

# The Moderating Effect of Risk Culture in Relationship between Leadership and Enterprise Risk Management Implementation in Malaysia

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## Abstract

The present study is designed to examine the relationship between leadership (board of directors, senior management commitment and chief risk officer) and ERM implementation amongst Malaysian public listed companies (PLC). It is also examining the moderating effect of risk culture on the relationship between leadership and ERM implementation amongst Malaysian PLC. This research adopted quantitative research approach to analyze the data obtained from the questionnaire distributed to the PLC via their Risk Management Division. From the 814 listed companies, according to Bursa Malaysia main board directory, 300 were taken as a sample. The primary data collection commenced after the pilot test was completed and the data was analyzed using SPSS Version v.18. From the analysis it is found that senior management commitment and chief risk officer have a significant and positive relationship with the ERM implementation. The hierarchical multiple regressions indicated that risk

culture played the moderating role in the relationship between senior management commitment, chief risk officer and ERM implementation. This study provides significant theoretical and practical contributions for the industry, practitioners, researchers and academician, besides providing a framework for ERM implementation in the listed companies in Malaysia. The results of this study could serve as a guide to develop a strategy for audit actions in the assessment of ERM practices to further improve the level of ERM implementation by the intended shareholders as a whole.

**Keywords:** enterprise risk management, board of directors, senior management commitment, chief risk officer, risk culture

## 1. Introduction

The term 'risk' refers to uncertain and unpredictable situations that disrupt the process of achieving corporate objectives and creating shareholders' values (Deloach, 2000; Cassidy, 2005). In an unpredictable business cycle, risk is highly uncertain and could negatively affect a company's operations, including but not limited to, strategy operations, human capital, reputational exposure and the legal framework (Shimpi, 2005; Gupta, 2011). Thus, every company has to effectively manage operational risks so that profitability and business growth could be ensured. In the literature, the process of managing risk is usually coined as enterprise risk management (ERM).

Smith et al. (1997) defined ERM as a tool to manage, measure and mitigate risk exposure that give an impact to the business operations and strategy objectives. In other words, ERM is a value-added tool for business improvement by identifying and analysing potential risks or hazards inside and/or outside the company, and in turn, determining suitable actions to mitigate them. According to Anthony (2001), ERM is a comprehensive business tool to assist companies to align business strategy, processes, human capital, technology and innovation and knowledge transfer with actions that aim to maintain business sustainability and shareholder's expectation. The role of ERM in mitigating an organization's exposure to business risks is also highlighted in the Committee of Sponsoring Organizations of Tradeway Commission (COSO) (2004). The continuous monitoring and executing risk mitigation action plans in the business context will ensure that corporate objectives and maximum wealth for shareholders are always achieved (Lam, 2003; Gupta, 2011).

Essentially, ERM implementation involves the entire organization and decision-making process which in turn are associated with the quality of board of directors (BOD), chief risk officers (CRO) and senior management commitment towards risk management culture (Nocco & Sultz, 2006). These three factors are usually grouped under leadership construct. In short, it could be said that the success of ERM implementation depends on the credibility, efficiency and efficacy of management in terms of identifying and evaluating business risks that cover the internal control system and business operations areas as well as the approach to address those risks (Fraser, 2007; Rosa, 2007).

Additionally, ERM implementation is also associated with risk culture. KPMG International (2010) conducted a survey amongst 500 bank executives and found that 48% of respondents stated that risk culture is a key factor in a credit crisis. This is because executives that have low risk culture are usually not serious in weighing benefits and risk exposure and ultimately leads to wrong decision making and poor internal control. Thus, without positive risk culture, it is hard to deliver quality products or services to clients and ultimately reduces their confidence on the company. Although there are a few studies that have identified factors influencing ERM implementation, the moderating factor of risk culture has not or has yet to surface. If the level of risk culture among the stakeholders within the company is ignored, it will surely challenge the implementation of ERM, and in turn, the meeting of the company's

ultimate objectives. This study intends to investigate this in detail.

In short, the objective of this research is to examine leadership elements that are critical to effective ERM implementation. The moderating effect of risk culture on that relationship will be investigated also. The proposed leadership elements are quality of BOD, CRO and senior management commitment. All these elements are embedded in the conceptual framework.

The paper is organized as follows. Next section presents a conceptual justification for every element in the conceptual framework. Section 3 offers a diagram of the proposed conceptual framework. Finally a conclusion is presented in the concluding section.

## **2. Theoretical Overview**

For the theoretical understanding of ERM implementation we posit that ERM implementation is based on the concepts of leadership and risk culture. In the following sections a discussion of leadership and risk culture is offered.

### *2.1 Enterprise Risk Management*

Deloach (2000) defined ERM as a holistic approach and systematic program which aligns with corporate strategy, business processes, human resources, technology innovation and knowledge management to mitigate business uncertainties and help in creating business value for the benefit of shareholders and stakeholders within the business circle of influence. ERM is also one of the key components of good governance practices and is linked to the corporate governance framework, which emphasizes both transparency and accountability (Priscilla & Susan, 2008). It thus enables a business enterprise to support its achievement by pro-actively identifying and controlling risks. In short, ERM is part of an organization's strategy to reduce potential losses and maximize opportunities.

