DEVELOPING AN ENTERPRISE RISK MANAGEMENT VALUE ENHANCING MODEL MANIFESTED THROUGH ECONOMIC VALUE ADDED ANALYSIS

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Abstract: - Enterprise Risk Management (ERM) is an essential technique used to manage myriad of risks in a holistic manner. This paper espouses an ERM implementation framework which encompasses three dimensions, seven areas which in turn are operationalized by fourteen elements. This paper also empirically examines the impact of ERM towards the firm's performance measured through Economic Value Added (EVA) analysis. The research design incorporates descriptive and cross sectional analysis. Results of the empirical analysis show that ERM implementation does have a significant positive impact on firm performance. The results support the hypotheses that firm's which implements ERM will have higher performance as manifested through the EVA analysis.

Key-Words: - Enterprise Risk Management, Firm performance, Economic Value Added.

1 Introduction

Risk management has occupied an important place in business operations and has become a necessity instead of an option for enterprises. It is the process of managing and thinking systematically about the risks facing the organization. The concept of risk management in the form of Enterprise Risk Management (ERM) is most advocated in business world [1].

ERM is considered as a value based management approach that provides a holistic framework for measuring and managing corporate risks with the objective to create firm's long-term value [2]. Recently ERM became an important global issue and received much attention including in Malaysia for all types of organizations regardless of their size [3]. According to [4], one tenth of 800 listed companies in Malaysia suffered loss due to financial crisis occurred in 1997/98 and destitute risk management was the foremost cause of companies fragility. Additionally, [5] postulated that companies operating in Malaysia are exposed to many kinds of risks, internally or externally due to economic fluctuation, political, cultural, religious and technological advancement. Therefore, the scenario of ERM practices and its regulatory consequences presents a backdrop of the essence of ERM implementation among Corporate Malaysia.

ERM is believed to have positive impact on a firm's performance [6]. Several accounting and traditional measures such as return on assets, return on equity, earning per share, Tobin's q etc. are used in different organizations for performance appraisal. Though traditional or accounting measures are widely used they are often under severe criticism: The key criticism of accounting measures is that they do not take into consideration the cost of capital of the firm [7]. Also, they do not incorporate risk (i.e., market volatility) or the time value of money. Consequently, they do not help investors to understand the complex process of value creation [8] [9]. In this light this study evaluates the applicability of using a value based measurement system such as that of economic value added (EVA) among the Malaysian public listed companies (Plc's) in the context of ERM implementation.

Economic Value Added (EVA) of a company can be enhanced by several ways. For instance, by increasing the net operating profit after tax (NOPAT), by reducing the weighted average cost of capital (WACC), by investing in new projects where the return on capital exceeds the WACC or lowering invested capital (divesting capital where the return on capital is below the WACC) [10].

Value maximization theory of risk management postulates that ERM implementation leads to

various tangible and intangible benefits [11]. The tangible and intangible benefits then leads to improvement in operating margin, lowering cost of capital maximizing return on invested capital which ultimately will improve the performance of the firm.

As such, the aim of this paper is to propose a value enhancing model of ERM implementation manifested through EVA analysis. This paper also empirically examines the impact on ERM towards the firm's performance vis-à-vis the espoused EVA model.

2 Literature Review

2.1 Proposed ERM Implementation Model

The study propose a value enhancing model for ERM implementation adopted from [12]. The model comprises three dimensions namely; *Structure*

Governance, and Process. These three dimensions are classified into seven areas. Fourteen elements are used to operationalize these seven areas. For example the Structure dimension covers two areas; *ERM definition, performance measurement* that will be measured by four implementation elements. The Governance dimension also covers two areas; *Information and roles,* and *Compliance* measured with four implementation elements. While the third dimension Process covers three areas; *integration of business strategy and objectives, risk identification and response,* and *risk quantification* will be measured by six implementation elements. Table I, presents the three dimensions, seven areas and corresponding fourteen elements of the proposed value enhancing ERM implementation model.

