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# A Conceptual Framework for Enterprise Risk Management performance measure through Economic Value Added

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## **Abstract**

Enterprise Risk Management (ERM) is an essential technique used to manage a myriad of risks in a holistic manner. The purpose of this study is to propose a conceptual framework for investigating the impact of ERM on the firm's value through Economic Value Added (EVA) performance measure. The research design for our study incorporates conclusive research. It covers the descriptive and cross sectional design. It focuses specifically on the objective performance measures of ERM through EVA measure approach. The study adopts an ERM implementation framework comprising three dimensions namely, *structure*, *governance*, and *process* which will be translated into fourteen implementation elements. The study estimates the positive effect of ERM using EVA as a measuring proxy for firm value. EVA computes company profit by incorporating cost of capital.

**Keywords:** Enterprise Risk Management, Firm value, Economic Value Added; EVA

## **1. Introduction**

Nowadays risk management becomes a necessity instead of an option for an enterprises. The executives and Board of Directors of most of the companies have comprehended the importance of risk management and they have given the primary importance to implement it in their corporations. Risk management is the process of managing and thinking systematically about the risks faced by the organization. Traditionally, organizations manage risks using the silo approach ([Beasley et al., 2005](#)). According to the executives of many organizations, the 'silo' approach is not an effective way ([Shenkir and Walker, 2005](#)) to manage enterprise level risks. Therefore, researchers proposed a new methodology named Enterprise Risk Management (ERM) to manage the portfolio of risks ([Nocco and Stulz, 2006](#); [Lai and Azizan, 2010](#)) and to improve the shareholders values.

### **1.1 ERM Definition**

The Committee Of Sponsoring Organization Of The Treadway Commission (COSO), the leading expert in the field of ERM defined ERM as: "*a process, effected by an entity's board of directors, management and other personnel, applied in a 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, and to provide reasonable assurance regarding the achievement of entity objectives*" (COSO, 2004). Through ERM, all risks can be well

understood and categorized according to their impact and be managed effectively. All information obtained through managing the enterprise risks can help corporate executives to make correct and accurate decisions with regards to investments, capital utilization, performance evaluation, reward systems, employee training and evaluation.

### **1.2 Global ERM Standards**

ERM frameworks and standards provide different approaches to identifying, analysing, responding, and monitoring internal and external threats to an organisation. Various regulatory frameworks globally contribute to the development and improvement of ERM. This includes International Organization for Standardization ISO 31000, COSO 2004, Federation of European Risk Management Associations (FERMA), the Sarbanes-Oxley act (SOX) in the US. Elimination of risk can be difficult. Nonetheless, managing risk is crucial and that can be made possible through frameworks mentioned. For example, ISO released set of principles and generic guidelines in 2009 on risk management. The designed principles can be applied to a public, private large or small organization to effectively manage their risks. According to Kevin Knight a Risk Management standards expert the principles and guidelines of ISO 31000 are concise, clear and flexible which assist corporation to manage their risk.

Whilst previously released standards like Australia-Newzealand standard 4360 (AS/NZS 4360) mostly focused on risk management process, ISO 31000 through its principles and guidelines focuses on the whole risk management system like its structure, implementation, maintainance and its improvement. ISO is classified into three components: Principles and guidelines, Framework and Process (Airmic, 2010). Out of eleven principles of ISO 31000, one principle is directly linked to value creation of firm which states that a proper risk management process assists to achieve agency's objectives through continuously reviewing and improving the process and systems of risk management.

The risk management process is a dynamic one and consists of the risk identification, risk evaluation and analysis, risk treatment, and risk monitoring (ISO 31000, 2009). The principles and guidelines support the risk management process and establish a link between framework and process in order to achieve the goals of enterprises. Looking in the perspective of Malaysia regulatory regime on risk management there is no specific law that of Sarbanes-Oxley act (SOX) in US. SOX Act of 2002 was enacted in response to the financial scandals occurred such as Enron and WorldCom. SOX requires the auditors and Board of Directors to swear under oath that they will make complete, accurate and fact based financial statements. In comparison, the Malaysian regulatory framework, entails enterprises to manage their risks in accordance to the Malaysian Code on Corporate Governance.

