Enterprise Risk Management and Firm Performance Validated Through Economic Value Added Factors

Muhammad Kashif Shad[1,] Fong-Woon Lai[2]
Department of Management and Humanities[1, 2]
Universiti Teknologi PETRONAS
Bandar Seri Iskandar, 32610 Tronoh, Perak, Malaysia
Email: mkashifshad@gmail.com[1]; laifongwoon@petronas.com.my[2]

Abstract— Enterprise Risk Management (ERM) is an essential technique, used to manage a myriad of risks in a holistic manner. This paper presents an ERM implementation framework which is operationalized by fourteen elements. It highlights the impact of ERM towards the firm's performance measured through Economic Value Added (EVA) factors. The research design incorporates descriptive and cross-sectional analysis. Data was collected from 120 public listed companies in Bursa Malaysia through questionnaires survey. Results of the empirical analysis show that ERM implementation has significant positive impact on firm's performance. The results support the hypothesis that the firms which implements ERM will enhance their performance as validated through the perceived measurement of EVA factors. This study offers a perspective of measuring ERM implementation impact through EVA factors as compared to the accounting measures.

Keywords— Enterprise Risk Management, Firm Performance, Performance Measurement, Economic Value Added.

I. INTRODUCTION

RISK management has occupied an important place in business operations and become a necessity instead of an option for enterprises. It is the process of managing and thinking systematically about the risks encountering the organization [1]. The concept of risk management in the form of Enterprise Risk Management is most advocated in business world [2]. The aim of this paper is to propose a value enhancing model of ERM implementation validated through Economic Value Added (EVA) analysis. This paper empirically examines the impact of ERM towards firm's performance vis-à-vis the espoused EVA model.

ERM is defined as "the process of identifying and analyzing risk from an integrated, company-wide perspective". It is a structured and disciplined approach in aligning strategy, processes, people, technology and knowledge with a purpose of evaluating and managing the uncertainties the enterprise faces as it creates value [3] [4]. Recently ERM became an important issue and received much attention globally including in Malaysia for all types of organizations regardless of their size [5]. According to [6], one tenth of 800 listed companies in Malaysia suffered losses due to financial crisis occurred in 1997/98 and destitute risk management was the foremost cause of companies fragility. Additionally, [7] postulated that companies operating in Malaysia are exposed to many kinds of risks, internally or externally due to the economic fluctuation,

political, cultural, religious and technological advancement [8]. 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 firm's performance [9]. Value maximization theory of risk management postulates that ERM implementation leads to various tangible and intangible benefits [3]. These benefits then lead towards improvement in operating margin, lowering cost of capital maximizing return on invested capital which ultimately will improve the performance of the firm.

Various kinds of accounting and traditional measures are available for firm's performance appraisal e.g. return on assets, return on equity, earning per share, and Tobin's q etc. Despite the fact that traditional or accounting measures are widely used they are often under severe criticism. According to [10], most of the performance measurements techniques did not provide comprehensive scenario for decision making. Furthermore, they do not incorporates the cost of capital in terms of risk (i.e., market volatility) and the time value of money in assessing investment return or performance [11]. Thus, those measurement techniques do not help investors to understand the complex process of value creation [12] [13]. Value based performance measure approach like EVA has attracted the attentions of financial analysts and researchers due to its supremacy and ability to show a genuine value of the enterprises.

However, few empirical studies were done on the effect of ERM toward value based firm performance, much less through EVA analysis. EVA is still a new approach for performance measurement purposes in developing countries like Malaysia [14]**.** Hence, this study evaluates the applicability of using a value based performance measurement system such as that of economic value added among the Malaysian public listed companies (Plc's) as a result of ERM implementation.

II. Literature Review

A. ERM Implementation Model

The study adopts a value enhancing model for ERM implementation presented by [15]. The model comprises three dimensions namely; *Structure Governance, and Process.* These three dimensions are classified into seven areas.

Fourteen elements are instituted 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 adopted ERM implementation model with its three dimensions, seven areas, and corresponding fourteen elements.

