling the organization to improve risk management effectiveness, those factors will allow the enterprises to achieve their performance targets effectively.

(3) The monitoring agencies and state enterprises may review the independence of the organizational structure for risk management, as well as introducing cross-functional collaboration of offices under the same line of command, such as in strategic planning and budget planning, in order to increase the efficiency of risk management. By adopting a matrix organization structure, the organization will benefit from the sharing of resources, knowledge, and ideas. This can be an important instrument in driving risk management operations.

(4) This study may have some limitations in terms of application since the sample size was small for both the cross-section and time-series data, as many state enterprises have transitioned to the new performance evaluation system called State Enterprise Performance Appraisal (SEPA), which includes risk management effectiveness under other criteria, unlike the previous system. Moreover, there were obstacles in collecting the data on some of the independent variables, such as investment in IT and investment in human resources since the majority of the state enterprises did not record financial data on the investment in risk management. The cost of activities supporting risk management was not distinctively allocated. If state enterprises are interested in analyzing the impact of those variables to decide their worthiness, the cost per activity should be recorded. Additionally, the performance of state enterprises may be affected by external factors such as politics, the economy, and finance.

3) Suggestions for Future Study

Future study on similar topics should be expanded to cover the factors that have become more common in current business operations, such as economic profit, if the monitoring agency is to make such data accessible to the public in order to reach more detailed conclusions. Other variables that should be included in future study are the factors that measure future business opportunity, which is another benefit of risk management besides the variables employed in this research.

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APPENDICES

APPENDIX A
RESEARCH QUESTIONNAIRE
(FOR RISK MANAGEMENT UNIT)

RESEARCH QUESTIONNAIRE
(FOR RISK MANAGEMENT UNIT)

Subject Research Questionnaire

Dear Sir/Madam,

I am Natthita Rungwatthana, a Ph.D. candidate in Public Administration at National Institute of Development Administration. I am conducting a survey for my dissertation, "Risk Management and Performance of Public Enterprises in Thailand," which is aimed at examining the factors that influence the efficiency of risk management, as well as the relationship between risk management effectiveness and performance of state-owned enterprises in Thailand.

Attached is a questionnaire for the survey, comprising 7 parts as follows:

1. General information about the respondent
2. Investment in risk management information technology
3. Investment in human resources associated with risk management
4. Risk competency of people in the organization
5. Risk management organizational structure
6. Risk culture
7. Opinions and suggestions

The information obtained from the questionnaire will be kept strictly confidential and applied for the purpose of the research only. I am grateful for your precious time spent responding to the questionnaire. Kindly return the replied questionnaire by e-mail to Natthita.ru@mcot.net, or by postal service using the provided envelope, before December 31, 2014.

Thank you in advanced for your kind cooperation.

Faithfully yours,

Natthita Rungwatthana

Part 1 General Information on the Respondent

Instruction Please tick ✓ the box that best describes your answer.

1. Name of your organization.....
2. Work unit (section/division/department/office).....
3. Gender

   ☐ 1) Male ☐ 2) Female

4. Age

   ☐ 1) Under 25 ☐ 2) 25-35

   ☐ 3) 36-45 ☐ 4) Over 45

5. Education level

   ☐ 1) Lower than a Bachelor's Degree ☐ 2) Bachelor's Degree

   ☐ 3) Master's Degree ☐ 4) Doctorate Degree

6. Your position.....
7. Years of experience at this organization

   ☐ 1) Less than 3 ☐ 2) 3 - 5

   ☐ 3) 6 - 10 ☐ 4) More than 10

Part 2 Investment in Risk Management Information Technology

Instructions Please fill the numbers in the blank.

1. Investment in establishing information technology (IT) to support risk management (total amount invested since the year your organization undertook performance evaluation on risk management until last year)	Amount (Baht)……

Part 3 Investment in Human Resources Associated with Risk Management

1. Training expense (for last year)	Amount (Baht/person/year)……

Part 4 Risk Competency of People in the Organization

Instruction Please tick ✓ the box that best describes your answer and/or fill the numbers in the blank.

1. Does the risk management unit have responsibilities in the main working groups of your organization?

☐ 1) No.

☐ 2) Yes, but without official appointment.

☐ 3) Yes. The unit is officially appointed to participate in some groups.

☐ 4) Yes. The unit is officially appointed to participate in every main working group.

☐ 5) Others (please specify) .....

2. Does your organization include a risk officer in its structure and appoint risk officers enterprise-wide?

☐ 1) No.

☐ 2) Yes, both executives and operational staff are eligible.

☐ 3) Yes, only executives are eligible.

☐ 4) Others (please specify).....