To a layman's understanding, ERM refers to a process of managing a crisis within an agreed parameter, which requires further attention from the management to mitigate risks (Eick, 2003). Gupta (2011) stated that ERM is an avenue or platform for business enterprises or associates to mitigate their potential risks in terms of identifying, analysing and reporting their business gaps and addressing them in the form of risk mitigation action plans. Thus ERM is an important agenda for business enterprises, especially in the financial sector, since business operations are very much inter-twined with business conditions which are likely to be uncertain in nature.

In the wake of mismanagement that brought down some of the largest corporations, ERM has emerged as an essential discipline for any corporation. For example, the Barings collapse was primarily due to weak internal controls and poor corporate governance, which in turn increased the need for ERM in the companies (Hespenheide & Funston, 2006). During the East Asian financial crisis in 1997, poor ERM was found to be one of the factors that contributed to corporate failure (Fraser, 2007). Karen (2007) uncovered that ERM is always linked to investors' confidence on the company and market. In short it could be said that ERM is an important part of business operations because of its ability to reduce the level of

severity and the impact of risk exposures.

The above discussion is applicable to Malaysia because being an open economy attracting high foreign direct investment is a must for maintaining economic growth. Sustaining economic growth is critical to Malaysia as it aims to achieve a high income developed nation status by year 2020. Thus, every organization in Malaysia must implement ERM so that good ratings for proper business conduct will be given by the international rating houses, which in turn can ensure economic growth of the country.

## *2.2 Enterprise Risk Management Implementation*

The ERM implementation is derived from the interaction or interrelationship between key determinants that have significant impact on ERM. It can also be interpreted as a systematic integrated action in mitigating risks across an organization to achieve its objectives and at the same time, maximize shareholders' value (Lam, 2000). In addition, it is an organizational-wide approach or a structured process framework which governs the process of identifying, evaluating, analysing, treating and monitoring risks and aligning them with organizational objectives (Shimpi, 2005).

The underlying principles of ERM implementation is COSO's (2004) framework. This framework is a basic principle to alleviate the requirement of risk management efforts in a more appropriate manner. Fraser (2007) in his study revealed that ERM implementation is embedded within formalized, mature governance and management processes. This involves the alignment of all risk management processes to ensure the processes are working as intended and the impacts are significant and measurable. Cassidy (2005) argued that the implementation of ERM drives some components of basic management principles, which include leading, organizing, planning, controlling and monitoring activities in order to minimize the impact of firms' significant risks, such as strategic, operational, reputational and financial risks. Mike (2005) stated that ERM implementation is a comprehensive structure for mitigating risk in order to be aligned with the overall strategic objectives and add value to the internal stakeholders.

Ernest and Albert (2015) studied ERM implementation from the perspective of public private partnership (PPP) in the water supply project. The results of the study concluded that poor risk list and risk rank leads to poor contract design, water pricing and tariff review uncertainty, political interference, public resistance to PPP, construction time and cost overrun, non-payment of bills, lack of PPP experience, financing risk, faulty demand forecasting, high operation costs and conflict between partners. Hoyt and Liebenberg (2006) investigated the determinants of ERM of 275 United States insurance companies within a 10-year consecutive period. The result revealed that size, institutional ownership and international diversification are significant in determining ERM implementation. Yusuwan et al. (2008) conducted a study on ERM implementation, specifically in Malaysia, to examine risk awareness and to review the management policy in a construction project. The outcome of the research revealed that ERM affects performance, project budget, quality performance and productivity. Alviunessen

and Jankensgard (2009) pointed out that ERM implementation centralizes company-wide information on risk scenarios to mitigate risk. The risk appetite has a significant input on the business and gives an absolute impact to the bottom line, continued existence of a company and financial cash flow.

However, Shenkir and Walker (2006) revealed that the ERM model requires top management commitment for successful implementation. They also stated that senior management team of companies should be enthusiastic in discharging their responsibility on ERM to ensure protection, conception and enrichment of shareholders' value. Thus it could be said that effective implementation of ERM relies heavily on organizational leadership.

### *2.3 Leadership and Effective Enterprise Risk Management Implementation*

In the past literature it is highlighted that an organization desires an effective leadership to produce long-term results for business sustainability (Longenecher & Neubert, 2003). Debowksi (2006) stated that leadership has a basic role in shaping and controlling an organization by securing a sense of direction, vision, mission, business strategy and tactics for all associates. Although there is strong recognition of the need to encourage effective leadership at the highest level in any organization, the changing nature of work has necessitated a focus on building leadership capabilities across organizational-wide approach. In other words, the managers must be equipped with necessary competencies, knowledge, skills, support, focus and talent. Debowksi (2006) stated good leaders must have the following four key dimensions: (1) the ability to drive the organization's goal alignment, business strategy and priorities; (2) the development of the organizational culture within operational needs and parameter setting; (3) the maintenance of good practices to accommodate conducive working environment; and (4) the encouragement of high performance and world class standard in the work execution.

Strong leadership leading to a high commitment in managing risk is needed to ensure continuous executive support for the implementation of integrated ERM (Nocco & Stulz, 2006). The champion is responsible for addressing integrated risk management and supporting executives to meet in both the short term and long terms corporate objectives. Previous studies have indicated that ERM adoption relies heavily on the institutional ownership of leadership (Douglas & Patterson, 2010).

From the above discussion it can be seen that ineffective leadership gives an adverse implication to the ERM system monitoring for the business risk mitigation and the quality of decision making process. Thus having strong leadership is paramount to effective ERM implementation. To establish strong leadership for effective ERM implementation this study proposes the elements of BOD, senior management commitment and CRO.

