IEBMC 2017
8th International Economics and Business Management Conference

VALUE CREATING DETERMINANTS OF ENTERPRISE RISK MANAGEMENT AND ITS ECONOMIC VALUE ADDED

Fong-Woon Lai (a), Muhammad Kashif Shad (b)* & Arif Ali Khan (c)
*Corresponding author

(a) (b) Department of Management and Humanities Universiti Teknologi PETRONAS, Malaysia,
laifongwoon@utp.edu.my; mkashifshad@gmail.com
(c) Department of Computer Science, City University of Hong Kong, Hong Kong, aliakhan2-c@my.cityu.edu.hk

Abstract

The aim of this research paper is to gain insights into the value creating determinants of enterprise risk management (ERM) implementation and its economic value added (EVA). Data for this study was collected using questionnaire survey and published reports of public listed companies. Empirical examination of the pertinent value creation hypotheses involves bivariate correlation and regression analysis in examining the association and impact of ERM implementation towards various factors of EVA measurement as well as value maximization elements. The results of the study reveal that ERM implementation significantly enhances the net operating profit after tax, return on invested capital; whilst reduces the cost of financial distress, cost of external financing, informational asymmetries, agency problem and the weighted average cost of capital of the companies. Nevertheless, the findings show insignificant relationship between ERM implementation and lowering the tax burden of the companies. This study contributes to the existing literature on the value maximization theory of ERM by linking it with the measurement factors for economic value added analysis.

© 2018 Published by Future Academy www.FutureAcademy.org.UK

Keywords: Value maximization theory, enterprise risk management, economic value added.

1. Introduction

In the dynamic global business environment, organizations inevitably undertake various risks in the midst of creating value for their shareholders. Numerous risk factors are inherent in all business activities. As such, it is imperative for organizations to put in place a vigorous risk management framework to safeguard their precious resources from adverse consequences. One such framework can be embodied in enterprise risk management (ERM) model. ERM is an organized system that aligns strategy, technology, processes, people, and information with a purpose of assessing and managing the risks faced by the firm as it creates value (Lai et al., 2010). ERM has gained its popularity among practitioners and researchers in recent years to manage risks from all fronts of business operations. Historically, the practice of risk management was operationalized to manage pertinent risks facing the financial institutions and insurance companies. Later on the scope of risk management has been extended beyond the investments and liability risks to those like translational risks, currency exchange risks, operational risks, technological risks as well as various other risk factors that affecting business enterprises. ERM can be strategically implemented to not only manage business risks but also be aligned to play a significant role in sustainable development of the organization in that it improves economic efficiency and growth as well as enhances investors' confidence (Liu et al., 2017; Schiller & Prpich, 2014; Lam & Quinn, 2014; Ramanathan & Badlani, 2014).

Furthermore, its relevancy and acceptance as a management technique are precipitated by the heightened stakeholders' expectations as well as by the intensified compliance requirements on risk management and corporate governance (Ghazali & Manab, 2013).

In this light, an ERM implementation framework is proposed to diffuse its risk mitigation effect, so as to enhance the various economic value added (EVA) factors as well as value maximization elements of businesses. The elements of the proposed ERM implementation framework are linked to value maximization determinants. The value maximization literature argues that ERM implementation reduces external financing cost, corporate taxes and agency costs. This in turn, will lead to the reduction of the firm's cost of capital and hence, enhancing the firm overall performance.

Nevertheless, the neo-classical finance theory posits that firm-specific risk is not relevant and that only the covariance of the firm's systematic (market) risk measured by the beta coefficient as in the capital asset pricing model (CAPM), is important (Belmont, 2004). This implies that ERM implementation will have no value to companies as it emphasizes on reducing the firms idiosyncratic risks. Nonetheless, what the neo-classical finance theory claims is in stark contrast to the phenomena of increased acceptance for ERM implementation by policy makers and industry practitioners.

ERM is a growing discipline. Research related to ERM, its efficacy, design and influence on firm's performance can be described to be reaching its middle maturity stage. As such, the objective of this paper is to gain insights into the value creating determinants of ERM implementation as well as its economic value added for the Malaysian public listed companies.