Instruction The following questions concern the extent of your agreement with the statement regarding the risk competence of people in your organization. Please tick ✓ the space that best describes your answer.

Indicators of risk competence		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
3.	The risk management unit is resourceful.					
4.	The risk management unit is skillful.					
5.	The risk management unit is trusted for its expertise and is accepted across the organization as a valuable decision supporter.					

Indicators of risk competence		Strongly disagree → Strongly agree				
		1	**2**	**3**	**4**	**5**
6.	Your organization thoroughly promotes the development of the advanced risk management skills of people in the organization by providing training and development programs.					
7.	The people in your organization are insightful concerning risk management.					
8.	Risk competence is commonly accepted as an essential skill for the organization.					

Part 5 Organizational Structure

Instruction Please tick ✓ the box that best describes your answer.

1. Does your organization designate a dedicated risk management work unit?

☐ 1) No, and there is no plan for a dedicated unit. Risk management responsibility is integrated in another unit (please identify the unit).....**.....**

☐ 2) No, but there is a plan to designate a dedicated unit in the next 1 – 2 years.

☐ 3) Yes.

2. Does your organization have a chief risk officer (CRO)?

☐ 1) No, and there is no plan to appoint a CRO.

☐ 2) No, but there is a plan to appoint a CRO within the next 1 – 2 years.

☐ 3) Yes.

Part 6 Risk Culture

Definition Risk culture means the values, beliefs, attitudes, knowledge, and understanding of risk and risk management shared by a group of people with a common purpose within an organization. Risk culture may be concrete or abstract embedded within an organization and unconsciously expressed. It is inherent but subject to change. This research measures risk culture in 3 critical factors: tone at the top, governance, and rewarding appropriate decision making.

Instruction Please tick ✓ the box that best describes your answer and/or fill the numbers in the blank.

Tone at the top

1. How often does a risk management committee convene a meeting?
   - ☐ 1) Once a year
   - ☐ 2) Biannually
   - ☐ 3) Quarterly
   - ☐ 4) Regularly

2. How often does your CEO attend risk management committee meetings?
   - ☐ 1) Seldom (less than 50% of the meetings)
   - ☐ 2) Often (more than 50% of the meetings)
   - ☐ 3) Every time

3. Percentage of top executives (first, second, and third most senior executives) attending risk management meetings last year
   - ☐ 1) Less than 50%
   - ☐ 2) 50 – 80%
   - ☐ 3) More than 80%

Instructions The following questions concern the extent of your agreement with the statement regarding the tone at the top concerning risk management. Please tick ✓ the space that best describes your answer.

Indicators of tone at the top		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
4.	Your CEO clearly supports and gives priority to risk management.					
5.	Your CEO has defined risk management strategies with clear and concrete objectives.					
6.	Your CEO efficiently communicates about risk management strategic planning and targets to ensure proper understanding throughout the enterprise.					
7.	Your CEO encourages transparent, direct, and rapid information disclosure across the enterprise.					
8.	Your CEO encourages early disclosure of the organization's bad news.					
9.	Your CEO is highly capable of learning from both successful and missed risk management decisions, as well as applying knowledge to create the competitive advantage of the organization.					

Governance

10. Does your organization delegate accountability in managing risk?

☐ 1) No.

☐ 2) Yes, but it is not officially documented.

☐ 3) Yes, and it is officially documented.

☐ 4) Yes. It is officially documented and defined in the job descriptions.

☐ 5) Yes. It is officially documented and defined in the job descriptions. Related persons sign the document to acknowledge their responsibilities.

☐ 6) Others (please specify).....

11. Does your organization clearly define the operational objectives of the risk owner?

☐ 1) No.

☐ 2) Yes, but it is not officially documented.

☐ 3) Yes, and it is defined as a KPI.

☐ 4) Yes. It is defined as a KPI and cascaded into the department level.

☐ 5) Yes. It is defined as a KPI and cascaded into the department level. A memorandum of understanding at the department level is issued and signed.

☐ 6) Others (please specify) .....

12. Does your organization disclose its risk information?

☐ 1) No.

☐ 2) There is a system and channel enabling access to risk information.

☐ 3) There is assessment for awareness of risk information and access to the information.

☐ 4) There is knowledge management of risk information.

☐ 5) Others (please specify).....

13. Are the financial statements of your organization timely?

☐ 1) No.

☐ 2) Yes.

☐ 3) Others (please specify) .....

Instructions The following questions concern the extent of your agreement with the statement regarding governance. Please tick ✓ the space that best describes your answer.