### *2.4 Strong Leadership for Effective Enterprise Risk Management Implementation*

As stated above, this study proposes the elements of BOD, senior management commitment and CRO for establishing strong leadership for effective ERM implementation. The

description for each element is offered in the following subsections.

#### 2.4.1 Board of Directors

The BOD commitment and involvement in corporate governance is pivotal in the oversight function of ERM. The BOD must assess the ERM implementation on a timely basis, in particular the management assessment, planned response and highly significant risk exposure. The BOD must be convinced on the appropriateness of the ERM processes and that management is accountable and position themselves to provide solid indication of total risk management practices with the ability to identify, assess and respond to risk at the board level (Deloitte, 1995). In short, the BOD should be able to provide advice on ERM to management provided that all data or information on ERM is completely digested with an adequate and open line of communication to discuss risk issues with senior executives or the CRO. Manab et al. (2010) conducted a research on the drivers and the success factors of ERM implementation with corporate governance compliance and value creation amongst Malaysian business practices. The outcome of the research revealed that five main drivers which contribute to the success of ERM for financial and non-financial companies are good business practices, corporate governance, mandate from BODs, shareholder value and improved decision-making.

The success of ERM implementation depends heavily on the leadership which is normally the BOD commitment. Purchasing decision on ERM must come from the BOD (Fraser, 2007). PriceWaterhouseCoopers (2004), in their study on ERM, mentioned that under the new governance approaches, the role of the BOD includes developing culture and values, establishing internal policies, business strategy formulation, determining risk appetite and monitoring performance. This is supported by Deloitte (1995) whereby BOD commitment and direction towards risk management activities are pivotal and directly influence the ERM implementation. The BOD is accountable and responsible for making sure that all risks are identified, analysed, measured, reviewed, controlled and consistently reported to senior level management (COSO, 2004). The selection of the BOD, including the nomination of directors, depends on the significance of risk exposure that requires hands-on leadership from the perspective of stakeholders and business goals (Rosa, 2007).

Rosa (2007) stated that the effectiveness of the BOD is derived from an adequate and fair board structure, information technology management system, size of the board, authority and responsibilities, performance and business operations. The BOD must make sure that ERM mechanism is adequately practiced by linking risks to business strategies and objectives, including but not limited to, management action plans (Lars & Bengt, 2011). The BOD should further engage with reliable or independent parties to explore potential risk information, especially from the internal auditors, external auditor and advisors.

The new listing rules of Bursa Malaysia (2009) state that the BOD should not solely rely on the specified monitoring processes within business operations to perform its responsibilities (Bursa Guidelines, 2009). This process must be constantly integrated into daily operating

activities and the board must regularly review reports on internal control and ERM implementation. In short, the BOD provides oversight with regards to ERM by: (1) understanding the management principles in establishing an effective ERM in the organization; (2) concurring with and consistently being aware of the business risk appetite; (3) reviewing the business portfolio of risk against the appetite; and (4) evaluating the important risks for management to respond in an appropriate manner (IIAM, 2010).

According to the ‘Malaysian Code of Best Practices in Corporate Governance, Item 4.17 Section A The Principal Responsibilities of the Board of Directors, the BOD should openly presume the responsibility of ascertaining significant or core business risks and ensuring appropriate system implementation to manage these risks. The BOD governs the internal environment component which directly or indirectly influences the ERM implementation within the business organization. Berghe and Levrau (2004) stated that board composition, size and leadership structure are the key parameters of having good corporate governance and high quality board structure. This is supported by Rasid and Rahman (2009) who stated that there is a close and significant relationship between the BOD and ERM implementation. Thus, the following hypothesis is proposed:

H1: The BOD significantly and positively influences ERM implementation

#### 2.4.2 Senior Management Commitment

Senior management is required to be in charge and manage ERM across the entire organization (Berenbein, 2004). Barton et al. (2002) found that senior management support is very important for an organization to implement ERM successfully. This is supported by Kleffner et al. (2003b) that the existence of silo mentality and senior management’s refusal to change are constraints to implementing ERM, which has caused lack of organization buy-in. In another article, Kleffner et al. (2003a) revealed that 61% of the respondents said that the influence of senior management enables companies to implement ERM successfully.

Kaven and Ian (2007) investigated the impact of contingency factors such as external expertise, business vision and top management commitment on new organizational systems development. The outcome of the study revealed that senior management commitment has direct or significant influence on the success of organizational system operations. Berenbien (2004) found that senior management is required to be in charge and manage ERM across the entire organization. Without top and senior management commitment, including knowledge and capability of leadership, the ERM program will not be entirely successful (Brian, 2006). Grimsey and Lewis (2002) conducted a study to determine the level of senior management commitment in project management. The result revealed that top management commitment is considered as one of the critical success factors for project management. This is supported by Hasanali (2002) in his study that strong leadership and commitment from top management play a prominent role in influencing the success of almost any initiatives within an organization.

Nocco and Stulz (2006) conducted a study to analyse senior management commitment in



relation to the decision making process. A crucial part of a successful project is top management support, the benefit of which are related to processes and management of risk (Lam, 2000). In short, successful risk mitigation profile is contingent upon commitment and support from top management. This is supported by Henriksen and Uhlenfeldt (2006) who stated that senior management formulates, establishes and decides on objectives and strategies for organizational risk management activities, mission and proactive mitigation action plans.