### **1.3 Research Objectives**

Many studies have argued that enterprise risk management contributes to the firm's performance. Nonetheless, evidence on the impact of ERM practices on the firm's performance is still limited in Malaysia (Tahir and Razali, 2011). Although Lai and Samad (2011) in their study provided the evidence that there is a good penetration on ERM implementation by the Malaysian public listed companies the maturity level of the practices is still at the initial stage (Yazid et al., 2008). In view of that, this paper attempts to present a conceptual framework which espouses the positive impact of ERM implementation on firm value by employing economic value added (EVA) analysis. The proposed conceptual framework adopts an ERM implementation model by Lai and Azizan, (2010). The adopted ERM model encompasses 3 dimensions namely, *structure*, *governance* and *process*;

operationalized by 14 elements as presented in *Table 1*. Hence, in specifics, the primary objectives of this paper are twofold:

1. to present a conceptual framework on an ERM implementation model in relation to its impact on firm's value.
2. to hypothesize the significant positive relationships between various elements of ERM implementation with factors of EVA analysis of firm value.

The proposed conceptual framework will contribute to literature on the development and adoption of ERM measurement via EVA analysis.

Table 1: Dimensions and elements of ERM framework (Lai and Azizan, 2010)

Dimensions	Elements
<b>Structure</b>	Provide common understanding of the objectives of each ERM initiative
	Provides common terminology and set of standards of risk management
	Identifies key risk indicators (KRIs)
	Integrates risk with key performance indicators (KPIs)
<b>Governance</b>	provides enterprise-wide information about risk
	Enables everyone to understand his/her accountability
	Reduces risk of non-compliance
	Enables tracking costs of compliance
<b>Process</b>	Provides the rigor to identify and select risk responses (i.e.risk- avoidance, reduction, sharing and acceptance)
	Integrates risk with corporate strategic planning
	Integrated across all functions and business units
	Quantifies risk to the greatest extent possible
	ERM strategy is aligned with corporate strategy
	Aligns ERM initiatives to business objectives

## 2. Literature Review

### 2.1 Enterprise Risk Management

The subject of Risk management has been under consideration since 1950s. It was the first time when Modigliani and Merton, (1958) demonstrated that the risk management didn't affect the value of a firm when the market is in a perfect condition. However recently, many authors have verified that risk management occurs because of imperfections in the market and its implementation leads to the firm's overall value.

The modern portfolio theory claims that the risk management concept is not related to shareholders' value because shareholders can use two tools, asset allocation and diversification, to reduce the risks which they face (Markowitz, 1952). Nevertheless, the shareholders are not the only stakeholders of organization so the risk management should be used by the companies. It could be favorable for the companies to improve the whole firm's value.

Several studies have advocated that ERM implementation improves firm's performance, like the study by Hoyt and Liebenberg (2011), investigate the relationship between ERM adoption and a firm's performance. He used the firm's value as a dependent variable and used Tobin's Q to measure it. In addition, for the ERM implementation intensity he used the chief risk officer (CRO) appointment in the company as a proxy. Based on his study, ERM enabled firms to understand the risks residing within the company, and improve the return on equity and the capital efficiency. He conducted this study in insurance companies and found that the ERM implementation enhanced the value of the firm. Moreover, he saw a difference in Tobin's Q measure for the firm which implement ERM and those which did not. From the results, he concluded that ERM implementation enhance firm's value.

