

ปัจจัยหลักแห่งความสำเร็จของการบริหารความเสี่ยงองค์กร

CRITICAL SUCCESS FACTORS IN ENTERPRISE RISK MANAGEMENT

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ความเสี่ยงคือความไม่แน่นอนของเป้าหมายที่สำคัญที่อาจส่งผลกระทบต่อองค์กร ระบบบริหารความเสี่ยงที่ดีจึงจะสามารถทำให้องค์กรประสบความสำเร็จได้ตามที่ตั้งไว้ โลกในยุคปัจจุบันได้พัฒนาแนวคิดและมาตรฐาน (Paradigm and Standard) ของระบบบริหารความเสี่ยงไว้ เช่น ISO 31000 และ COSO-ERM แต่อย่างไรก็ตามมาตรฐานดังกล่าวไม่ได้มีการระบุว่า จะทำอย่างไรจึงสามารถพัฒนาระบบบริหารความเสี่ยงได้อย่างมีประสิทธิภาพด้วยความจำเป็นดังกล่าว บทบทความวิชาการนี้มีวัตถุประสงค์เพื่อศึกษากระบวนการได้มาซึ่งปัจจัยหลักแห่งความสำเร็จในการพัฒนาระบบบริหารความเสี่ยงขององค์กร และผลสรุปปัจจัยความสำคัญดังกล่าว จากงานวิจัยทั้งหมดที่เกี่ยวข้องมากกว่า 10 งานวิจัย ได้ผลสรุปว่า บทบาทของผู้บริหารระดับสูงขององค์กร มีความสำคัญเป็นอันดับหนึ่ง ในการพัฒนาระบบบริหารความเสี่ยงขององค์กร ผู้บริหารสามารถสร้างความร่วมมือในองค์กรด้านความเสี่ยงได้เป็นอย่างดี เพราะกระตุ้นในองค์กรเห็นความสำคัญของกระบวนการบริหารความเสี่ยง กระตุ้นให้องค์กรมีการสื่อสารและเข้าใจในความสำคัญของกระบวนการบริหารความเสี่ยง ตลอดจนผู้บริหารมีส่วนในการผลักดันกระบวนการบริหารความเสี่ยงที่ครบวงจรได้แก่ การสนับสนุนทรัพยากรด้านความเสี่ยง การประเมินความเสี่ยง ตลอดจนกระบวนการจัดการความเสี่ยง ทั้งนี้ นอกจากบทบาทของผู้บริหารแล้ว กระบวนการความเสี่ยงจะสามารถทำได้อย่างมีประสิทธิภาพ เมื่อแผนกลยุทธ์ขององค์กรมีความสมบูรณ์

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Abstract

Risks are uncertainty events which deviate the organizational goals as expectations. Robustness of Enterprise risk management (ERM) could enhance organizations to reach the appropriated goals. In globalizing world, organizations can employ ERM standards and paradigm for example, ISO 31000 and COSO-ERM, unfortunately, such standards would not even indicate the success way to implement ERM in organizations. With this importance, the objectives of this paper are to study the methodology of conducting critical success factors (CSFs) in ERM and also to report them. According to the qualitative literatures more than 10 articles, *the role of top management* is the most important factor in implementing ERM. The commitment of leadership could enhance organizational cooperative by stimulating organizations to conduct ERM through appropriated communication and understanding. Moreover, the role of leadership has a positive impact with execution and integration of ERM through cycle of risk management process-identify, assess and mitigation of ERM. Apart from the role of leadership, ERM also works well when the completeness of *organizational strategic plan* would be done.

Keyword : 1) Risk 2) Enterprise Risk Management 3) Critical Success Factors

INTRODUCTION

In globalizing world, the growing complexity and dynamism of the contexts both public and private organizations have led to relentless increase in the level of risk in all areas and activities.¹ As a consequence, the concept of risk management (RM) should be explored in many organizations. Risk defines as an “uncertainty events which can be found generally in variety types, for example, strategy, operational, compliance and financial risks.”² Risk management (RM), therefore, is the principles and guidelines, provides principles, framework and a process for managing risk.