Shenkir and Walker (2006) stated that according to the COSO (2010), the ERM model requires executive management commitment for its rigorous implementation. It has been suggested that the key executives of companies should be committed towards ERM because they are ultimately responsible for the overall protection, creation and enhancement of shareholders' value. In other words, the success of organizational strategy and the overall effectiveness of ERM implementation depend on the strong support and full commitment of executive leadership. This is agreed to by Barton et al. (2002) and PriceWaterHouseCoopers (2004a) whereby they stated that strong support and senior management commitment are paramount for successful implementation of ERM initiatives.

To recapitulate, a strong support and full commitment from senior management are necessary for the successful achievement of organizational strategy and the ERM implementation. This is agreed to by Barton et al. (2002), Walker et al. (2002), Eick (2003), Kleffner et al. (2003a, 2003b), PriceWaterhouseCoopers (2004) and Bowling and Rieger (2005a). Eick (2003) opined that supportive leadership is important to risk managers in terms of providing back-up in the form of clout and mentorship. Senior management commitment and support from top management are very important for ERM implementation. Thus, the following hypothesis is proposed:

H2: Senior management commitment significantly and positively influences ERM implementation

#### 2.4.3 Chief Risk Officer

The position of the CRO is becoming more pertinent to ensure a success of ERM implementation (Lee, 2003). The CRO should be considered as a bridge to combine all risk and management assurance activities without duplication or repetition within a business entity. The purpose of appointing a CRO is to make sure that risk management activities are effectively executed and independently driven (Lam, 2000). Pagach and Warr (2007) conducted a study to determine specific factors that influence a firm to adopt ERM of which the assessment has some similarities with Hyot and Liebenberg (2006). The outcome of the research indicated the increase in leverage of 10% led to an increase of 7.8% for business enterprises hiring a new CRO. Liebenberg and Hoyt (2003), known as two of the pioneers in ERM, conducted a study using secondary data related to ERM. The outcome of the study revealed that the CRO's role is paramount when implementing and managing the ERM program.

Daud et al. (2010) conducted a research to examine the direct association between the quality of CRO and level of ERM adoption in Malaysia. The outcome of the study indicated that the quality of the CRO and ERM is positively significant adoption. The role of CRO is pivotal and considered as the key determinant in ERM adoption. In this case ERM implementation needs a dedicated officer who can initiate and monitor the risk management program. In the COSO Report (2004), it is clearly stated that to implement ERM, the CRO needs to act as a coordinator and intermediary party with internal stakeholders so that risk management functions can be performed effectively.

The CRO should be able to assess or re-evaluate the business strategy prior to ERM adoption and have specific qualities including: (1) consistent risk consciousness; (2) understanding of the key business processes; (3) an advanced university degree and suitable training in the risk management area; and (4) great interpersonal skills and ability to engage with various level such as managerial and operations levels (Liebenberg & Hoyt, 2003). Lee (2003) stated that the role of CRO includes: (1) promoting a risk culture and awareness on business risk program for the entire organization; (2) providing a platform or forum on the risk management system as a one-stop centre and communication channel for internal stakeholders manned by highly competent and professional individuals; (3) establishing an efficient approach for financial or non-financial risks; and (4) providing an advisory role by facilitating, coordinating and communicating to the relevant stakeholders and being a focal point for ERM implementation. Lam and Kawamoto (1997) posited that the CRO is very important for driving the ERM program. The CRO must team-up and work closely with supporting teams which is the risk management committee. The quality of the CRO is crucial and highly important for ensuring the success of ERM implementation on a large scale (Daud, 2010). Champbell (1987) found that the role of the CRO in financial institutions has expanded dramatically as it includes strategic business decision and alignment of risk management into the firm's structure. He also indicated that although the ERM concept is widely known in developed countries, it is however fresh or even a long way away in Malaysia. The Economic Intelligence Unit (2005) also discovered that many organizations eventually assign a dedicated personnel who represents senior management for ERM development.

A survey conducted by Ernst & Young (2006) among the executives in charge of ERM revealed that CRO believe that their role is to ensure that risk is being assessed at the senior executive level and efficiently mitigated at the business unit level. Rosa (2007) pointed out that CRO should have attributes such as a well-developed risk perception, hands-on business acumen, relevant educational or professional qualifications in risk management, communication and interpersonal skills that include working with individuals, facilitation and coordination skills in finance, accounting and insurance at relevant party. This is supported by Liebenberg and Hoyt (2003) that there is a positive relationship between CRO and ERM implementation program. Daud et al. (2010) investigated the relationship between CRO and ERM in Malaysia and found that there is a significant relationship between them. Lam and Kawamoto (1997) found that the CRO is considered as a highly important position for

driving the ERM program to make stakeholders understand the importance of ERM implementation. With all these findings, the following hypothesis is developed:

H3: The CRO significantly and positively influences ERM implementation

### *2.5 Risk Culture*

According to Lima and Castro (2005), risk culture can be interpreted as a behavioural system that envisages the core values and behaviours adopted throughout an organization and assists in shaping the right risk decision making processes. Tansey and Riordan (1999) pointed out in their study that risk culture influences the management and employees' decisions even if they are not deliberately considering the risks and benefits as a whole. An organization directly benefits from deliberating risk exposure in response to the increase of corporate culture and ERM values, such as strategic, human capital, operational, financial, reputation and legal compliance values (Pagach & Warr, 2007). Bolton (2000) suggested that the Turnbull Guidelines provide the organizations an opportunity to initiate an adequate control culture where ERM is incorporated and a reality check on lessons learnt which are also embedded as part of daily operational activities within the risk management (Chown, 2000; Viles, 2000; Boswell, 2001; Barlow, 2000).