Indicators for governance		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
14.	The risk management unit has a completely advanced role in assuring the organization that risk information is efficiently communicated.					
15.	The risk information of the organization is transparently disclosed.					
16.	Risk information is communicated enterprise-wide in a timely manner.					
17.	Knowledge of risk management, both the successful and missed cases, is exchanged efficiently across the organization.					

Decision making and rewarding appropriate decision making

Instructions The following questions concern the extent of your agreement with the statement regarding decision making and rewarding appropriate decision making. Please tick ✓ the space that best describes your answer.

Indicators of decision making and rewarding appropriate decision making		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
18.	Risk information is integrated in the important business decisions and business planning of your organization.					
	1 = Not integrated in business decisions/planning of important projects 3 = Integrated in some business decisions/planning of some important projects 5 = Integrated in every important business decision/project					
19.	Important business decisions are affected by political influence.					
	1 = Affected and cannot be managed. Decisions are distorted from rationa decision making. 3 = Affected but manageable 5 = Unaffected					
20.	Your organization applies risk management-related indicators for performance evaluation and rewards people that are insightful of risks challenging the entity and manage those challenges appropriately.					
	1 = No 2 = Risk management indicators are applied to performance evaluation.					

Indicators of decision making and rewarding appropriate decision making		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
	3 = Risk management indicators are applied to performance evaluation, and linked to non-financial incentives. 4 = Risk management indicators are applied to performance evaluation, and linked to financial incentives. 5 = Risk management indicators are applied to performance evaluation, and linked to financial and non-financial incentives as well as punishment.					
21.	Your organization includes risk competency as a criterion for succession planning.					
	1 = No 3 = Risk competency is applied as a criterion for succession planning for executives at some levels. 5 = Risk competency is applied as a criterion for succession planning for executives at every level.					

Part 7 Opinions and Suggestions

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******* Thank you for taking your time to answer the questionnaire. *******

APPENDIX B

RESEARCH QUESTIONNAIRE

(FOR EXECUTIVE VICE PRESIDENT/DIRECTOR OF STATE ENTERPRISES)

RESEARCH QUESTIONNAIRE
(FOR EXECUTIVE VICE PRESIDENT/DIRECTOR OF STATE ENTERPRISES)

Subject Research Questionnaire

Dear Sir/Madam,

I am Natthita Rungwatthana, a Ph.D. candidate for in Public Administration Degree at The National Institute of Development Administration. I am conducting a survey for my dissertation "Risk Management and Performance of Public Enterprises in Thailand" aimed to examine factors that influence efficiency of risk management, as well as relationship between risk management effectiveness and performance of state-owned enterprises in Thailand.

This set of questionnaires, involving the risk competency of people in the organization and risk culture, is a supplement to the questionnaire delivered to the risk management unit of your organization. This set aims to collect information from the research sample group, who are the executive vice president or vice president of state enterprises. It consists of 4 parts as follows:

1. General information about the respondent
2. Risk competency of people in the organization
3. Risk culture
4. Opinions and suggestions

The information obtained from the questionnaire will be kept strictly confidential and applied for the purpose of the research only. I am grateful for your time spent responding to the questionnaire. Kindly return the replied questionnaire by e-mail to Natthita.ru@mcot.net, or by postal service using the provided envelope, before December 31, 2014.

Thank you in advanced for your kind cooperation.

Faithfully yours,

Natthita Rungwatthana

Part 1 General Information about the Respondent

Instruction Please tick ✓ the box that best describes your answer.

1. Name of your organization.....

2. Work unit (section/division/department/office).....**.....**

3. Gender

☐ 1) Male ☐ 2) Female

4. Age

☐ 1) Under 25 ☐ 2) 25-35

☐ 3) 36-45 ☐ 4) Over 45

5. Education level

☐ 1) Lower than a Bachelor's Degree ☐ 2) Bachelor's Degree

☐ 3) Master's Degree ☐ 4) Doctorate Degree

6. Your position.....

7. Years of experience at this organization

☐ 1) Less than 3 ☐ 2) 3 - 5

☐ 3) 6 - 10 ☐ 4) More than 10

Part 2 Risk Competency of People in the Organization

Instructions The following questions concern the extent of your agreement with the statement regarding the risk competence of the people in your organization. Please tick ✓ the box that best describes your answer.

Indicators of risk competence		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
1.	The risk management unit is resourceful.					
2.	The risk management unit is skillful.					
3.	The risk management unit is trusted for its expertise and is accepted across the organization as a valuable decision supporter.					
4.	Your organization thoroughly promotes the development of the advanced risk management skills of the people in the organization by providing training and development programs.					
5.	The people in your organization are insightful concerning risk management.					
6.	Risk competence is commonly accepted as an essential skill for the organization.					