Table I: Dimensions and Areas of ERM Implementation

Dimension	Areas	Element / Statement
Structure	ERM Definition	Provides common understanding of the objectives of each ERM initiative
		Provides common terminology and set of standards of risk management
	Performance measurement	Identifies key risk indicators (KRIs)
		Integrates risk with key performance indicators (KPIs)
Governance	Information and roles	provides enterprise-wide information about risk
		Enables everyone to understand his/her accountability
	Compliance	Reduces risk of non-compliance
		Enables tracking costs of compliance
Process	Integration of business strategy and objectives	Integrates risk with corporate strategic planning
		Integrated across all functions and business units
		ERM strategy is aligned with corporate strategy
		Aligns ERM initiatives to business objectives
	Risk identification and response	Provides the rigor to identify and select risk responses (i.e. risk- avoidance, reduction, sharing and acceptance)
	Risk quantification	Quantifies risk to the greatest extent possible

2.2 Economic Value Added (EVA)

EVA, is an analytical tool introduced by Stern Stewart & Co in 1980's. It is computed by the change in NOPAT (Net Operating Profit after Taxes minus the change in the cost of capital used [13]. The main objective of any organization is to maximize the value of shareholders. Every organization attempts to enhance its EVA value as it

also means that the firm's shareholders value will increase [13]. EVA can be presented in the following equation:

$$EVA = NOPAT - (WACC \times Invested\ Capital)$$

Where

NOPAT = Net operating profit after tax
WACC = Weighted Average Cost of Capital.
(WACC × Invested Capital) = capital charge

In computing the EVA, if

$$[NOPAT - \text{capital charge}]$$

is positive, it means that company is generating positive return above its cost of capital and this translates the firm into higher performance.

ERM improves the awareness of risks within the firm which helps in making better operational and strategic decisions [14] [15]. Better decision making enables the management to meet strategic goals, reduce earnings volatility, and increase profitability. Furthermore, ERM is beneficial in the reduction of expected taxes, mitigation of incentive conflicts, and creation of new opportunities. Risk management has the ability to minimize the volatility of reported income and the progressivity of most of the world's tax codes [16]. By reducing fluctuations in taxable income, ERM can lead to lower tax payments by ensuring that the largest possible proportion of corporate income falls within this optimal range of tax rates. The increase in sales and profitability, reduction in tax payments and cost of goods sold through ERM implementation will positively impact the NOPAT component of EVA of the enterprise.

ERM minimizes cost of debt and cost of equity. ERM program in the organization motivates the debt markets to provide debt financing, reduces systematic risks which ultimately reduces the cost of capital [11]. Also, risk management minimizes the cost associated with external financing, reducing corporate taxes, and agency costs. So, the reduction in cost of capital of the firm will reduce the WACC component on the EVA. According to [17], the bankruptcy of many enterprises may be due to poor risk management. The increase in volatility in return increases the chance of bankruptcy.

The Trade-off Theory assumes that there is an advantage for firms to finance through debt (interest tax shield benefit) but they do need to consider the bankruptcy costs and agency costs associated with debts. Hence, firms trade off the benefits of debt and equity financing to find an optimal capital structure that will minimize the cost of capital and maximize the firm value [18]. Hence, ERM implementation ensures that the ownership of the company will not be transferred to debt holders through bankruptcy.

2.3 ERM Implementation and Firm Performance

Modern portfolio theory claims that risk management concept is irrelevant to the shareholders' value because shareholders can use two tools, asset allocation and diversification, in order to reduce the risks which they face [19]. The emergence of ERM after 1990's made risk management a significant part of organization's strategic plan and objectives. ERM implementation challenged the notion of modern portfolio theory (ERM-firm specific risk management is irrelevant to shareholder value) as ERM enables companies to make better risk adjusted decisions that enhance shareholder value [6].

The review of literature revealed that few empirical studies were done on the effect of ERM toward firm performance. Others focused on risk management in the financial industry and found a significant positive impact. However, few studies focused specifically on both subjective and objective performance measures of ERM, much less through Economic Value Added (EVA) analysis.

Empirical evidences on relationship between ERM and firm performance appear to be mixed. Some of the studies found a positive relationship between ERM and firm value, while others found negative relationship. The study by [16] among US insurance companies articulates that ERM implementation enhances the firm's value measured through Tobin's q. Moreover, the study indicates that the value of Tobin's q is higher in the firm practicing ERM and vice versa. Another empirical study by [20] found that ERM implementation is positively related to firm size as well as institutional ownership and negatively related to reinsurance use and leverage.