Historically, the first developments in RM initiated in the USA insurance industry in the period between 1955 and 1960.³ At that time, the main reason for adopting RM techniques was to reduce insurance costs. The problem of the first generation of RM the only risk identified and assessed was pure risk since without a doubt the predominant risk considered and was the economic-financial impact of losses associated with pure risks (e.g. fire) whereas other types of risk, such as operational or strategic risks, were almost never considered. Such problematic could lead organizations to adopt the concept of **Enterprise Risk Management (ERM)** which takes a broad perspective on identifying the risks that could lead an organization to fail to meet its strategies and objectives rather than considering only a piece meal view of risks. Hence, after 2000 the concept of RM has changed to the concept of ERM that aligns strategy, processes, people, technology and knowledge with the purpose of evaluating and managing threats and opportunities that the enterprise faces.

ERM consolidates a risk management process across all the levels within the organization, and concerns not only an enterprise's view of risks, but also the degree of coordination and consolidation with which the enterprise manages the risks.⁴ ERM is an indispensable system for private organizations many reasons. Firstly, with open-business systems, every organization confronts with other competitors which lead them to some challenge in *strategic risks*. Apart from these, in term of within organizations, particular organizations could be found the uncertainty events from staff, processes, information technology supportive systems which they called *operational risks* that organizations could not evade. Moreover, all organizations will also confront with *financial risk*-the probability of loss inherent in financing methods which may impair the ability to provide adequate return-for example, loss of revenue, financial gain less than expected and fluctuate of exchange rate and so forth. Ultimately, conforming the organizations, it means that they need to align the rule and regulation. Hence if they could not align with particular rules, it could be possible to create a compliance risk- is the threat posed to a company's earnings or capital as a result of violation or nonconformance with laws, regulations, or prescribed practices-. That is all particular groups of facing risks in organizations in over view.

Not only is ERM important for private organizations, but it is also vital function for public organizations. Historically, ERM was unexplored topic in public organizations because such organizations do not confront with uncertain events compared to private sectors. Also management level in public organizations does not really see tangible benefit of ERM. However, negative events can also occur for every organization in globalization world. Hence, today ERM system is also a significant issue for public organizations since they also face with many risks, for example, risk effect from not achieving strategy plan, incompletely operational process and unplanned-event hazards and so on.

In developing countries, such as, Thailand, there are some risk types from public institutes like, educational institutes which affect countries as a whole. For example, numbers of graduate students are following the downward trend for

especially the field that really impacts for country as a whole such as medical students. According to the risk profiles from well-known Faculty of Medicine in Thailand, they reveals that the highest risk confronting to them is the number of graduating medical students not meet the target due to several factors, for example, fail medical license, quit during studying. Such risk deriving from faculty of medicine really relates to the way to develop countries as number of doctor per patient is an indicator to measure how country development is. With important risks from educational institutes, office of higher education in Thailand (MUA) sets off ERM system as a one of the important Key Performance Index (KPI) to every university in Thailand. It means that Ministry of Education takes the issue of ERM into account. MUA promulgates that faculties in university should indicate key risk and mitigation plans as a periodical frame. With the important of risk issues, some universities deploy ERM into the strategy level. For example, Mahidol University, one of the best university in Thailand, specifies ERM to be the eighth KPI for annual evaluation in every faculty.

Besides ERM mitigating risks, many articles disclose that ERM can positively contribute to performance indicators, improve decision making, control on projects, and decline losses caused by risks.⁵ Sui Pheng et al. , (2013)⁶ investigated that there are relationship between ERM and the performance of Singaporean contractors. Questionnaire-based survey was conducted with Singaporean contractors to test their awareness and implementation of ERM, and to what extent ERM has affected different aspects of their performance. The result showed that, apart from health, 10 selected performance indicators have benefited from ERM. Moreover, Stephengates, Jean-Louis and Paul L. Walker (2012)⁷ concluded that the use of ERM leaded to inclined management consensus, better informed decisions, enhanced communication of risk taking, and greater management accountability.