Part 3 Risk Culture

Definition Risk culture means the values, beliefs, attitudes, knowledge and understanding of risk and risk management shared by a group of people with a common purpose within an organization. Risk culture may be concrete or abstract embedded within an organization and unconsciously expressed. It is inherent but subject to change. This research measures risk culture in 3 critical factors; tone at the top, governance and rewarding appropriate decision making.

Instructions The following questions concern the extent of your agreement with the statement regarding the components of risk culture. Please tick ✓ the space that best describes your answer.

Components of risk culture		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
Tone at the top						
1.	Your CEO supports and gives priority to risk management.					
2.	Your CEO has defined risk management strategies with clear and concrete objectives.					
3.	Your CEO efficiently communicates about risk management strategic planning and targets to ensure proper understanding throughout the enterprise.					
4.	Your CEO encourages transparent, direct, and rapid information disclosure across the enterprise.					
5.	Your CEO encourages early disclosure of the organization's bad news.					

Components of risk culture		Strongly disagree → Strongly agree				
		1	2	3	4	5
6.	Your CEO is highly capable of learning from both successful and missed risk management decisions, as well as applying knowledge to create the competitive advantage of the organization.					
Governance						
7.	The risk management unit has a completely advanced role in assuring the organization that risk information is efficiently communicated.					
8.	The risk information of the organization is transparently disclosed.					
9.	Risk information is communicated enterprise-wide in a timely manner.					
10.	Knowledge of risk management, both the successful and missed cases, is exchanged efficiently across the organization.					
Decision making and rewarding appropriate decision making						
11.	Risk information is integrated in the important business decisions and business planning of your organization.					
12.	Important business decisions are affected by political influence and are unmanageable. The decisions are distorted from rational analysis.					

Components of risk culture		**Strongly disagree → Strongly agree**				
		1	**2**	**3**	**4**	**5**
13.	Your organization applies risk management-related indicators for performance evaluation and rewards people that are insightful of the risks challenging the entity and manages those challenges appropriately.					
14.	Your organization includes risk competency as a criterion for succession planning.					

Part 4 Opinions and Suggestions

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******* Thank you for taking your time to answer the questionnaire. *******

APPENDIX C
INTERVIEW TOPICS

INTERVIEW TOPICS

Topics for In-depth Interview

1. Do you consider the risk management appraisal score evaluated by TRIS Corporation Limited suitable as a criterion to measure the risk management effectiveness of state enterprises?
2. In your opinion, what are factors that have impacts on risk management effectiveness?
3. Opinions on the attributes of the enterprise
    3.1 Do you think that the size of an enterprise and the sector of the business affect risk management effectiveness?
4. Opinions on investment in risk management
    4.1 Do you think that investment in risk management information technology affects risk management effectiveness?
    4.2 Do you think that investment in human resources associated with risk management affects the effectiveness of risk management?
5. Opinions on risk competency
    5.1 Does the risk competency of the people in your organization affect risk management effectiveness?
6. Opinions on organizational structure
    6.1 Do you think that assigning a work unit or a working group/committee to be accountable for risk management affects risk management effectiveness?
    6.2 Do you think that having a chief risk officer (CRO) in the organization affects risk management effectiveness?
    6.3 Does the number of Board of Directors sitting in a risk management committee affect risk management effectiveness?
7. Opinions on risk culture

7.1 What is the factor determining the efficiency of risk culture among three dimensions; namely, tone at the top, governance, and business decisions and rewarding? How significant is each dimension?

7.2 Do you think that risk culture affects risk management effectiveness?

8. Compared to risk culture, to what extent does the process of managing risks affect risk management effectiveness?
9. What are the problems and barriers challenging risk management?
10. What are the contributions of risk management?
11. Please explain the strategies and processes for improving the risk management in your organization.
12. Does risk management effectiveness have any impact on the performance of state enterprises? If so, to what extent does it have an impact?
13. What strategic and practical suggestions for improving risk management effectiveness do you wish to give TRIS Corporation Limited, the Ministry of Finance, and the government?

BIOGRAPHY

NAME	Natthita Rungwatthana
ACADEMIC BACKGROUND	Bachelor of Economics Thammasat University, 1990
	Master of Economics (English Program) Thammasat University, 1993
POSITION AND OFFICE	1994 - 1995 Analyst, Financial Institutions Supervision and Development Department Bank of Thailand
	1995 - 2002 Senior Analyst, Money and Banking Research Unit KASIKORN Research Center Company Limited
	2002 - 2008 Division Manager, Performance Evaluation Department TRIS Corporation Limited
	2008 - Present Vice President, Risk Management Department MCOT Public Company Limited