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 the 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

B. Economic Value Added (EVA)

The fundamental objective of an organization is to maximize the value of its shareholders. Various traditional or accounting measures like return on assets, return on equity, return on capital employed, return on net worth, earning per share, Tobin's q etc. are widely used by organizations to evaluate their business performance. However, according to [16] the accounting performance measurement tools have failed to explain how much value has been created by the organization in the context of risk adjusted cost of capital invested.

To overcome the problems related to traditional performance measures, Stern Stewart & Co in 1980's proposed an alternative theory and a new performance measurement system namely economic value added (EVA).

EVA is a superior financial performance measure that reflects the accurate and true value of the company by incorporating the cost of capital [17]. It is computed by the deducting capital charge (Weighted Average Cost of Capital WACC x Invested Capital) from NOPAT (Net Operating Profit after Taxes). Empirical studies such as [14], [16], [17], [18] articulated the superiority of EVA and stated that " *it is really better to use value based measures than traditional performance measures to evaluate the financial performance of the companies*". 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

EVA is a better performance measure because it combines various factors like economy, accounting, and market information in the evaluation of the enterprise performance [19]. According to [17], performance evaluated via EVA assists financial analysts to make better investment decisions, identify new and better ways for expansion of business, attract new investors and maintain the existing ones.

The fundamental concept behind the measurement of the firm's performance via EVA is to provide maximum return to shareholders for their risk taking. In other words, shareholders have to earn at least an equal return as similarly risky investment in equity markets. If they do not receive the above mentioned required return, then there is no excess return being made, hence, no value being created by the firm to its shareholders rendering a zero EVA. As such, EVA analysis provides the basic advantage that shows the true profit of an organization by incorporating the cost of capital in its performance assessment [20]. In short, if EVA of a firm is greater than zero, value is created during the period under analysis. On the other hand, if EVA is less than zero, value is destroyed.

C. ERM Implementation and Firm Performance

Modern portfolio theory claims risk management concept is irrelevant to the shareholders' value because shareholders can use two tools, asset allocation, and diversification to reduce the risks they face [21]. The emergence of ERM since 1990's has made risk management a substantial part of an organization's strategic plan and objectives. Nonetheless, in one perspective, ERM implementation challenges 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 [9].

ERM improves the awareness of risks within the firm which helps in making better operational and strategic decisions [22] [23]. 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 [24]. 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.

Moreover, [3] articulated that ERM minimizes the 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. Also, risk management minimizes the cost associated with external financing, reduce corporate taxes, and agency costs. Therefore, reduction in the cost of capital of the firm will reduce the WACC component on the EVA. 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 [25]. Hence, ERM implementation ensures that the ownership of the company will not be transferred to debtholders through bankruptcy. (The increase in volatility in return increases the chance of bankruptcy). According to [6], the bankruptcy of numerous enterprises is caused by poor risk management.

The empirical evidence on the 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 a negative relationship. The study by [26] in the United States insurance companies articulates that ERM implementation enhances the firm's value.

Moreover, the study indicates that the value of Tobin's q is higher in the firm practicing ERM and vice versa. A study by [7] about value enhancing ERM implementation framework among listed companies claims that ERM implementation in organization reduce firm's specific risks, persuade debt markets to provide low-cost debt, reduce risk premium which eventually reduce cost of capital of the firm [27]. Furthermore, the study indicates that ERM implementation improves the 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 [28]. All of the above value enhancing outcome of ERM implementation will contribute to enhance EVA of the organizations.

III. CONCEPTUAL FRAMEWORK

This paper proposes a conceptual framework featuring an ERM implementation model which will have positive and significant relationships with firm performance to be measured through EVA. Figure I depicts the dependent and independent variables relationships of the proposed conceptual framework.

The conceptual framework sees that the adopted implementation model of ERM (independent variable) has a positive impact on a firm performance (dependent variable) and that performance can be validated through EVA factors, namely *NOPAT* and *Capital Charge*. The adopted ERM model has been presented in Table I.