Despite the necessity, benefits and effectiveness of implementing ERM, various researchers state that the organizations which have been successful in practical implementation of ERM are still in a small proportion which does less than 25 % regarding to the most optimistic reports⁸. Additionally, although there is a well-developed body of knowledge relating design and implementation of different processes of ERM such as risk management planning, risk identification, risk evaluation or assessment, risk analysis and risk response planning or even manuals for creating of risk management operation procedures⁹, there is not yet any approved and globally accepted standards or guidelines available to assist organizations with a successful design and implementation of ERM without limitation of business type.

In spite of the existence of extensive literature regarding risk management, there still seems to be lack of knowledge in the identification of critical success factors (CSFs).⁸ There is an urge in the field of risk management to develop a body of knowledge related to CSFs in ERM system. Hence, the objective in this literature article is to consolidate and to conclude the key CSFs in ERM across industries which have some few portions in risk management body of knowledge. In addition to, this paper also keens to study the conceptual framework and methodology for conducting CSFs in ERM from many scholars. Therefore, the final product is this article is about the group of CSFs in ERM.

While the benefits of ERM have such a huge positive impacts for organizations, some of them seem still reluctant to implement it. Sui Pheng et al., (2013)⁶ concluded reasons in ranked order why some organizations still do not implement ERM accounting for: time, cost implications, small scale organizations and do not see the need. From this, the obvious benefit to study of CSFs in ERM is to reduce the implementation ERM cost since the organizations could be utilized resources on ERM easier. For example, they can ignore some unnecessary factors and do not spend any resources on them. Therefore, identifying critical success factors of ERM is a beginning stage before organization deciding to implement ERM in day-to-day operation. Apart from indirect benefit, the direct advantage is about to reduce the key risk facing for organizations by trying to implement success factors to ERM system.

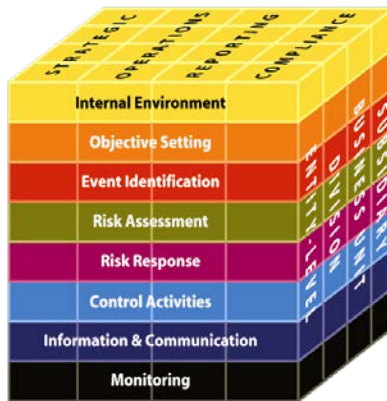
Ultimately, this paper is a tool for some organizations where have been started to implement ERM. However, more details and technical methodologies in this paper are still out of scope. The author recommends some particular organizations to further study articles, research papers and books in order to raise the level of ERM maturity. Risk could turn threats in to the opportunity if we have some good mitigation.

STUDYING CTITICAL SUCCESS FACTORS IN ERM

Some definitions should be proposed, firstly, what the definition of Enterprise Risk Management (ERM) is. According to the Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2004), ERM is defined as:²
“a process, effected by an entity’s board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives”

From such definition, it could make it more clearly by considering the COSO-ERM framework as figure 1 below. According to figure 1, we can employ COSO-ERM framework by considering how the people from the four organizational levels (i.e. entity-level, division, business unit, and subsidiary) across an enterprise implement the eight interrelated ERM components in order to achieve strategic, operations, reporting and compliance objectives? From the framework, it just only tells us three dimensions in ERM accounting for: methodology used starting from setting internal environment until monitoring, level of assessing risk from entity level to subsidiary and four objectives of risk management. Such standard does not tell us how to implement risk management system in an appropriate way. To be precise, organizations should really know themselves which factor affects to organization when they attempt to implement risk management. Hence, studying critical success factors for ERM is necessary which the particular standard, COSO ERM, does not give any details.

Figure 1 COSO Standard



Source: COSO (Committee of Sponsoring Organizations of the Treadway Commission).

Apart from the definition of ERM, the definition of critical success factors (CSFs) should be proposed. CSFs describe those few key activities in which favorable results are absolutely necessary for a manager to reach his or her goals¹⁰. As a consequence, studying CSFs in ERM is to study *few key activities in which favorable results to adopt ERM in particular organizations*.