Zeier (2014) viewed that risk culture is a combination of key values, understanding, beliefs and norms that members of an organization share. He further reiterated that risk culture can be categorised into visible and invisible culture by way of promoting right values and constant awareness to intended parties within business enterprises, such as symbols, slogans and ceremonies and deeper values and shared understanding held by the organization. Risk culture is an integrated approach to risk assessment which allows business units to measure risk exposures and monitor residual risks by both impact and likelihood which is consistent across the enterprise.

Lima and Castro (2005) argued that risk culture is crucial for positive change in the mindset or internal system relating to business enterprise and families. It has been highlighted also that an over-emphasis on automated risk assessment will eventually reduce the tendency or likelihood of being able to identify and mitigate risk factors at an optimum level. However, this depends on the extent to which risk management has already been incorporated into strategic planning and operations. It also depends on the availability of risk identification, operational and financial information, staff awareness on the capacity to manage risks and finally the existence of systems and protocols to respond to potential threats and opportunities.

Regester and Larkin (2005) found that traditional corporate culture and risk management culture do not vary greatly. In order to make sure that the level of understanding of risk management implementation is guaranteed and constantly monitored by the assigned authority or delegates, the following activities need to be established: (1) ensure continuous awareness and importance of ERM; (2) constant communication on the entity's risk appetite and tolerance; (3) common risk language assistance; and (4) consult with personnel on their

roles in supporting the components of ERM implementation.

From the above discussion, it can be seen that risk culture could moderate the relationship between leadership and ERM implementation. Thus, the following hypotheses are developed:

H4a: The influence of BOD on ERM implementation is moderated by risk culture

H4b: The influence of senior management commitment on ERM implementation is moderated by risk culture

H4c: The influence of CRO on ERM implementation is moderated by risk culture

### 3. Research Methodology

In this study, the researcher decided to randomly choose 300 respondents from the listed companies on Bursa Malaysia. As the total number of listed companies is 814 (as at July 2014), as recommended by Sekaran (2003), the proposed sampling size is 300. Hence, 300 questionnaires were distributed to the respondents based on random basis. The questionnaires were distributed in December 2014 until middle of February 2015. The returned questionnaires were 162. After checking all the questionnaires, the researcher found that eight questionnaires were badly completed. The researcher excluded those questionnaires due to their incompleteness. Hence, 154 questionnaires were considered usable for analysis procedure.

### 4. Research Findings

Out of 300 distributed questionnaires, 154 were returned and usable for analysis. This resulted in a response rate of 51.3%. As suggested by Sekaran (2003), a response rate of 30% is considered adequate for mail survey research. Based on this suggestion, the response rate of this study (51.3%) was above the recommended rate. In turn, the findings of this research can be generalized to the population.

#### 4.1 Profile of Respondents

The frequency and percentage of each demographic profile are illustrated in Table 1. In term of assessing the existing risk management process, result shows that 142 respondents which represents 92.2% stated that the companies have a formal process to perform risk assessment. The remaining 12 respondents which represents 7.8% indicated that there was no formal process in place to perform a risk assessment in the organization. This shows that more than 92% of the total respondents are already adopting a formal risk assessment process.

Table 1. Profile of the organizations

	Frequency	Percentage
Formal process in place to perform a risk assessment		
Yes	142.0	92.2

No	12.0	7.8
Early warning indicators to alert management		
Yes	142.0	92.2
No	12.0	7.8
Adequate risk management training		
Yes	131.0	85.1
No	23.0	14.9
Need to strengthen risk management function		
Yes	154.0	100.0
No	0.0	0.0
Standard template/standard operating procedures		
Yes	136.0	88.3
No	18.0	11.7
Risk assessment and monitoring software		
Yes	142.0	92.2
No	12.0	7.8
Modelling tools		
Yes	138.0	89.6
No	16.0	10.4
Type of Business		
Trading	10.0	6.5
Industrial product	35.0	22.7
Consumer product	19.0	12.3
Properties	20.0	13.0
Finance	20.0	13.0
Construction	11.0	7.1
Plantation	11.0	7.1
Technology	19.0	12.3
Hotels	1.0	0.6
Mining	8.0	5.2
Age of the Company (years)		
43105.0	4.0	2.6
43230.0	13.0	8.4
43419.0	73.0	47.4
<16	64.0	41.6
Ownership		
Bumiputra	72.0	82.8
Foreign	2.0	2.3
Others	13.0	14.9

The result also shows that 142 respondents which represents 92.2% stated that the companies have an alert indicator. The remaining 12 respondents which represent 7.8% indicated that there were no early warning indicators to alert management in the organization. This shows that more than 92.2% of the total respondents are already adopting or implementing an early warning indicator in the organization. Next, result shows that 131 respondents which represents 85.1% stated that the companies have adequate risk management training. The remaining 23 respondents which represent 14.9% indicated that there was no formal risk management training in the organization. This shows that more than 85% of the total respondents have a sufficient or an adequate risk management training program company-wide.

The background of companies related to risk management function shows that 154 respondents which represents 100% stated that the companies need to strengthen the risk management function in the organization. This shows all respondents agreed to the idea of strengthening risk management function within their organizations. The result also shows that 136 respondents which represent 88.3% stated that the companies have standard operating procedure for risk management. The remaining 18 respondents which represent 11.7% indicated that there was no specific or standard operating procedure for risk management in the organization. This shows that more than 88.3% of the total respondents are already adopting and have established the required standard operating procedure for risk management within the organization.