Firm performance can be measured through objective and perceived measures. Objective measures are typically secondary data such as financial or accounting data whereas perceived measures are usually primary data collected through survey and questionnaire instruments.
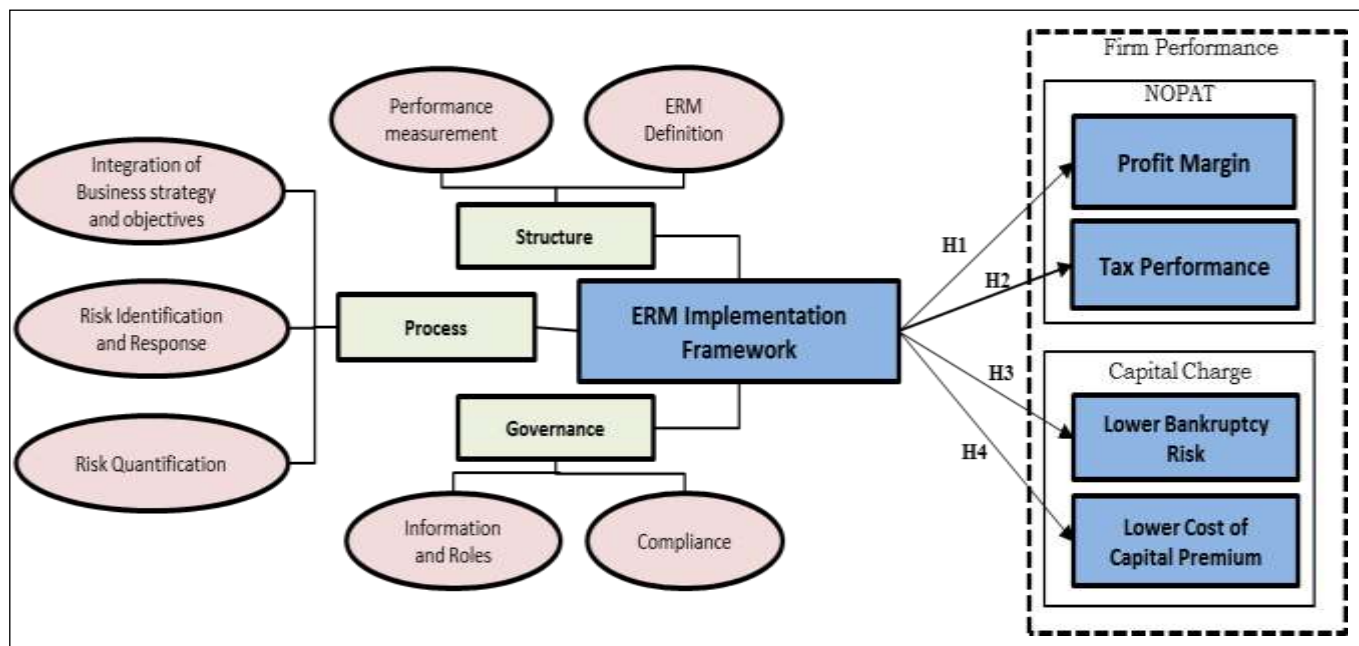

Figure I: Conceptual Framework of ERM Implementation and Firm Performance

In this study, we present the firm performance of EVA factors through some proxy perceived measures collected via questionnaire instrument. EVA encompasses two factors, *NOPAT* and *Capital Charge* (see equation in *section 2.2*). In this study, we proxy *NOPAT* measure by two constructs namely, *Profit Margin* and *Tax Performance* which in turn, are measured by four and two questionnaire items respectively. On the other hand, *Capital Charge* is proxied by two constructs namely, *Lower Bankruptcy Risk* and *Lower Cost of Capital.* The two constructs are measured by three items respectively. Table II below presents the respective construct proxies of the EVA factors and their corresponding variables (questionnaire items):

Table II: Perceived measures proxies for EVA factors

Construct	Variables
Profit Margin	ERM improves awareness of risks
	ERM reduces earning volatility
	ERM reduces general & administrative expenses
	ERM improves return on assets of the firm
Tax Performance	ERM reduces company's expected taxes
	ERM reduces the agency cost of the firm
Lower Bankruptcy Risk	ERM improves corporate reputation
	ERM boosts investors' confidence
	ERM reduces costs of e1financial distress
Lower Cost of Capital	ERM reduces external capital costs of the company
	ERM improves the retained earnings of the firm
	ERM protects company's investment

This study hypothesizes that ERM implementation maximizes *Profit Margin* and reduces *Tax Payments*, *Bankruptcy Risk* and *Cost of Capital*. Enhancement in *Profit Margin* and reduction in *Tax Payments* positively impact the *NOPAT* component of EVA and lower *Bankruptcy Risk* and *Cost of Capital* will reduce *Capital Charge* component of EVA. Hence, enhance firm performance in terms of EVA.