Process and Methodology of Studying CSFs ERM

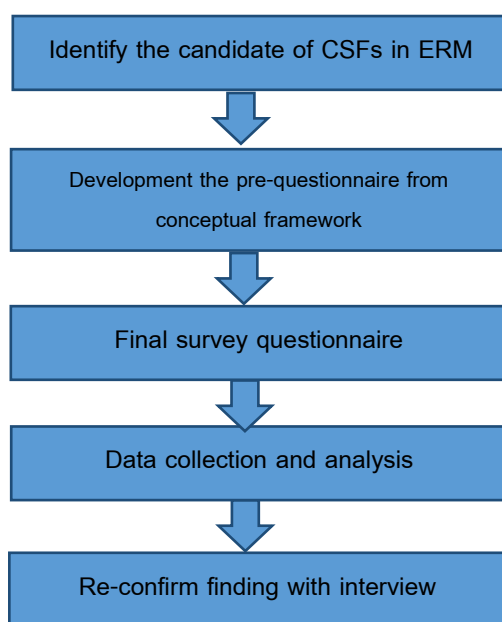
Normally, there are a few published paper related in studying CSFs ERM. From these, they adopted mixed-approach for research process. Starting with qualitative methodology would be employed in order to incorporate candidate

of CSFs in ERM. Later on quantitative analysis will come to second step analyzing empirical data. Moreover, qualitative methodology will come in the end with ensuring the empirical result by interviewing expertise. ¹¹

In term of research design, most of them studied CSFs by collecting data with simple questionnaire survey. Hence, survey is a practical way to conduct the research in the field of CSFs. Apart from document and content analysis in qualitative approach, in-depth interview is a well-known approach to claim the findings after sophisticated quantitative analysis was conducted.

Research methodologies employed in CSFs field are to be varied. According to the literature reviews, the author would like to propose research methodology flow as following: ^{5, 6, 8, 11}

Figure 2 Review Research Methodology



- *Identify the candidate of CSFs in ERM:* The first step is to identify related CSFs in ERM. This step we could incorporate such candidate by literature, document analysis and risk theory. Furthermore, the researchers could confirm and assure that they go to the right way by setting some in-depth interview with expertise before sophisticated process should be proposed. The output in this step is the list of the candidate of CSFs in ERM identified in questionnaire
- *Development the pre-questionnaire from conceptual framework:* After receiving the candidates of CSFs in ERM, researchers should conduct conceptual framework in order to consider which variables and attributes that the researchers should cover in questionnaire. While there are distinctive patterns of conceptual framework patterns, the author would like to state two patterns of conceptual framework of CSFs in ERM as follow.
 - The first conceptualization in CSFs in ERM relating for the relationship among CSFs or path analysis of 1) the group of commitment and involvement of top management 2) the group of communication and understanding 3) the group of execution and integration
 - Apart from above conceptual framework, the rest report the CSFs by the different perspectives, that are, CSFs for a corporation' s readiness, CSFs for design and implementation of ERM and CSFs for administration of ERM.

Operationalization process is adopted for measuring variables process. If the researchers will conduct the large scale of survey, some small group in preliminary step would be necessary to see whether the variables and

attributes in questionnaire are appropriate and applicable or not.¹² The size of sample in pre-questionnaire phase rests on how large of population in research is.