Table 1 also illustrates the findings on the background of companies in terms of risk assessment and monitoring software. The result shows that 142 respondents which represents 92.2% stated that the companies have basic risk assessment tools. The remaining 12 respondents which represent 7.8% indicated that they did not use risk assessment and monitoring software. This shows that more than 92.2% of the total respondents are already adopting risk assessment and monitoring software within the organization. 138 respondents which represents 89.6% stated that the companies have a standard modelling tool related to risk management program. The remaining 16 respondents which represents 10.4% indicated that there were no basic modelling tools related to risk management in the organization. This shows that more than 89% of the total respondents have already adopted or implemented a basic modelling requirement on risk management within the organization.

Several industrial sectors are given which are trading, industrial products, consumer products, properties, finance, construction, plantation, technology, hotels and mining. Table 3.1. shows that 35 respondents which represents 22.7% (the highest) come from industrial products; 20 respondents each represent properties and finance, respectively; 19 respondents each representing 12.3% are from technology and consumer products, respectively; 11 respondents, each representing 7.1% are from construction and plantation, whilst the remaining 10 (6.5%), 8 (5.25%) and 1 (0.6%) respondents represent trading, mining and hotel industries, respectively.

The descriptive analysis in Table 1 shows that 73 respondents (47.4%), represent the age of

the company between the range of 11-15 years; 64 respondents (41.6%) represent the age of more than 16 years; 4 (2.6%) respondents are from companies with the age range of 1-5 years; and 13 (8.4%) respondents come from the age range of 5-10 years. The research also intends to know the ownership of the business based on three dimensions: Bumiputra, Foreign and Others. Others category is classified as Chinese and Indian. The descriptive analysis, as illustrated in Table 3.1., shows that 72 respondents which represents a high percentage (82.8%) are bumiputra companies; two respondents which represents 2.3% indicated that the business is owned by the foreigners; whilst the remaining 13 respondents which represents 14.9% indicated that the business is owned by others.

#### 4.2 Reliability Analysis

An internal consistency confirmation of the scales was performed to ensure the reliability of the scales. This can be done by checking the Cronbach's alpha coefficient. The cut-off point for measuring the reliability for this study is coefficient alpha of above 0.65 as recommended by Nunnally and Berntein (1994) and Nunnally (1978). Table 2 exhibits the Cronbach coefficient alpha of all variables. In short, all the variables in this study have values more than 0.65.

Table 2. Reliability coefficients for variables

	N of Item	Cronbach Alpha
Leadership:		
Board of Directors	7	0.792
Senior Management Commitment	6	0.791
Chief Risk Officer	7	0.815
Risk Culture	18	0.792
Enterprise Risk Management Implementation	14	0.724

#### 4.3 Multiple Regression Analysis

Multiple regressions were utilized to examine the influence of leadership on ERM implementation. Multiple regression analysis using Enter Methods were applied with the confidence level of 90 percent ( $p < 0.10$ ). Overall, leadership elements significantly explained 84.8 percent of variance in ERM implementation ( $R^2 = 0.848$ ,  $F = 71.85$ ,  $p < 0.01$ ) (refer Table 3). Table 3 indicates the result of multiple regression analysis to examine the effect of leadership on ERM implementation. Two factors under leadership construct significantly influence ERM: senior management commitment ( $B = 0.117$ ,  $t = 2.365$ ,  $p < 0.05$ ); and CRO ( $B = 0.233$ ,  $t = 4.808$ ,  $p < 0.01$ ). Hence, the results support H2 and H3. These two hypotheses are accepted.

Table 3. Effect of leadership on ERM implementation

	B	t	Sig.
Board of Director	.010	.266	.790
Senior Management Commitment	.117	2.365**	.015
Chief Risk Officer	.233	4.808***	.000
R <sup>2</sup>	0.848		
F	71.851		
Sig.	0.000		

Notes: \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

#### 4.4 Hierarchical Multiple Regression

Hierarchical multiple regressions test were utilized to examine the effect of risk culture on the relationship between leadership and ERM implementation. The results are summarized in Table 4.

Table 4. Effect of Risk Culture in the Relationship between Leadership and ERM Implementation

	Standardised Beta					
	Model 1		Model 2		Model 3	
	B	Sig.	B	Sig.	B	Sig.
Model 1: Independent Variable						
Board of Director	.010	.190	.010	.793	.020	.612
Senior Management Commitment	.117**	.015	.101**	.040	.117**	.041
Chief risk officer	.233***	.000	.225***	.000	.270***	.000
Model 2: Moderating Variable						
RC			0.106***	0.009	0.092**	0.036
Model 3: Interaction Term						
rcX-Board of Director					.052	.212
rcX-Senior Management Commitment					.176**	.016
rcX-Chief Risk Officer					.168**	.043
R <sup>2</sup>	0.848		0.855		0.866	
F	71.851		69.203		36.479	
Sig.	0.000		0.000		0.000	
R <sup>2</sup> Change	0.848		0.007		0.001	
F Change	71.851		6.951		0.968	
Sig. F Change	0.000		0.009		0.079	



Notes: \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Model 1 represents the effect of independent variables on ERM Implementation. The model contributes 84.8 percent of variance of ERM. Model 2 represents the effect of independent variables on ERM implementation with the presence of risk culture.