### ***2.2 Benefits of ERM Implementation***

ERM implementation has several tangible and intangible advantages (Lai and Azizan, 2010). Organizations should implement ERM to improve decision making, efficient gathering of information, and strengthen corporate governance. Findings from different studies have stated that risk management is the process through which the organization can minimize earning volatility, encourage job and financial security and improve the value of their shareholders. Overall, risk management is a process that enables firms to grow economically and financially as it reduces the risk of business activities and cost of capital. This paper presents an enterprise risk management implementation model comprising three dimensions: *Structure*, *Governance* and, *Process*. These dimensions are expected to be related to the firm's value.

### ***2.3 Structure***

An effective ERM implementation model should possess a structure to enable the management to understand and communicate the risk factors. Based on Lai (2011) a proper risk management program in organizations is very important to handle the challenges in their operations. ERM practices within the firm's provides a structure that combines the risk management events in a holistic framework that facilitates the identification of uncertainties (Hoyt and Liebenberg, 2011). ERM structure establishes the policies, processes, competencies, reporting, technology, and a set of standards for risk management. Standard and Poor's argued that the evaluation of organization ERM structures enable the firm to adress all of their risks, set common terminology and expectation about which risk to take and which to avoid (Pagach, 2010).

Our ERM model propose the structure dimension of ERM implementation model to be measured using four items shown in *Table 1*, which are: (i) ERM provide common understanding of the objectives of each ERM initiative (ii) provides common terminology and set of standards of risk management (iii) identifies key risk indicators (KRIs) and (iv) integrates risk with key performance indicators (KPIs).

### ***2.4 Governance***

Proper ERM governance ensures risk management system to develop internal control procedures which are crucial to avoid loss, safeguard security and enhance profitability

(Drennan, 2004). The ultimate aim of risk management mechanism is linked to creating value in the form of reducing firm's cost of capital (Ramly and Rashid, 2010). Simply put, ERM governance enables the organization to survive in the market and keep the organization flourishing; it also supports the flow of internal information which helps make appropriate and timely decisions. An integrated ERM governance incorporates an infrastructure that enables everyone to improve transparency and understand their responsibility (Lai and Azizan 2011).

Morover Lai (2014) argued that risk management program within the firm can only be successful if everyone know the nature of relevant risk. Thus all information concerning relevant risk facing enterprise must be dispersed effectively. Based on Beasley et al. (2005) the proper channel of communication within the organization enables all the members to understand their roles and responsibilities regarding risk. Our model proposes the governance dimension of ERM implementation model to be measured by four elements which are; (i) ERM provides enterprise-wide information about risk (ii) Enables everyone to understand his/her accountability (iii) Reduces risk of non-compliance and (iv) Enables tracking costs of compliance.

### **2.5 Process**

The proper risk management process helps the firm to first identify what risk to accept and what to avoid and then successfully quantify and measure the identified risk. ERM process enables the firm to integrate business strategies to achieve the desired objectives. Generally, ERM process consists of 5 steps which are: (i) Risk identification (ii) risk analysis (iii) risk assessment (iv) risk mitigation and (v) risk monitoring. The process dimension of ERM provides the way for aligning the risk management strategies with corporate strategic planning. According to Demidenko & McNutt (2010) the risk management process enhance the decision making and select the alternative response, assists enterprise to reduce operational losses and errors, identify and grab opportunity and enhance allocation of capital.

Our ERM model proposes that the process dimension of ERM implementation model to be measured by six statements which are: (i) provides the rigor to identify and select risk responses (i.e. risk avoidance, reduction, sharing and acceptance) (ii) integrates risk with corporate strategic planning (iii) integrated across all functions and business units (iv) quantifies risk to the greatest extent possible (v) ERM strategy is aligned with corporate strategy and (vi) aligns ERM initiatives to business objectives.