- *Final survey questionnaire:* After the researchers receiving some feedbacks from respondents in pre-questionnaire phase, three things the researchers should consider. Firstly, conceptual framework in your research paper is appropriate or not. Secondly, variables and attribute from operationalization process measured the concept we want in your objectives of research. If variables and attributes do not reflex to conceptual framework, the researchers should alter them before conducting the final questionnaire. Thirdly, validity and reliability should be concerned for especially the field of social science survey research. To test validity, it aims that accurately reflects the concept intended to measure. By this it means does the research instrument allow us to hit "the bull's eye" of the research objectives? Reliability defines as "the extent to which results are consistent over time after repeated it again and again. If the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable".¹²
- *Data collection and analysis:* Studying CSFs in ERM directly relates to inquiry personal attitudes and preference, survey questionnaire is a practical tool.^{5, 6, 8, 11} Hence, data collection mostly conducts through survey questionnaire. For the data analysis process, the author agrees that productive researches should cover both descriptive and inferential statistics.¹³
 - Descriptive statistics is a statistics procedure that displays and describes the pattern of available information and reports it in a manageable form, for such as, table and graph. Moreover, central tendency likes mean, median, mode of CSFs in ERM also must be reported.
 - Inferential statistics is a statistics procedure that estimates and predicts value of population by using the observations. Inferential statistics is important for CSFs research as it is impossible to collect the data from population. Basically, researches adopt one sample T-test. To be more precise and verify if the survey results reflect a specific variable to be important or not, a one-sample t-test was performed based on the assumptions that the respondents' answers were reasonably normally distributed and independent from one another.⁸ (type hypothesis) Furthermore, some researches also employ advance causal statistics, for example, path analysis and structural equation model (SEM) to analyst the relationship among critical factors. The structural equation modeling (SEM) method has been seen as one of the most suitable techniques for analyzing the possible relationships among variables.¹⁴ Ultimate, if the authors get several critical factors, they should attempt to group them by conducting factor analysis- is a statistical technique used for replacing a large number of variables with a smaller number of "factors" that reflect what sets of variables have in common with one another-.¹⁵
- *Re-confirm finding with interview:* After analyzing statistical result, the author recommends to re-confirm the findings by conducting qualitative analysis-interview-. ERM is top down systematic in which it requires some views from management executives. As a consequence, executive interviews should be conducted in order to make your researchers more practical rather than conducting only the sophisticated statistical analysis.

The Findings of Document Analysis for CSFs in ERM

The objectives of this review paper are to study the possible framework conducting CSFs for ERM and also some results of CSFs in ERM through academic papers would be displayed. Based on qualitative analysis, the author attempts

review more ten academic articles published in international journals. Furthermore, some open sources of information are also incorporated yet there are not the main of our analysis result.

Overview findings

Based on the first conceptual framework, there are three groups of factors that relate to ERM, that are, the group of commitment and involvement of top management 2) the group of communication and understanding 3) the group of execution and integration. The CSFs for each group and the correlations among them are the following.

Table1 Overview Findings of CSFs in ERM

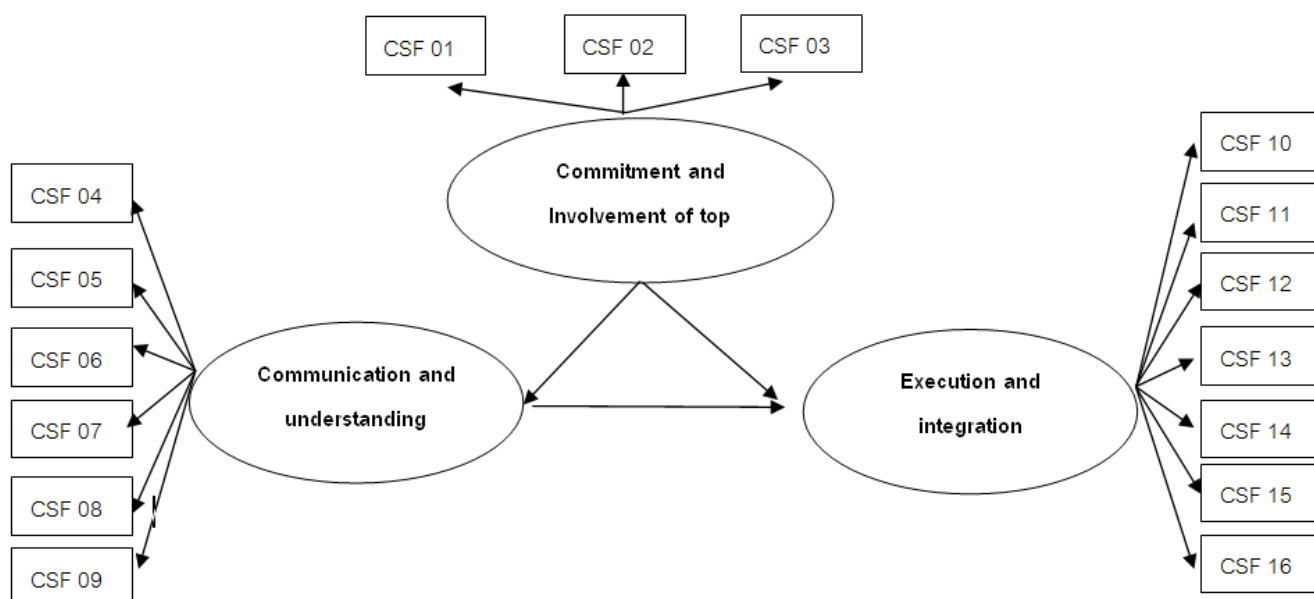
Three groups of factors	CSFs
Commitment and involvement of top management	CSF01: Commitment of board level CSF02: Risk Ownership CSF03: Risk appetite and tolerance
Communication and understanding	CSF04: Risk-awareness CSF05: Leveraging risks as opportunity CSF06: Risk communication CSF07: A common risk language CSF08: A risk management information CSF09: Training program
Execution and Integration	CSF10: Sufficient resources CSF11: Clear objective setting CSF12: Risk identification, analysis and response CSF13: Periodical ERM process steps CSF14: Identify key risk indicators (KRIs) CSF15: Alignment of ERM and business processes CSF16: Improving ERM framework