2. Literature Review

The value of the firm is influenced by a number of factors. The current literature on enterprise risk management (ERM) debates on the issue that organizations may enhance their performance by embracing a holistic approach to risk management. The main objective of adopting a holistic approach is to facilitate

the aggregation of risks facing the organization at the strategic or corporate level instead of analyzing them at the operational or business units' level in silo. This is to provide a consolidated understanding of the entire risk spectrum that is being exposed to by the organization.

2.1. Enterprise Risk Management Implementation

Risk management has been a subject for debate since 1950s. Modigliani and Miller (1958) indicated that risk management adoption had no effect on the firm's value when the market is in a perfect condition. Neo-classical finance theory stated that in the perfect market condition, shareholders would have full information relating to the risks in an enterprise. As such, shareholders were able to evade the firm-specific risk easily through diversification of their portfolio's assets. Hence, risk management activities by the firm were irrelevant in terms of value creation in relation to what shareholders were able to do it for themselves. This logic is apparently conflicting with the concept of enterprise risk management in managing firm-specific risk.

To refute the arguments postulated by the Neo-Classical Finance theory, newer theory of holistic risk management begins to look into frictional costs that relate with corporate risk. For example, Doherty (2000) stated that risk would tend to increase taxes and potential costs of financial distress. Besides, when a firm's cash flows were at stake, conflicts of interest would arise between stockholders and creditors. Hoyt and Liebenberg (2011) indicated that ERM implementation was beneficial for the reduction of expected taxes, mitigation of incentive conflicts, and creation of new business opportunities. It had an effect to minimize volatility of reported income.

2.2. Determinants of Value Creation

This paper highlights the determinants that are hypothesized to create economic value added to the firm through ERM. These determinants deliberate the underpinning for value maximization propositions of ERM implementation. The determinants of value creation for firms engaging in risk management activities which are in tandem with the respective value maximization hypotheses of risk management theory are discussed in the following section.

2.2.1. Financial Distress Cost Hypothesis

Reducing cost of financial distress is one of the primary objectives of firm's risk management (Shad and Lai, 2015a). Firms will involve in risk management if they are more likely to experience financial distress costs. Nevertheless, Cummins et al. (1998) stated that the evidence for firms to engage in risk management was not persuasive for non-financial firms.

2.2.2. Lower Tax Burdens Hypothesis

Risk management has the effect on reducing corporate taxes. Nance et al. (1993) found that non-financial firms with complex and higher investment tax credits were more frequent to transact in derivative markets – a conduit for risk management. Cummins et al. (1997) supported the proposition that taxes were a significant factor for enterprises to involve in derivative market transactions.

2.2.3. Costly External Financing Hypothesis

The process in the ERM framework are executed to manage a wide spectrum of risks holistically and to improve the transparency of information about risk profile of the company which lead to the reduction of the cost of external financing (Berry et al., 2016). Literature indicates that firms involved in risk management activities by means of derivative transactions in order to ensure the strength of internal funding mechanism through lowering the income stream variation (Lai & Samad, 2010). Firms normally look forward to utilizing internal funding than that of external ones to avoid higher financing cost.

2.2.4. Agency Problem Hypothesis

Company executives have an economic incentive to ensure that business continuously perform well so that their jobs are secured. Company executives stake are high as they have extremely large investments in the form of their skilled human capital in the organization. Company executives are concerned with disruption to the firm's profit which may lead to the firm facing financial distress or bankruptcy. These negative consequences in turn may result in replacement of current skilled human capital. This presents a huge personal risk to the company executives (Cummins et al., 1998). Hence, company executives are motivated to managing the enterprise's risks.

2.2.5. Informational Asymmetry Hypothesis

ERM reduces informational asymmetry between the company management and the external investors as its implementation will improve the transparency of risk information with regard to business activities (Froot et al., 1993). If asymmetric information exists, it would result in even a sound firm facing difficulty or higher cost in raising funds in the capital market especially during distress calls.