IV. HYPOTHESES

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

H_1: ERM implementations has an effect on profit margin.

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.

V. COMPARISON WITH PREVIOUS METHODS

This study carried out an empirical examination of the formulated hypotheses to validate the hypothesized relationship among the variables. Due to the significance of ERM implementation and performance evaluation in an organization, the study proposed a value enhancing model based on the work of [15]. Moreover, the substantial part in this study is the introduction of value based measurement tool known as economic value added analysis to assess the firm's performance as a result of ERM implementation. This study further enlightens the arguments of [15] by employing EVA analysis to validate the proposed value enhancing transmission mechanism of the positive impacts of ERM implementation.

VI. METHODOLOGY

A. Sampling Frame and Procedure

The sampling frame defines a set of elements from which researcher can select a sample of the target population [29]. The sampling frame for this study comprises 941 listed companies on the stock exchange in Malaysia (Bursa Malaysia) that is our target population excluding financial companies. The reason for excluding financial companies in 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.

Probability sampling technique called stratified sampling method is used in this study. Stratified sampling is a method in which the population is segregated into sub populations or strata's [30]. 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 [28]. There are fourteen market sectors as per Bursa Malaysia classification. Under stratified sampling, this study selected top 280 companies from fourteen sectors based on market capitalization. Number of sampled elements was kept at 280 which shows the sampling rate of 30% against the target population. 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. And also they have gained more experience in implementing ERM program and realizing ERM upshots. See the summary of sampling design in Table III.

Table III: Sampling Design summary

Target Population	Public Listed Companies in Malaysian Stock Exchange. (941)
Sampling Frame	The dataset compiled from Bursa Malaysia's online database.
Sampling Technique	Stratified sampling. Top 280 companies contacted.

B. Data Collection

EVA analysis by design use objective (financial) measurement data, but here we use primary (perceived) data. We carried out an email and drop-off research method for survey data collection. From the research population of 941 listed companies in Bursa Malaysia 280 companies were

contacted through telephone, email using survey monkey and drop-off method. A total of 120 questionnaires were received back and accepted which provided the information on firm's ERM implementation (independent variable) and their profit margin, tax performance, financial distress cost and Cost of capital situations (Dependent variables)

C. Mode of Analysis

Linear regression analysis is employed in this study to analyze the data. The correlation and regression coefficient is obtained based on which the strength, direction and impact of relationships can be determined. R, R-square, and p- value (significance) have been used to scrutinize the results. This is performed by observing the relationship between ERM implementation and its impact on profit margin, tax performance, financial distress cost and Cost of external capital. Below section will discuss the results of the empirical tests.

VII. ANALYSIS AND FINDINGS

A. Reliability Analysis

SPSS is used to perform reliability analysis to compute Cronbach's alpha on the variables. Table IV show the results of reliability analysis with the Cronbach's alpha scores for the respective constructs composite scale. All the coefficient alpha are above 0.70, indicating satisfactory internal consistency of the instrument [31]. 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).

Table IV: Reliability Statistics

Constructs	Items	scales	Cronbach's alpha
ERM implementations	14	i1 to i14	0.80
Profit margin	4	p1 to p4	0.81
Tax performance	2	t1 and t2	0.89
Lower Bankruptcy Risk	3	d1 to d3	0.71
Lower Cost of Capital	3	e1 to e3	0.75

B. Hypotheses Testing

Linear regression analysis is used for testing the hypotheses H_1, H_2, H_3, and H_4 presented in section 4. This is performed by way of examining the strength of associations between ERM implementation (independent variable) and its impact on profitability maximization, lowering tax payments, lowering financial distress cost, and reduction in external capital costs. (Dependent variable). The test for significance is performed by examining the following hypotheses.

$$H_0: \beta=0$$
$$H_A: \beta\neq0$$

The null hypothesis H_0, demonstrates that there is no linear relationship between the variables. The alternative hypothesis H_A implies there is statistically significant linear relationship between the variables.