According three factors above, that are, commitment and involvement of top management, communication and understanding and execution and Integration, it could be concluded that the role of leadership, communication power and execution ERM are the key role to establish ERM in organizations and explains in detail as following.

- Firstly, the CSFs relates to role of leadership accounting for commitment of board level and setting up risk ownership- the person best situated to keep an eye on risk. ¹⁶ Moreover, organization should think about how much risk a company is willing to accept- risk appetite and tolerance-.
- Secondly, the effectiveness of communication and understanding have to relate in awareness of risk, language used in risk, risk management information and also training program
- Thirdly, ERM in action- execution and Integration- starts from dedicating adequate resources, setting clear objective, risk identify, analysis response and follow-up. ERM will be successful if organization will collect and identify KRIs as leading indicators for key risks. Moreover, execution and integration in ERM also concern with alignment of ERM in to business processes. Ultimately, ERM framework should dynamic and improve all the time.

Apart from finding groups of CSFs in ERM, social science researches usually further study causal relationship between factors. Based on more than ten papers, with sixteen CSFs in ERM, there are some causal relationships between factors as the following.

Figure 3 Relationship among CSFs in ERM



Source: Lui, J. Y., Low, S.P and He, X. (2011)

According to structural equation modeling (SEM)- one of the most suitable techniques for analyzing the possible relationships among variable-17 above could show that the commitment of top management can guarantee better communication and understanding in several reasons. Firstly, it stimulates organization to aware the key risks as top-down approach tends to make employee to corporate in risk activities. Secondly, the commitment and involvement of top management can ensure that the sponsorship of training programs, and can confirm the creation of risk communication mechanisms as well as the use of the common risk language.

Additionally, sufficient resources are invested in ERM execution, objectives at all levels are clearly identified and expressed, and that KRIs are identified for all the critical risks of a company if the commitment and involvement of top management embeds in ERM. Moreover, commitment of top management enforces relating person to participate risk management process- identify, assess and monitoring periodic- through their power. Furthermore, it would take many years to fully integrate ERM into business and management processes, during which there may be altered in senior management roles. Hence, continual commitment and involvement of top management ensures that execution and integration would not be disrupted by changes within top management.

Finally, communication and understanding can positively contribute to the execution and integration of ERM. Good communication mechanism across company supplies reliable risk information to management and helps them execute the ERM process. Meanwhile, understand ERM also means to make a good execution through attaching ERM activities- identify, analysis, indicated KRIs and monitoring- with robustness.