### **2.6 Firm value**

The value of the company depends on the ability of the company's planing, allocation of resources, more productive investments, accurate and informed decisions and most importantly effectively managing business risks. The accurate performance could be measured by different methods, such as shareholder value, Tobin's Q, return on assets, economic value added etc. According to Liebenberg and Hoyt, (2003) ERM enhances the firm's value in terms of capital efficiency and return on equity. The studies conducted by Lai and Azizan, (2010) and COSO, (2004), debated many advantages of implementing ERM in the organization. These advantages include (i) reduce risk/return profile of the company (ii) reduce stock price volatility which leads to improving the shareholder's worth (iii) attain competitive advantage (iv) enhance decision making ability (v) build confidence for investors (vi) minimize the expenditures related to different risk management activities (vii) improve capital efficiency (viii) enhance resource allocation (ix) improve return on

equity and (x) reduce the cost of external financing. These advantages lead to a reduction of the cost of capital and improvement of the firm's performance.

According to [Lai and Azizan \(2011\)](#), the ERM implementation will affect the value of the shareholders by reducing the cost of capital (via lowered risk premium) and increasing the business efficiency (i.e., higher price-to-earnings ratio for the firm's shares). The relationship between the ERM program and the firm's value enhancement is shown in *Figure 1*.

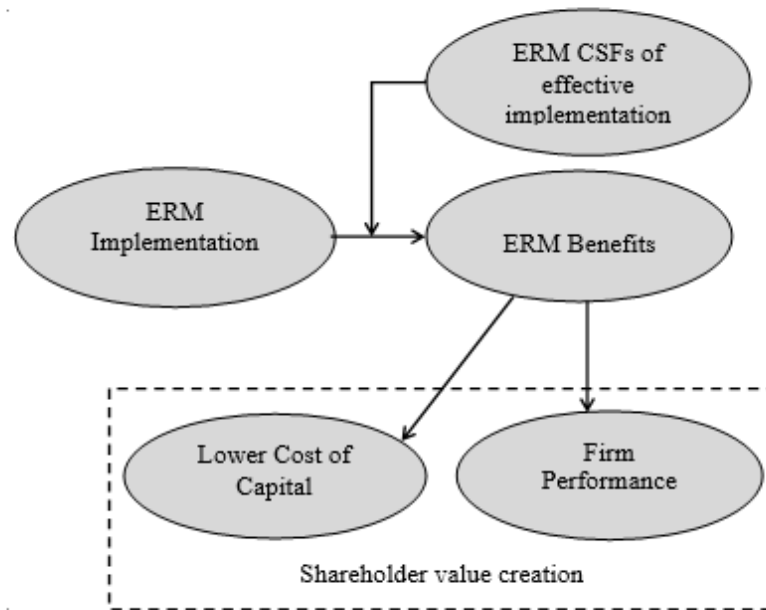


Figure 1: Path Diagram of the Causal Relationship between ERM and Shareholder value  
Source: [Lai and Azizan \(2011\)](#)

*Figure 1*. shows that the benefits of ERM implementation which leads to reduction of the cost of capital and ultimately improvement in the performance of the firm. The effective implementation of the ERM program depends upon some critical success factors (CSFs). CSFs are important in this study because the increase or decrease of the shareholder value depends upon the characteristics of the firm.

### 2.7 Performance Measure

The performance measurement is an evolving area of research in finance all over the world. For many years, the executives and shareholders of companies have relied on traditional measures like return on capital, return on assets, return on investments, earnings per share, etc. to measure a firm's value ([Kaur and Narang, 2009](#)). This study intends to use the EVA analysis as a proxy for measuring performance. [Hawawini et al. \(2003\)](#) proposed the use of the EVA, also known as the economic profit. EVA can be proposed to measure the value of firm as EVA provides accounting, economy and market information information about the short-term and long-term performance ([Mamun et al., 2012](#)) by incorporating the cost of capital employed by the business.