The results indicate that the presence of risk culture in Model 2 has significantly increased the variance to 85.5 percent ( $R^2=0.855$ ,  $F=69.203$ ,  $p < 0.001$ ). Risk culture is also found to have significant association with ERM implementation in Model 2 ( $B=0.106$ ,  $t=2.637$ ,  $p < 0.01$ ). The last model, Model 3, shows the effect of independent variables and moderator variable on ERM implementation with the presence of interaction variables between independent variable and moderator variable. Model 3 also shows the significant changes in the variance ( $R^2=0.866$ ,  $F=36.479$ ,  $p < 0.01$ ).

The results indicate that there are significant effects of the interaction between senior management commitment and risk culture ( $B= 0.176$ ,  $p < 0.05$ ) and CRO and risk culture ( $B=0.168$ ,  $p < 0.05$ ). The examination on the interaction plot showed an enhancing effect whereby when senior management commitment, CRO and risk culture was larger, ERM implementation increase (Figure 1). The two related hypotheses, H4b and H4c were supported and accepted whilst H4a was not supported.

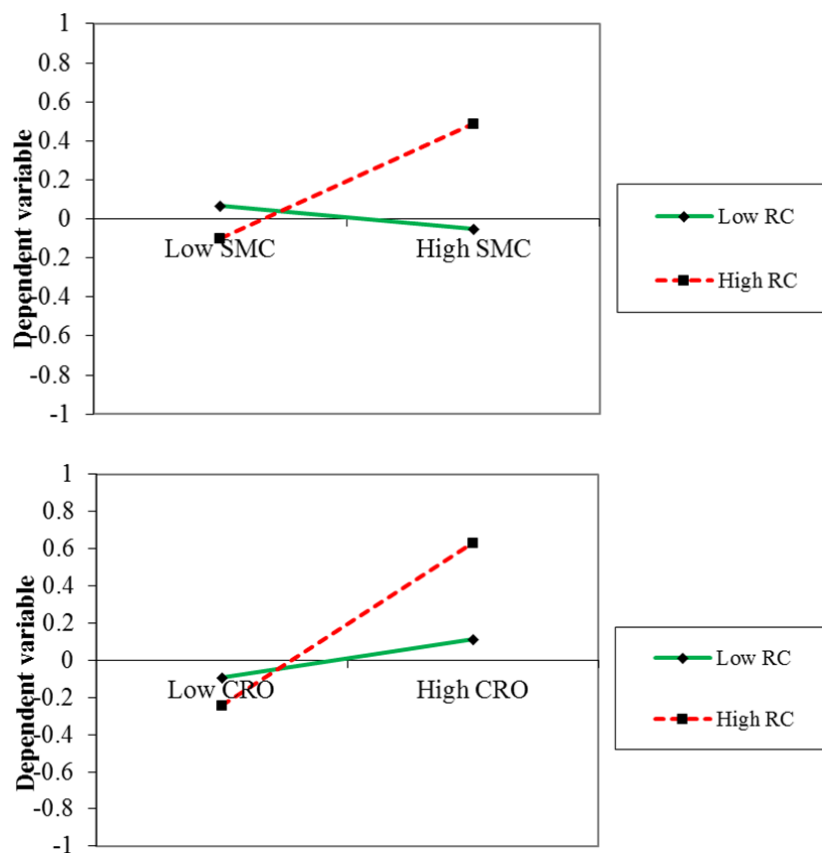


Figure 1. Moderating effect of Risk Culture on the Relationship between Leadership Elements and ERM implementation

## 5. Discussion

The outcome of the regression analysis as illustrated in Table 3 confirms that there is no significant relationship between BOD and ERM implementation (since the  $\beta = 0.010$ ,  $t = 0.266$ ,  $p > 0.01$ ). Therefore, hypothesis H1 is not supported. This result does not indicate a strong association with or support the agency theory in the ERM context. The relationship between BOD and ERM implementation is also positive ( $\beta = 0.010$ ). This result, however, is not in tandem with the previous study conducted by Rasid and Rahman (2009) where it is reported that there is a significant relationship between BOD and ERM implementation. The current results illustrates that BOD does not influence ERM implementation through their strong commitment and support in corporate governance practices. The first buy-in of the ERM implementation should come from the BODs. This is also supported by the previous studies by PriceWaterhouseCoopers (2004), Deloitte (1995), Yi and Judith (2009), and Rosa (2006). BOD commitment and direction towards the development of risk management activities directly influence the ERM implementation. BOD is inevitably accountable for making sure that all risks are identified, analyzed, measured, reviewed, controlled and consistently reported to the senior level. In addition, BOD commitment ensures better governance practices which are aligned with the national practices of good corporate governance framework. The insignificant relationship found between BOD and ERM implementation raises the question of BOD involvement in ERM implementation in the companies. Thus, BOD should be active in ensuring the success of ERM implementation through thorough and prudent oversight activities.

In the present study, it is confirmed that there is a significant relationship between senior management commitment and ERM implementation ( $B = 0.117$ ,  $t = 2.3658$ ,  $p < 0.1$ ), as illustrated in Table 3. Therefore, hypothesis H2 of the current study is supported and accepted. This result is parallel with previous studies such as Ifinedo (2008), Miccolis (2003b), Barton et al. (2002), and Kleffner et al. (2003b) whereby they found that senior management support is a primary input for an organization to implement ERM. Implicit in this finding is that senior management commitment is one of the critical success factors in the ERM implementation. This scenario is in tandem with agency theory. In other words, a continuous relationship between senior management commitment and ERM is required to ensure the effectiveness of ERM implementation through thorough and prudent oversight activities.