CSFs for each phase of ERM

As ERM is a huge program supplying in organizations, reporting CSFs in ERM could enhance developer to see ERM in a whole picture. However, based on the second conceptual framework attempting to report CSFs for each phase or ERM, important three phases of ERM, that are, CSFs for a corporation's readiness, CSFs for design and implementation of ERM and CSFs for administration of ERM should incorporate. The findings are displayed as the following.

Table2 CSFs in Each Phase of ERM

Phase of ERM	CSFs
CSFs for a corporation' s readiness	<u>CSF01: Strategy</u> CSF02: Team spirit CSF03: Responsibility CSF04: Business type
CSFs for design and implementation of ERM	<u>CSF05: Top management</u> <u>CSF06: Human resources</u> CSF04: Business type
CSFs for administration of ERM	<u>CSF08: Human resources</u> CSF09: Organizational structure <u>CSF10: Top management</u> CSF11: Organizational culture <u>CSF01: Strategy</u>

Source: . Niam Yaraghi and Roland G. (2011)

The result illustrates that *strategy, role of top management and human resources* are the key success factors in all three phases of ERM. Such results are similarly to the first conceptual framework which the role of top management comes to the first priority

CONCLUSION AND RECOMMENDATIONS

From content analysis, the author attempts to conclude the following key information which is the beneficial for ERM implementers.

- (1) Top management- C Level CEO, CFO, etc- should have a visible and continual commitment to ERM implementation and be participated in ERM implementation which better improves to other key areas of ERM.
- (2) Although ERM is based on particular standard and theory, execution and integration ERM system rests on communication, understanding and corporation in organization.
- (3) The management should embed ERM into all daily management processes and consistently consider risk information, risk tolerance and appetite, and risk response strategies in all decision-making activities, especially in strategic decision making.
- (4) Top management should allocate sufficient resources for implementation of key activities in ERM program
- (5) In each phase of ERM- ERM readiness, implement and administration- strategy, role of top management and human resources are the key success factors for ERM.

Recommendation

From both the author experience and the result shown above, I myself recommend that firstly, ERM should not only be a program but ERM should be a policy level which would need support from management level. Secondly, top management and involved parties should try to show a tangible benefit in ERM in order to having some cooperative efforts. Thirdly, ERM could not be appropriated to implement if strategic plan or strategic roadmap would not be completed as risk should assess against strategy and objective setting in organizations. Apart from the role of top management, human

resources are the key drivers. Hence, organization should put effort to develop key ERM person by investing to develop risk management unit or department and also setting up ERM training program in order to give some ERM standard and guidance to employee.

Finally, this paper would be a good starting tool for the organizations where have started implementing ERM but they would be curious in which factors will be enhanced ERM. Nevertheless, the author suggests the future research papers will ensure this conceptual framework by conducting empirical analysis through collecting survey questionnaire data. The most loss of risk does not come from risk yet it comes from the ignorance of ERM system in fact. ¹⁸

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- Design risk assessment process by alignment such process with COSO ERM and ISO 31000 standards to educational medicine industry
- Lead, facilitated, advised and training organization with risk management knowledge and standards
- Reporting and monitoring risk to Risk management Committee(RMC) in Faculty of Medicine Ramathibodi Hospital, Mahidol University by monthly basis
- Conduct key risk indicators(KRIs) with statistical tools
- Conduct and facilitate in business continuity plan to ensure that faculty can continue in our mission critical activities(MCAs) during a crisis time

Corporate risk management supervisor

April 2012 to July2013

Corporate risk management unit, Business assurance department, Financial group

Total access communication Public Company Limited. (dtac)

- Develop and implement organization's Risk Management program in a manner that fulfills the mission and the goal
- Playing a coordination role and providing guidance, advice and training with respect to local Risk Management and Risk Assessment activities
- Assist in maintaining the local risk register
- Effectively communicate identified risks and propose responses

- Conduct Key Risk Indicators (KRIs)
- Promote risk awareness across the business processes and decision making forums.
- Ensure compliance to Risk Management policies and procedures.
- Lead, facilitates and advises departments in designing risk management program within their own departments
- Conduct and facilitate in dtac business continuity plan to ensure that dtac can continue in our mission critical activities(MCAs) during a crisis time