ERM focuses on the risk and return tradeoff. Shareholders invests their capital in company in a hope of obtaining a high risk adjusted return this can be achieved by reducing enterprise

cost of capital (Kraus, 2012). ERM implementation can help in reducing enterprise risk hence can reduce the cost of capital. According to Stern Stewart, EVA is a technique for measuring financial performance and it shows the true profit of the organization through which the value of the shareholder is created over time. EVA approach emphasize that the firm can not improve its value until it covers its opportunity cost and cost of capital. Based on COSO (2004), the ERM implementation leads to a lower cost of capital and assists to enhance the business performance. By employing ERM, it can reduce its unsystematic risk profile which leads to reduction in the firm's risk premium and as a result, the cost of capital can be lowered. Thus for study reported in this paper performance will be measured by EVA.

EVA can be calculated as:

$$EVA = NOPAT - (TCE \times WACC)$$

Where

NOPAT = Net operating profit after tax

TCE = Total capital employed (Short Term Debt + Long Term Debt + Minority Interest + Share holders Equity)

WACC = Weighted average cost of capital. WACC can be calculated as:

$$WACC = D/V \times Cd + E/V \times Ce$$

WACC encompasses two components

(i) Cost of Equity (Ce)

(ii) Cost of Debt (Cd)

D = the market value of firm's debt

E = the market value of firm's equity

V = total value of firm debt + equity

Cost of equity is expressed by CAPM model and is given by:

$$Ce = Rf + \beta (Rm - Rf)$$

Where

Rf = risk-free interest rate

$\beta$  = beta coefficient

Rm = return on the market portfolio

(Rm - Rf) = market risk premium

Cost of debt (Cd) refers to the average rate of interest the company pays for its debt obligations.

Cd is computed as:

$$Cd = \text{Total interest expenses} \times (1 - \text{Effective tax rate})$$

EVA is considered to be the most important technique for measuring performance because it focuses on the cost of capital whilst the traditional corporate performance does not consider the cost of capital. Table 2 shows comparison among various computation of return vis-à-vis the incorporation of capital employed and the cost of capital.



Table 2: Comparison of Various Measures

Measures	Return	Capital employed	Cost of capital
NOPAT	√	x	x
ROCE	√	√	x
RONW	√	√	x
EPS	√	√	x
EVA	√	√	√

From *Table 2*, it is clear that the other tools for measuring performance like Net Operating Profit After Tax (NOPAT), Return on Capital Employed (ROCE), Return on Net Worth (RONW) and Earning Per Share (EPS) do not consider cost of capital whilst Economic Value Added (EVA) does.

### 3. Conceptual Framework

The proposed conceptual framework features an ERM implementation model with hypothesized causal relationships to firm value through EVA analysis is presented in *Fig 2*. The conceptual framework sees the adopted ERM model as an independent variable whose implementation will have a positive impact on the firm's value, which is the dependent variable. The adopted ERM model has three dimensions which made up of fourteen elements (Lai and Azizan, 2010). The three dimensions are *structure*, *governance* and *process*. Each of the dimensions is operationalized by some corresponding implementation elements as presented in *Table 1*. On the other hand, the measurement for the dependent variable, namely firm value, can be established and validated through EVA analysis.

EVA analysis encompasses the examination by charging the cost of capital on capital employed against operating profit. EVA is a technique for measuring financial performance. It shows the true profit of the organization through which the value of the shareholder is reated over the time (Stern, 1991).