A study by [11] about value enhancing ERM implementation framework among public listed companies postulates that ERM implementation in organization reduce firm's specific risks, persuade debt markets to provide debt financing, reduce risk premium which ultimately reduce cost of capital of the firm. Furthermore, the study indicates that ERM implementation improves price to earnings ratio. This is because the investors are willing to pay higher price for the company's share at a given level of earnings-per-share (EPS) due to the firm's perceived lower risk profile [21].

3 Conceptual Framework

The proposed conceptual framework features an ERM implementation model having positive and

significant relationship with firm performance measured through EVA as presented in Fig 1. The conceptual framework sees that an implementation of ERM (independent variable) has positive impact on firm performance (dependent variable). The ERM model used in this study is adopted from [5] which has three dimensions, seven areas operationalized by fourteen elements. The three dimensions are *structure, governance* and *process.* Each of the dimensions is operationalized by some corresponding implementation elements as presented in *Table I.* On the other hand, the measurement for the dependent variable, namely firm performance, is established and validated through four dimensions derived from EVA analysis, namely profit margin excellency, tax performance, lower bankruptcy risk and lower cost of capital. These four dimensions are operationalized by perceived measurement matric made up of twelve elements. For instance four elements were presented to assess the operational excellency of the firms, two elements to look for tax performance, three, three elements for cost of financial distress and cost of capital assessment respectively.
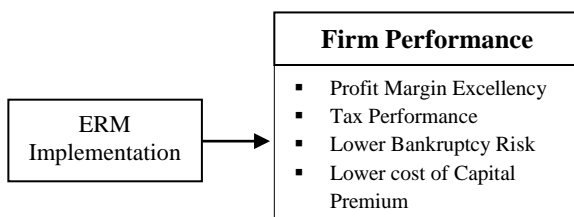

Figure.1 ERM implementation and firm performance conceptual framework

4 Hypotheses

In relation to the above conceptual framework, the below hypotheses are developed:

H_1: ERM implementations has positive significant effect on profit margin excellency.

H_2: ERM implementations has an effect on lowering tax payments.

H_3: ERM implementations has an effect on reducing cost of financial distress.

H_4: ERM implementations has an effect on reducing cost of external financing.

5 Methodology

5.1 Population of the study
The target population for this research is public listed non- financial companies in the Malaysian bourse. The reason for excluding financial companies in the this study is because the financial companies are highly regulated enterprises and they have their own clear set of risk management framework pertaining to the market, credit, liquidity, operational and legal risks in compliance to the Bank Negara guidelines as well as to that of Basel committee's risk management regimes [22].

5.2 Sampling Frame and Sample Size
The sampling frame defines a set of elements from which researcher can select sample of the target population [23]. The sampling frame for this study comprises 941 listed companies on stock exchange in Malaysia (Bursa Malaysia). Number of sampled elements was kept at 280 which shows the sampling rate of 30% against the target population.

5.3 Stratified sampling
Probability sampling technique called stratified sampling method was used in this study. Stratified sampling is a method in which the population is segregated into sub populations or strata's [24]. The benchmarks used to stratify the sample in this study is the market capitalization of the public listed companies in Bursa Malaysia. Market capitalization is defined as the total market share value of the Plc's [25]. The reason to target top ranked companies by market capitalization in the survey is that it is believed that more information will be gathered for companies ERM program.

5.4 Data collection
The structured questionnaire is used to collect information about ERM implementation and its impact on firm performance using EVA as a performance measure. ERM implementation is measured using fourteen items presented to the respondents (see table 1) to gauge the various aspects of ERM practices in companies, while for performance measurement twelve items were used. Pretested questionnaire was sent to the sampled companies based on stratified sampling method.

6 Analysis and Findings

6.1 Reliability Analysis

SPSS was used to perform reliability analysis to compute Cronbach's alpha on the variables. Table II shows the results of reliability analysis with the cronbach's alpha scores for the respective constructs scale measured through various items. All the coefficient alpha are above 0.70, indicating satisfactory internal consistency reliability of the summated scale of several items for each construct [26]. On the basis of these results the researchers can confidently run the other tests on formulated hypotheses. Each construct consists of items with five point Likert scale. Likert scales range from 1 (Strongly Disagree) to 5 (Strongly Agree). During the reliability analysis one, one item was disqualified from summated scale of both constructs due to achieve minimum acceptable cut off value for the cronbach's alpha 0.70 as mentioned by [27]. Table IV presents statistics of reliability analysis.