2.2.6. Net Operating Profit after Tax (NOPAT)

ERM implementation enhances firm's profitability. It increases the awareness about the risks that helps in making better strategic decisions (Lai et al., 2011). A better decision making allows the organization to meet strategic objectives, decrease earnings volatility, and enhance their value. It leads to higher sales return by managing operational risks encountered by the enterprises (Shad & Lai, 2015b). Operational risks have negative relationship with revenue generation of the firm. Risk monitoring and disclosure can decrease operational risks and empower the firm to focus on its resources to undertake business activities and generate value. Hence, ERM can minimize the fluctuation of operating income. The increase in sales revenue coupled with the lowering cost of goods sold due to ERM shall enhance the firm's NOPAT.

2.2.7. Weighted Average Cost of Capital (WACC)

ERM reduces the firm's overall risk by reducing its earnings volatility and improving capital structure (COSO, 2004). Capital structure is composed of debt and equity financing raised by the firm to finance their assets. One of the objectives of ERM is to lower the firm's weighted average of the cost of capital (WACC) (Lai & Shad, 2017). WACC comprised of the cost of equity and the cost of debt. ERM play a significant role in reducing the cost of capital of the firm. Its implementation helps to improve the

information available about the firm's risk profile. This information can be shared with investors, thus, reduces information asymmetries and leads to a lower cost of capital. A reduction in the firm's overall risk profile will help the firm to enjoy better credit ratings from the rating agencies, hence lowering the expected rate of return from the shareholders as well as the required risk premium charge from the debtholders when it issues capital instruments such as shares and bonds. As such, ERM adoption can improve firms' credit ratings which are used by external stakeholders as a signal of financial strength. Standard & Poor's, Malaysian Rating Corporation Berhad and other rating agencies explicitly evaluate firms' ERM program as part of their rating process (Weber et al., 2010; Berry et al., 2016).

2.2.8. Return on Invested Capital (ROIC)

A higher return on invested capital indicates the organization's abilities to utilize its capital resources efficiently. Shareholders value is created when the firm is able to generate a return from the capital invested higher than the required return or hurdle rate. And this hurdle rate must be equal to or higher than the rate that shareholders expect to earn by investing in an alternative but equally risk investment (Rappaport, 1999). ERM is intended to optimize the risk-return trade-off and therefore generating the firm long-term value. The implementation of ERM in the firm will enable it to make appropriate economic decisions and facilitate investment in more positive net present value (NPV) projects.

3. Problem Statement

ERM is a growing discipline and has received global attention among business enterprises and researchers including those in Malaysia. Yet, research related to ERM implementation, its efficacy, design and influence on the Malaysian companies' performance is still not extensive (Idris & Abdullah 2016). For instance, there is still limited research focus on the determinants associated with the adoption of ERM, and much less on the investigation of the value creating mechanism of ERM as well as its performance measurement such as that through the economic value added analysis. Therefore, this study will contribute to existing literature by expanding the scope of the value maximization theory of ERM by linking it with the firm performance measurement factors through economic value added analysis.

4. Research Questions

Q1. What are the main determinants of ERM value creation measured through economic value added analysis?

5. Purpose of the Study

The purpose of this paper is to empirically examine the value creating determinants of enterprise risk management (ERM) implementation through economic value added (EVA) analysis.

6. Research Methods

6.1. Data Collection

Data was collected from 120 Malaysian public listed companies listed across thirteen sectors. Both primary and secondary data were extracted. Primary data on ERM implementation (independent variable) was collected through questionnaire survey. While secondary data related to the economic value added (EVA) measurement was sourced from the Thomson Reuters DataStream.

This study developed and tested eight hypotheses as presented in Table 1 below. The testing of hypothesis involved running pearson correlation analysis as well as regression analysis to examine and validate the relationships between the elements of ERM implementation framework with the various dependent variables under study, which correspond to several determinants defined by the value maximization theory of holistic risk management as presented in column (a) of Table 1.