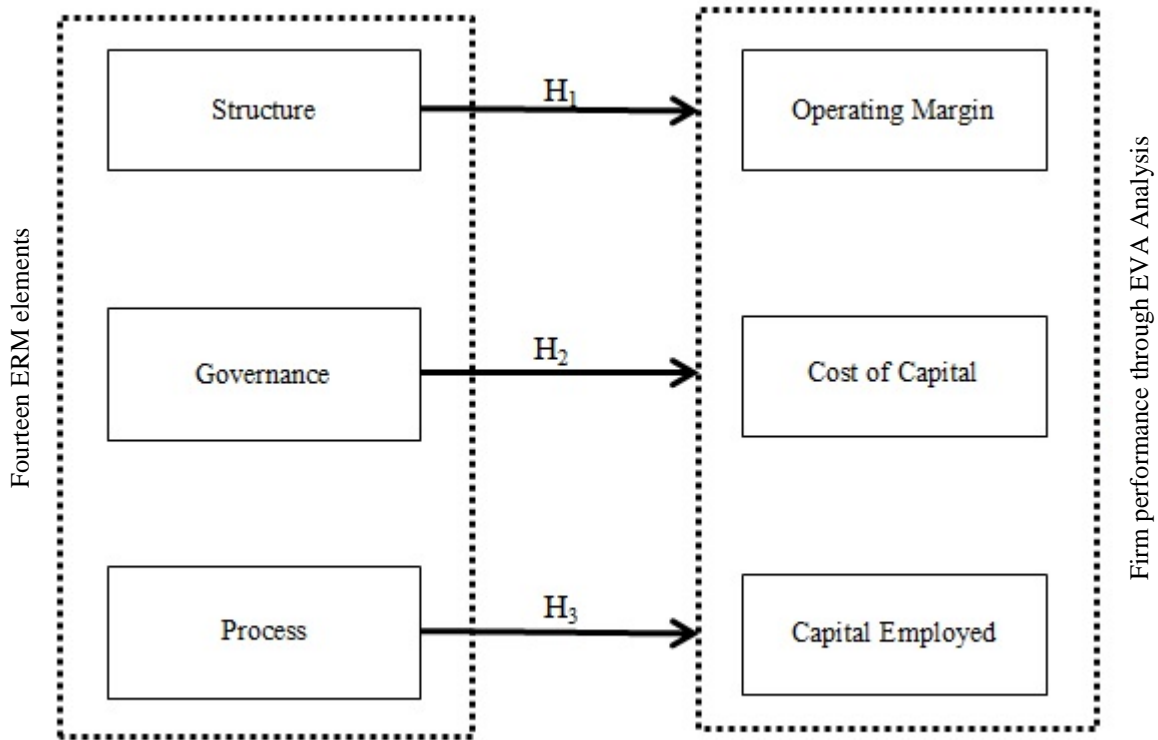


Figure 1: Conceptual framework of ERM implementation framework.

Based on the proposed framework, we hypothesize that

**H<sub>1</sub>.** The structure dimension of ERM has significant positive impact on enhancing Operating margin.

**H<sub>2</sub>.** The governance dimension of ERM has significant Positive relationship with firm's value through reducing Cost of Capital.

**H<sub>3</sub>.** The process dimension of ERM will enhance firm's value by maximizing return on Capital Employed.

#### 4. Hypotheses Testing

In this study, the three dimensions (Governance, Structure, and Process) of the ERM implementation model have advocated a positive impact on a firm's value. To investigate the impact of the ERM practices on the firm's value, the study presents a multiple regression modeling written as:

$$\begin{aligned}
 Y_1 &= \beta_{1,1}X_{1,1} + \beta_{1,2}X_{1,2} + \beta_{1,3}X_{1,3} \dots \beta_{1,i}X_{1,i} + e_1 \\
 Y_2 &= \beta_{2,1}X_{2,1} + \beta_{2,2}X_{2,2} + \beta_{2,3}X_{2,3} \dots \beta_{2,i}X_{2,i} + e_2 \\
 Y_3 &= \beta_{3,1}X_{3,1} + \beta_{3,2}X_{3,2} + \beta_{3,3}X_{3,3} \dots \beta_{3,i}X_{3,i} + e_3
 \end{aligned}$$

Where

- $Y_i$  = Firm value factor  $i$   
 $X_i$  = ERM implementation elements  $i$   
 $\beta$  = coefficient of effect on factor  $i$   
 $e$  = Error term  $i$

## 5. Conclusion And Future Work

This paper has presented an ERM performance measurement framework based on EVA analysis. Moving forward, future research can quantitatively focus on analyzing the impact of each implementation dimension of the adopted ERM model with the respective factors on firm's value under the EVA analytical model.

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