Table II: Reliability Statistics

Constructs	Items	Excluded items	Cronbach's alpha
ERM implementations	13	1	0.81
Firm Performance	11	1	0.76

6.2 Hypotheses Testing

We hypothesize that ERM implementation model has a positive impact on a firm's performance. To investigate the impact of the ERM practices on the firm's performance, the study presents a bivariate regression model to test the relevant hypothesis as follows:

$$y = \alpha + \beta X$$

Where
y = Firm Performance (dependent variable)
α = constant
β = co efficient of effect on factor
X = ERM implementation (independent variable)

6.3 Regression analysis

A simple linear regression was calculated to predict a firm performance based on the scores of ERM implementation. Initially, multivariate assumptions of linearity were examined through using curve fit test. A significant linear equation was found $F_{(1, 30)} = 14.65$, p= 0.001, with an R-square of 33 percent (see Table III). This F-ratio result indicates that the regression model is a good fit of data.

Firm performance is predicted as the following equation:

$$Y = 2.525 + 0.438 \times X$$

Table III. Results of Bivariate Regression Analysis

Model	R Square	Adjusted R Square	Std. Error of Estimate	F-test value	p-value
1	0.328	0.306	0.34817	14.65	0.001

a Predictors: (Constant), ERM Implementation
b Dependent Variable: Firm Performance

6.4 Results of Hypotheses testing

Results of the linear regression analysis showed that the co-efficient of ERM implementation in regression model is significant at p<0.01 (see table IV). This indicates that ERM implementation have significant positive linear relationship with maximizing firm performance. The results are encouraging and consistent with the value maximization hypotheses of enterprise risk management. The results shows that the effective ERM implementation in firm operating structure is helpful in order to enhance their performance.

Table IV. Hypotheses Testing Results

	Unstandardized Coefficients		Standardized Coefficients	t-statistics	Sig.
	B	Std. Error	Beta		
(Constant)	2.525	.458		5.517	.000
ERM Implementation	.438	.115	.573	3.828	.001

7 Conclusion

ERM enhances firm performance and it is considered as a strategic tool for the success of an enterprise. Discussion above demonstrates that ERM implementation significantly enhance the performance of public listed companies in terms of Economic Value Added analysis. This study investigated Malaysian public listed companies for the year of 2014. This study employed EVA based on perceived measurement metric to measure firm performance as a dependent variable. Linear regression analysis is used to analyze the data.
Results of the regression analysis suggest significant and positive relationship between ERM and Firm performance. The results of the study support the contention of the experts in the field of ERM for instance [3], [16], [20], [28], [29], [30].

References

[1] J. Lam, *Enterprise risk management: from incentives to controls*: John Wiley & Sons, 2014.

[2] Q. L. Y. Wu and U. Ojiako, "Enterprise risk management and firm value within China's insurance industry " 2014.

[3] Z. Ghazali and N. A. Manab, "Enterprise Risk Management and Value Creation: Initial Findings amongst Non-Financial Public Listed Companies in Malaysian Bourse," *Asian Economic and Financial Review,* vol. 3, pp. 913-922, 2013.

[4] N. A. Manab and Z. Ghazali, "Does Enterprise Risk Management Create Value," *Journal of Advanced Management Science Vol,* vol. 1, 2013.

[5] F. W. Lai, N. A. Azizan, and M. F. A. Samad, "A strategic framework for value enhancing enterprise risk management," *Journal of Global Business and Economics,* vol. 2, pp. 23-47, 2011.

[6] L. Meulbroek, "The promise and challenge of integrated risk management," *Risk Management and Insurance Review,* vol. 5, pp. 55-66, 2002.

[7] S. K. Panigrahi, Y. Zainuddin, and A. Azizan, "Comparing Traditional and Economic Performance Measures for Creating Shareholder's Value: a Perspective from Malaysia," *International Journal of Academic Research in Accounting, Finance and Management Sciences,* vol. 4, pp. 280-289, 2014.