Table 01. The Theory and Related Hypotheses

Value Maximization Theory Determinants (a)	H_i (b)	Questionnaire/ Hypotheses statement/ Dependent Variable (c)
Cost of financial distress	H_1:	ERM significantly reduces expected costs of financial distress
Lowering tax burden	H_2:	ERM significantly reduces company's expected taxes
Cost for external financing	H_3:	ERM significantly reduces the cost for external financing
Agency problem	H_4:	ERM significantly reduces volatility of managers' bonuses and salaries
Informational asymmetries	H_5:	ERM significantly reduces information gap between managers and investors
Net operating profit after tax	H_6:	ERM implementation has significant positive effect on Net Operating profit after tax of the firms.
Weighted average cost of capital	H_7:	ERM implementation has a significant positive effect on reducing Weighted Average Cost of Capital.
Return on invested capital	H_8:	ERM implementation has significant positive effect on return on invested capital.

6.2. Variables of Research Framework
6.2.1. Independent variable: ERM implementation

ERM Implementation (an independent variable) was proxied by a measurement metric made up of fourteen survey items gauging the respondent's agreement ratings with regard to the impacts resulted from their ERM implementation process. These fourteen items are related to: (1) understanding of the objectives of ERM initiatives, (2) terminology and standards used, (3) enterprise-wide risk information, (4) risk integration with strategic planning, (5) risk of non-compliance, (6) costs of compliance, (7) risk quantification, (8) risk internalization across business functions, (9) accountability awareness, (10) alignment of corporate strategy, (11) key risk indicators (KRIs) development, (12) risk integration with key performance indicators (KPIs), (13) ERM alignment to business objectives, (14) risk responses. These survey items were measured in 5-point Likert's scale.

6.2.2. The dependent variables

The dependent variables for hypotheses H1, H2, H3, H4 and H5 were survey statements correspond to the relevant value maximization determinants which were presented to the respondents for their agreement rating in 5-point Likert's scale. Table 1's column (b) and (c) present the pertinent hypotheses statements. H6, H7 and H8, were tested using secondary data which were extracted from Thomson Reuters DataStream. Hypotheses H6, H7 and H8, are proxies for firm performance measured through the factors for economic value added (EVA) analysis. EVA's equation is given by:

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

where,

EVA = economic value added, NOPAT = net operating profit after tax, WACC = weighted average cost of capital, and IC = invested capital.

EVA analytic is used in this study because it embodies value creation after taking into account risk-adjusted capital charge for a given business venture or investment.

6.3. Statistical Model Specification

To investigate the impact of the ERM implementation on firm's value creation determinants, this study adopts regression models written as below:

$$Y_1 = \alpha_1 + \beta_1 X_1 + e_1 \ldots\ldots\ldots Model\ 1$$
$$Y_2 = \alpha_2 + \beta_2 X_1 + e_2 \ldots\ldots\ldots Model\ 2$$
$$Y_3 = \alpha_3 + \beta_3 X_1 + e_3 \ldots\ldots\ldots Model\ 3$$
$$Y_4 = \alpha_4 + \beta_4 X_1 + e_4 \ldots\ldots\ldots Model\ 4$$
$$Y_5 = \alpha_5 + \beta_5 X_1 + e_5 \ldots\ldots\ldots Model\ 5$$
$$Y_6 = \alpha_6 + \beta_6 X_1 + e_6 \ldots\ldots\ldots Model\ 6$$
$$Y_7 = \alpha_7 + \beta_7 X_1 + e_7 \ldots\ldots\ldots Model\ 7$$
$$Y_8 = \alpha_8 + \beta_8 X_1 + e_8 \ldots\ldots\ldots Model\ 8$$

where,

Y_1 = cost of financial distress,

Y_2 = tax burden,

Y_3 = cost of external financing,

Y_4 = Agency problem,

Y_5 = Informational asymmetries,

Y_6 = Net operating profit after tax,

Y_7 = Weighted average cost of capital, and

Y_8 = Return on invested capital

X_1 = ERM implementation (independent variable)

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8$ = a constant of the corresponding model

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$ = the regression co-efficient of effect on factors,

e_i = error terms

7. Findings

7.1. Reliability Analysis

Reliability analysis was performed on the measurement scale of the ERM Implementation construct. Summated scale was created using fourteen items in the questionnaire survey to proxy ERM implementation intensity. Table 2 presents the results of the reliability analysis indicating Cronbach's alpha score of 0.85; showing acceptable internal consistency of the measuring instrument (Malhotra, 2004).