This study also found that there is a strong relationship between CRO and ERM implementation ( $B = 0.233$ ,  $t = 4.808$ ,  $p < 0.01$ ), as illustrated in Table 3. This result is parallel with past studies. For example, Daud et al. (2010) found that CRO and effective ERM is positively related because CRO position is pivotal and considered as the key determinant in the adoption of ERM. The result of this study is also consistent with Liebenberg and Hoyt (2003) whereby they uncovered that there is a positive relationship between CRO and ERM implementation. From this finding, it could be said that there is a positive relationship between CRO and ERM implementation and hence H3 is accepted and supported. In order words, CRO has a strong influence on the ERM Implementation within the business

organization. It is argued that the significant relationship between CRO and ERM implementation is due to the nature of CRO's role that is to support the development of ERM in companies. CRO's position involvement is also vital to ensure that communication and reporting are well structured and maintained. In short, CRO should be active to ensure the success of ERM implementation through thorough and prudent oversight activities.

The current study also found that there is no moderating effect of risk culture on the relationship between BOD and ERM implementation. This result directly does not support the cultural theory in the context of risk management. This result contradicts to the findings of Berghe and Levrau (2004) where their outcome indicated that board composition, size and leadership structure are key parameters of focused presentation and having good corporate governance culture and high quality board structure. Implicit in this is that the influence of risk culture on the relationship between BOD and ERM implementation is not supported. Hence, hypothesis H4a is rejected.

Contrastingly, this study uncovered that the influence of senior management commitment on ERM implementation is moderated by risk culture. The result indicates that there is strong relationship and interaction between senior management commitment and risk culture ( $\beta=0.176$ ,  $p<0.05$ ) based on Model 3 as illustrated in Table 4. This result directly supports the cultural theory, in the context of risk management. Implicit in this finding is that the influence of risk culture on the relationship between senior management commitment and ERM implementation supports the suggestion of the cultural theory. Hence, hypothesis H4b is accepted and supported. This finding is consistent with Register and Larkin (2005) whereby risk management corporate culture should include organizational change structure resulting from higher customer requirements for services of key industries. Another past study conducted by Tansey and Riordan (1999) pointed out that risk culture influences the management and employees' decisions even though they are not deliberately considering the risks and benefits as a whole. They further reiterated that an organization may directly benefit from deliberating their risk appetite within each category in response to the increase of corporate culture and value of ERM implementation company-wide, such as strategic, human capital, operational, financial, reputational and legal compliance.

The present study also uncovered that the influence of CRO on ERM implementation is moderated by risk culture. The result indicates that there is a strong relationship and interaction between CRO and risk culture (with  $\beta=0.168$ ,  $p<0.05$ ) based on Model 3 as illustrated in Table 4. This result directly supports the cultural theory related to risk management. Implicit in this finding is that the influence of CRO and ERM implementation moderated by risk culture and in turn supports the suggestion of cultural theory. Hence, hypothesis 4c is accepted and supported.

## **6. Conclusion**

The outcome of this research reveals that there are significant and positive relationships between senior management commitment, CRO and ERM implementation. These

relationships are also moderated by risk culture. Thus senior management commitment, CRO and risk culture need to be considered in depth before implementing ERM in an organization. This is to ensure success implementation of ERM in the organizations.

The result of hypothesis testing reveals that a few independent variables of the leadership construct (e.g., senior management commitment and CRO, RMC) are fully supported and accepted. The other independent variables were found to be insignificant and not accepted. From this assessment, the insertion of the interaction between senior management commitment and CRO with risk culture has significantly increased the effect on ERM implementation. The outcomes of the study also show that the risk culture is a good moderator in the relationship between ERM determinants and ERM implementation.

The result of this study also suggests that senior management commitment under the leadership construct fully supports the ERM implementation, which concurs with previous findings by Barton et al. (2002); Walker et al. (2002), Eick (2003), Kleffner et al. (2003a; 2003b), Price WaterhouseCoopers (2004), and Bowling and Rieger (2005a). Other independent factors, such as governance mechanism (e.g., RMC) are also strongly connected and significantly increase the effect on ERM implementation. The current findings are also aligned with past researchers and found to be significant and concurrent with previous studies conducted by Ciocoiu and Dobrea (2010) whereby they viewed that successful ERM implementation requires support and correlation of ERM determinants and dependent variables in the area of leadership.

The current study is significant in the sense that it helps shed light on the relative importance of the leadership on ERM implementation in Malaysia. The independent factors in relation to ERM unfolded in this study could serve as reference to academia and as a catalyst for further investigations. Following a thorough revision and discussion of the study's objectives achieved and related prior literature, the general and individual implications of the outcomes of the study are deliberated to give further details about their importance from the academic and stakeholders' points of view. In addition, theoretically and practically, the study's findings have significant value in terms of the research model developed and can be used as an explanatory model for ERM determinants and ERM implementation. In the auditing field for instance, the adoption of the risk based methodology approach is essentially important that linked to the yearly internal audit plan development. The auditor shall use the related information on ERM perspectives to conduct the audit based on high risk areas besides audit universe. Hence this model contributes to the knowledge in the area of risk governance, compliance and control mechanism that have linked with the enterprise risk management implementation. From the ERM perspective, the results of this study could serve as a guide to develop a strategy for audit actions in the assessment of ERM practices as this has the potential to improve the level of ERM implementation by the stakeholders as a whole.

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