C. Hypothesis H_1

Hypothesis, H_1 features that the adopted ERM implementation model will positively affect the profit margin of the firm. The increase in firm's profitability contribute to enhance the net operating profit after tax of the firm *(NOPAT)*, hence create value for the firm. Table V presents the regression results of H_1.

Table V: Regression Analysis Results H_1

H_i	R	R^2	Adjusted R^2	p-value
H_1	0.596	0.356	0.350	0.000

a Predictor: ERM Implementation
b Dependent Variable: Profitability

H_1 result indicates that p-value is 0.000 ($p<0.05$) which means a significant relationship exists between ERM implementation and firm's profit margin.

The Pearson coefficient R-value is 0.596. The positive R-value shows that the relation between ERM implementation and firm's profit margin is positive, demonstrating that increase in ERM practices will increase the profitability. The value of R^2 is 0.356 indicating that 35.6% of variance of dependent variable is explained by the independent variable.
The profitability of the organization is maximized by implementing ERM, increase in profitability contribute to an increase in NOPAT hence firm's performance will be enhanced.

D. Hypothesis H_2

Hypothesis H_2 reads that ERM implementation will reduce firm's tax payments. Table VI below presents the results of H2 testing.

Table VI: Regression Analysis Results H_2

H_i	R	R^2	Adjusted R^2	p-value
H_2	0.538	0.290	0.283	0.000

a Predictor: ERM Implementation
b Dependent Variable: Tax performance

The results indicate that ERM implementation has a positive and significant relationship with its effect on lowering the tax payment of the firm. The correlation coefficient value indicated by R is 0.538 specifies that ERM implementation enhance firm performance by reducing firm's tax payments. Obtained value of R^2 is 0.290 indicates that 29% variance in the reduction of taxes can be predicted by ERM implementation. The p-value showing the significance of the relationship between the variables is 0.000 ($p<0.05$) indicating that a significant linear association between ERM implementation and its impact on reducing tax payment of the firm exists. Henceforward, the null hypothesis of no relationship between ERM implementation and reduction in tax payments is rejected. Consequently, hypothesis H_2 is accepted that attesting ERM implementation minimizes the firm's tax payments.

E. Hypothesis H₃

Hypothesis H₃, the results indicates that ERM implementation has a positive and significant relationship with a reduction in the cost of financial distress. The correlation coefficient value indicated by R is 0.640. The value of R^2 is 0.410. Meaning that 41% variance in reduction of financial distress cost can be predicted by ERM implementation. The p-value is 0.000 (p<0.05) indicating that a significant linear association between ERM implementation and its impact on reducing financial distress cost of the firm exists.

Hence, the null hypothesis of no relationship between ERM implementation and reduction in the cost of financial distress is rejected. Subsequently, hypothesis H₃ is accepted and proving that ERM implementation minimizes the firm's cost of financial distress. Table VII presents the H₃ results.

Table VII: Regression Analysis Results H₃

Hᵢ	R	R²	Adjusted R²	p-value
H₃	0.640	0.410	0.405	0.000

a Predictors: ERM implementation
b Dependent Variable: Cost of Financial distress

F. Hypothesis H₄

Hypothesis H₄ demonstrates that ERM implementation has an effect on reducing the cost of external financing. Results indicate that the relationship between ERM implementation and reduction in the cost of external financing is positive and significant. The correlation coefficient, R is 0.397. The value of R^2 is 0.158 indicates that 15.8% variance in reduction of cost of external financing can be predicted by ERM implementation. The p-value is 0.000 (p<0.05) indicating that a significant linear association between ERM implementation and its impact on reduction of cost of external financing of the firm exists.

Hence, the null hypothesis of no relationship between ERM implementation and reduction in cost of external financing is rejected. Consequently, hypothesis H₄ is accepted and proving that ERM implementation minimizes the firm's cost of external financing. But the value of Pearson coefficient is 0.397 which is very low which means that the effect of ERM implementation in lowering cost of external financing in the firm is not strong, albeit the R-value is 0.397 with positive sign indicating positive relationship between both dependent and independent variables exists. Below Table VIII presents the results of H₄

Table VIII: Regression Analysis Results H₁

Hᵢ	R	R²	Adjusted R²	p-value
H₄	0.397	0.158	0.151	0.000

a Predictor: ERM Implementation
b Dependent Variable: Cost of external financing

VIII. HYPOTHESES TESTING SUMMARY

Four hypotheses were developed to test the impact of ERM implementation on profit margin, tax performance, financial distress cost and Cost of external capital. All of the four hypotheses H₁, H₂, H₃, and H₄ are accepted and they generated positive results. Table IX summarizes the results of hypotheses testing.