Table 02. Result of Scale Reliability Test on Summated Scale

Scale	No. of Item	Cronbach's Alpha
ERM Implementation Intensity	14	.85

7.2. Regression Analysis

To test the impact and relationship of all the eight hypotheses regression analysis was performed. Table 3 shows the results of the analysis. The coefficient (R) values (shown in Table 3) in the regression analysis if above 0.5 demonstrates a strong association between the corresponding independent and dependent variables (Malhotra, 2004). The results of the analysis for all except one (H2) of the value maximization theory of ERM implementation hypotheses indicate significant results at $\alpha = 0.01$ level.

Lowering tax burden is the only statistically insignificant variable in the regression models. Other tested variables- (H1) the cost of financial distress, (H3) the cost of external financing, (H4) agency problem, (H5) informational asymmetries, (H6) net operating profit after tax, (H7) weighted average cost of capital and (H8) return on invested capital supported the value maximization theory for ERM implementation.

Table 03. Regression Analysis Results

Models	Dependent Variable	R	R^2	Adjusted R^2	Std. Error	p-value
1	Financial distress cost	.548	0.410	0.405	0.56	.000**
2	Lowering tax burden	.044	0.290	0.283	48.08	.081
3	Cost for external financing	.692	0.158	0.151	0.88	.000**
4	Agency problem	.401	0.270	0.264	0.58	.000**
5	Informational asymmetries	.304	0.195	0.19	0.81	.000**
6	Net operating profit after tax	.53	0.282	0.276	0.58	.000**
7	Weighted average cost of capital	.476	0.226	0.220	0.86	.000**
8	Return on invested capital	.301	0.191	0.183	0.79	.000**

**significant at α=0.01 level

8. Findings

This study vindicate the effectiveness of ERM implementation in making value for the organizations. ERM framework can serve as a predictive model in anticipating ERM implementation successes among the industry practitioners. It offers direction to the organizations for adoption of risk management framework. The tests on ERM value creation theory through testing of hypotheses H1, H3, H4, H5, H6, H7 and H8 have discovered that value of the organization can be created in various forms by

ERM implementation. The value can be transmitted through enhancement in net operating profit after tax and return on invested capital; whilst reduction in the cost of financial distress, cost of external financing, informational asymmetries, agency problem as well as weighted average cost of capital. Therefore, this study draws a conclusion that firms should devote their time and other resources, for instance, man power, IT structure, training to the employees etc., in having a rigorous and effective ERM framework in their organization. This is due to the fact that such initiatives are making managerial sense owing to their value creating capabilities in the organization. This study also lends credence to the usefulness of EVA analysis as a firm's performance appraisal model for ERM implementation. For practitioner's and policy makers, this study provides an important input to better understand the significance of ERM implementation in managing risks and evaluating firm's risk-adjusted performance through EVA analysis.

9. Conclusion

This study undertook an empirical test on several hypotheses to ascertain the significance of ERM value maximization theory. The study has proven that the ERM implementation undertaken by the firm can transmit value in several channels as described by the hypothesis statements. Concludes that ERM implementation is an important conduit to enhance the firm's value. The findings also suggest that ERM implementation possess largest explanatory power in reducing financial distress cost and agency problems. This is followed by enhancing the firm's net operating profit after tax as well as lowering the weighted average cost of capital.

References

Belmont, D.P. (2004). Value Added Risk Management in Financial Institutions: Leveraging Basel II & Risk Adjusted Performance Measurement (Vol. 255). Wiley.

Berry, S. Thomas, R, & Xub, J. (2016). Enterprise Risk Management and the Cost of Capital. *Journal of Risk and Insurance.*

Cummins, J.D, Phillips, R.D, & Smith, S.D. (1998). The Rise of Risk Management. E*conomic Review – Federal Reserve Bank of Atlanta, vol. 83, n*o.1, pp.30-38.

Cummins, J.D., Phillips, R.D, & Smith, S.D. (1997). Derivatives and Corporate Risk Management: Participation and Volume Decisions in the Insurance Industry., Boston.