Business Continuity Management Project Manager

March 2011 to April 2012

Lead in Business Continuity Management Team, Compliance Branch Operation Dep

Kiatnakin Bank Public Company Limited

- Proposing risk assessment process to find out which depts contain critical business
- Establishing a Business Continuity Management (BCM) Program Management function for overseeing the progress of the development, implementation, testing and maintenance.
- Proposing and recommending BCM policies, standards, guidelines and best practices for business recovery and resumption in variety scenarios alignment to BOT
- Monitoring the current state of BCM capabilities and readiness within the Bank, and should provide a gap analysis against industry best practice benchmarks
- Conducting education and training to business managers on their roles, responsibilities and accountabilities for managing business interruption risks
- Providing regular reports to the Risk Management Committee and senior management on the testing of the BCM Plans.
- Manage current crisis facing for banking industry

Senior IT Risk Quality Assurance Specialist

April 2010 to March 2011

IT Quality Assurance

Kasikorn Bank Public Company Limited

- Producing IT Risk quality assurance process for critical IT application.
- Establishing IT Risk planning roadmap alignment it with corporate strategy goal
- Conducting education and training in IT policy for key person
- Conducting and monitoring IT disaster recovery plan (ITDR)

Assistance Researcher

July 2008 to June 2010

National Institute of Development Administration

- Conduct Airline overbooking model using the data of Thai airway international company.
- Coding overbooking model with matlab programming language.
- Conduct allocates resource models by using revenue management for airline service sector.
- Exploring research paper about user satisfaction in National Institute of Development Administration database library system.
- Educate & Review environmental business factor to Nonthavej hospital.
- Manage resources by using allocate resource model for American office system.
- Analyst the process improvement using data environmental model (DEA.)
- Analyst linear programming model in distribution system for industry sector.
- Generate simulation model for enhancing business process.
- Create decision model for hospital by using simulation model
- Conduct a queuing model for many industries, for example, banking, post office in Ramkhamhang University branch etc...

Research Risk Officer

May 2007 to June 2008

Research Risk Dept

Krungthai Bank Public Company Limited

- Analyze data and writing report for supporting in approving credit process
- Analyze and reported Krungthai Business Index (KTBI) with statistical skill
- Create key performance index (KPI) with statistical questionnaire
- Design and analyst research topic with research methodology

Publication and Presentation

- Amaruchkul, K., and P. Sae-Lim (in press). Airline overbooking models with misspecification. *Journal of Air Transport Management*. (Impact Factor 2008: 0.773)
- Airline Overbooking Models with Misspecification. Joint Conference of The 4th International Conference of Operations and Supply Chain Management and The 15th Asia Pacific Decision Sciences Institute, Hong Kong. July 2010
- The Business Effect of Misspecification in Overbooking Models. OR-Net Conference 2010, Bangkok. September 2010

Achievement

- King Bhumibol Scholarship (Honorary Pin for Excellent Score).
- Award for outstanding student in school of apply statistics at National Institute of Development Administration.
- Full-Scholarship (NIDA) .
- Professor Dr. Tab Nilanidhi Foundation, Golden Pin Award with Certificate for the Best Bachelor Degree in Science.
- Award for outstanding student in faculty of science and technology at Thammasat University

Current Position

Head of risk management unit

July 2013 to Present

Risk management unit, Faculty of Medicine Ramathibodi Hospital, Mahidol University

- Design enterprise risk management policy and framework by alignment it with University and faculty strategy
- Embedded enterprise risk management process into day to day operations
- Conduct strategic risk management system in order to achieve mission and vision
- Design risk assessment process by alignment such process with COSO ERM and ISO 31000 standards to educational medicine industry
- Lead, facilitated, advised and training organization with risk management knowledge and standards
- Reporting and monitoring risk to Risk management Committee(RMC) in Faculty of Medicine Ramathibodi Hospital, Mahidol University by monthly basis
- Conduct key risk indicators(KRIs) with statistical tools
- Conduct and facilitate in business continuity plan to ensure that faculty can continue in our mission critical activities(MCAs) during a crisis time