[8] D. Maditinos, Z. Sevic, and N. Theriou, "A Review of the Empirical Literature on Earnings and Economic Value Added (EVA) in Explaining Stock Market Returns. Which Performance Measure Is More Value Relevant in the Athens Stock Exchange (ASE)?, *Annual Conference of the Hellenic Finance and Accounting Association Thessaloniki*, 2006.

[9] P. Richard, T. Devinney, and G. Johnson, "Measuring organizational performance: Towards methodological best practice," *Journal of management,* 2009.

[10] S. D. Young and S. F. O'byrne, "EVA and value-based management," *New York,* 2001.

[11] F.-W. Lai and F. A. Samad, "Enterprise Risk Management Framework and The Empirical Determinants of Its Implementation," *Risk,* vol. 6, 2010.

[12] F.-W. Lai, M. F. A. Samad, and N. A. Azizan, "Multifactor Model of Risk and Return Through Enterprise Risk Management Framework," *International Proceedings of Economic Development and Research,* vol. 12, pp. 555-559, 2011.

[13] J. M. Stern, G. B. Stewart, and D. H. Chew, "The EVA® financial management system," *Journal of Applied Corporate Finance,* vol. 8, pp. 32-46, 1995.

[14] COSO, "Enterprise risk management-integrated framework," *Committee of Sponsoring Organizations of the Treadway Commission,* 2004.

[15] S. Gates, J.-L. Nicolas, and P. L. Walker, "Enterprise risk management: A process for enhanced management and improved performance," *Management accounting quarterly,* vol. 13, 2012.

[16] R. E. Hoyt and A. P. Liebenberg, "The value of enterprise risk management," *Journal of Risk and Insurance,* vol. 78, pp. 795-822, 2011.

[17] Q. Chang and K.-C. Chen, "The research of liquidity risk management based on EVA improvement," in *Allied Academies International Internet Conference*, 2013, p. 3.

[18] L. T. P. Lewis and M. Jais, "How do firms in country with dual-financial system determine their capital structure? Evidence from Malaysia," *journal of global management,* 2014.

[19] H. Markowitz, "Harry M. Markowitz," *Portfolio selection, Journal of Finance,* vol. 7, pp. 77-91, 1952.

[20] R. E. Hoyt and A. P. Liebenberg, "The value of enterprise risk management: Evidence from the US insurance industry," in *unpublished paper, accessed at: http://www. aria. org/meetings/2006papers/Hoyt_Liebenberg_ERM_ 070606. pdf*, 2008.

[21] F.-W. Lai, "Enterprise Risk Management and its Value Creation Transmission Mechanism," *Recent Advances in Environmental Sciences and Financial Development,* p. 46, 2014.

[22] F.-W. Lai, "A Review of Enterprise Risk Management Practices among Malaysian Public Listed."

[23] D. B. Currivan, "Sampling Frame," *The Sage Encyclopedia of Social Science Research Methods. Thousand Oaks, CA: Sage,* 2003.

[24] N. Malhotra and D. Birks, *Marketing Research: an applied approach: 3rd European Edition*: Pearson Education, 2007.

[25] F. W. Lai, "An examination of value enhancing Enterprise Risk Management implementation framework for Malaysian public listed companies," University of Malaya KualaLumpur, 2011.

[26] N. K. Malhotra, J. Hall, M. Shaw, and P. Oppenheim, *Essentials of marketing research: an applied orientation*: Pearson Education Australia, 2004.

[27] D. George, *SPSS for Windows Step by Step: A Simple Study Guide and Reference, 17.0 Update, 10/e*: Pearson Education India, 2006.

[28] A. S. Yazid, M. R. Hussin, and W. N. W. Daud, "An examination of enterprise risk management (ERM) practices among the government-linked companies (GLCs) in Malaysia," *International Business Research,* vol. 4, p. p94, 2011.

[29] F.-W. Lai, N. A. a. Azizan, and M. F. A. Samad, "A Conceptual Framework for Value Enhancing Enterprise Risk Management," *nternational Handbook of Academic Research and Teaching,* p. 41, 2010.

[30] L. F. Woon, N. A. Azizan, and M. Samad, "Shareholders Value Creation through Enterprise Risk Management," *International Journal of Business Research,* vol. 10, 2010.