COSO, I. (2004). Enterprise Risk Management. Integrated Framework.

Doherty, N. (2000). Integrated Risk Management: Techniques and Strategies for Managing Corporate Risk: McGraw Hill Professional.

Froot, K.A., Scharfstein, D.S. & Stein, J.C. (1993). Risk Management: Coordinating Corporate Investment and Financing Policies. T*he Journal of Finance, 48(5),* pp.1629-1658

Ghazali, Z., & Manab, N. A. (2013). Enterprise Risk Management and Value Creation: Initial Findings amongst Non-Financial Public Listed Companies in Malaysian Bourse. *Asian Economic and Financial Review, 3(7*), 913-922.

Hoyt, R. E., & Liebenberg, A. P. (2011). The Value of Enterprise Risk Management. J*ournal of Risk and Insurance, 78(4),* 795-822.

Idris S.M.M., Abdullah A. (2016) A Conceptual Framework on Determinants of Enterprise Risk Management (ERM) Adoption: A Study in Manufacturing Small and Medium Enterprises (SMEs). In: Pyeman J., Wan Rashid W., Hanif A., Syed Mohamad S., Tan P. (eds) Proceedings of the 1st AAGBS International Conference on Business Management 2014 (AiCoBM 2014). Springer, Singapore

Lai, F.W, Azizan, N.A, & Samad, M. F. A. (2010). Shareholders Value Creation Through Enterprise Risk Management. International Journal of Business Research, 10(1), 44-57.

Lai, F.W. and A Samad, F. (2010). Enterprise Risk Management Framework and The Empirical Determinants of its Implementation. In*ternational Conference on Business and Economics Research vol.*1., Malaysia.

Lai, F.W., Azizan, N. A., & Samad, M. F. A. (2011). A Strategic Framework for Value Enhancing Enterprise Risk Management. Jo*urnal of Global Business and Economics, 2(1),* 23-47.

Lai, F.W. and Shad, M.K. (2017). Economic Value Added Analysis for Enterprise Risk Management. *Global Business and Management Research, 9(1s),* p.338

Liu, J., Low, S. P., & Zhang, Q. (2017). Enterprise Risk Management Practices of Top ENR International Contractors. In*ternational Journal of Construction Management, 1*-11. doi: 10.1080/15623599.2017.1326299

Lam, J., and Quinn, F. (2014). The Role of Sustainability in Enterprise Risk Management. Retrieved from https://d3q508xndy9wlu.cloudfront.net/sites/default/files/WP_The_role_of_sustainability_in_enterprise_risk_management.pdf. Workiva White Paper.

Malhotra, N.K., (2004). "Marketing Research: An Applied Orientation", 4th edition.

Modigliani, F., and Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The* American Economic Review, 261-297.

Nance, D.R., Smith, C.W., & Smithson, C.W. (1993). On the Determinants of Corporate Hedging. Journal of Finance, vol.68, pp.267-284.

Rappaport, A. (1999). Creating Shareholder Value: A Guide for Managers and Investors. Simon and Schuster.

Ramanathan, L., & Badlani, S. (2014). How Did We Win the Sustainability Game Through Enterprise Risk Management? Paper presented at the 21st World Petroleum Congress.

Shad, M. K., and Lai, F.W. (2015a). A Conceptual Framework for Enterprise Risk Management Performance Measure Through Economic Value Added. Gl*obal Business and Management Research*, 7(2), 1.

Shad, M. K., & Lai, F. W. (2015b). Enterprise Risk Management and Firm Performance Validated Through Economic Value Added Factors. *International Journal of Economics And Statistics*, *3*.

Schiller, F., & Prpich, G. (2014). Learning to Organise Risk Management in Organisations: What Future for Enterprise Risk Management? *Journal of Risk Research, 17(8),* 999-1017. doi: 10.1080/13669877.2013.841725

Weber, O., Scholz, R. W., & Michalik, G. (2010). Incorporating Sustainability Criteria into Credit Risk Management. Bu*siness Strategy and the Environment, 19(1*), 39-50