Table IX: Hypotheses Testing Summary

Hᵢ	R	R²	p-value	Status
H₁	0.596	0.356	0.000	Accepted
H₂	0.538	0.290	0.000	Accepted
H₃	0.640	0.410	0.000	Accepted
H₄	0.397	0.158	0.000	Accepted

As shown in Table IX, four of the hypotheses formulated in this study are accepted and they yielded positive results. Results of the linear regression analysis showed that the Pearson correlation and regression co-efficient of ERM implementation are significant at p<0.05. This indicates that ERM implementation have significant positive linear association with maximizing profit margin, lowering tax payment, financial distress cost, and the cost of external capital. The enhancement in the firm profit margin and lowered tax payments significantly contributes to enhance NOPAT of the firm, while the reduction in the cost of external capital and financial distress cost will lead to reduce the capital charge. Therefore, the economic value of companies listed in Bursa Malaysia will be improved. In summary, the performance of the firms will be enhanced. The results are encouraging and consistent with the value maximization hypotheses of enterprise risk management [32]. The results demonstrate that the effective ERM implementation in firm operating structure is helpful in order to enhance their performance measured through EVA.

IX. CONCLUSION

This study validates ERM implementation and its impact on firm's performance through EVA factors. The discussion above demonstrates that ERM implementation significantly enhance the performance of public listed companies in terms of EVA factors derived through perceived measurement metric. Linear regression analysis is used to analyze the data.

Results of the regression analysis suggest a 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 [5], [24], [26], [33], [28], [34].

REFERENCES

[1] M. L. Katarína Buganová, "Risk Management as a Tool for Successful Innovations Realization in Enterprise," *Advances in Economics, Risk Managment, Political and Law Science*.

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

[3] F.-W. Lai and F. A. Samad, "Enterprise Risk Management Framework and The Empirical Determinants of Its Implementation," *Risk*, vol. 6, p. 8, 2010.

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

[5]   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.

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

[7]   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.

[8]   A. B. Turk, "A Quantitative Operational Risk Management Model," *WSEAS Transactions on Business and Economics,* vol. 6, May 2009.

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

[10] A. Sharma and S. Kumar, "EVA versus conventional performance measures–empirical evidence from India," in *ASBBS Annual Conference: Las Vegas*, 2012.

[11] 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.

[12] 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)?," in *Annual Conference of the Hellenic Finance and Accounting Association Thessaloniki*, 2006, pp. 15-16.

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

[14] A. Al Mamun, H. Entebang, and S. A. Mansor, "EVA as Superior Performance Measurement Tool," *Modern Economy,* vol. 3, p. 310, 2012.

[15] 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.

[16] G. Owusu-Antwi, L. Mensah, M. Crabbe, and J. Antwi, "Determinants of Bank Performance in Ghana, the Economic Value Added (EVA) Approach," *International Journal of Economics and Finance,* vol. 7, p. p203, 2014.

[17] 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.

[18] A. Sharma and S. Kumar, "EVA versus conventional performance measures–Empirical evidence from India," in *ASBBS Annual Conference, Las Vegas, CO*, 2012.

[19] I. Issham, M. F. Ab dul Samad, Y. S. Hwa, A. Abdulbasah, A. Kamil, and M. A. Ayub, "Economic Value Added (EVA) as a Performance Measurement for Glc's vs non-Glc's: Evidence from Bursa Malaysia," 2008.

[20] F. W. Lai, "A Conceptual Framework for Enterprise Risk Management performance measure through Economic Value Added," 2014.

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

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

[23] 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, pp. 28-38, 2012.

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

[25] 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.

[26] 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.

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

[28] 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.

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

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

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

[32] F.-W. Lai, "Empirical Examination of Enterprise Risk Management's Value Creation Mechanism," *WSEAS Transactions on Business and Economics,* vol. 12, 2015.

[33] 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.

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