

Enterprise Risk Management Implementation and Firm Performance: Evidence from the Malaysian Oil and Gas Industry

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Abstract

This paper intends to vindicate the influence of Enterprise Risk Management (ERM) implementation on firm performance. A sample of 11 oil and gas Public Listed Companies (PLC's) were selected in this study. Data were collected using content analysis with regard to the companies' ERM practices and their financial performances. ERM implementation was measured using COSO's ERM integrated framework while the firm financial performance was assessed through return on assets (ROA) measurement. Multiple regression analysis was performed to test eight developed hypotheses. Results indicate that four components of the ERM framework, i.e. supportive internal environment, objective setting, control and monitoring activities, are found to be positive and significant predictors for the firm's performance. The findings support the efficacy and potential strengths of ERM implementation in the oil and gas companies.

Keywords: enterprise risk management (ERM), firm performance, return on asset, COSO

1. Introduction

Over the last few decades, enterprise risk management (ERM) notably gained the attention of organizations due to globalization in the business environment, advancement in technology, innovations in business operations and pressure from regulatory bodies to manage risk holistically. The Committee of Sponsoring Organizations of the Treadway Commission (COSO), a leading authority in ERM posits that the businesses will continue to face a future full of uncertainty, complexity, and volatility. Hence, ERM will be crucial for any organization to manage and succeeds through these times (COSO, 2017). ERM manage the risks in an integrated way and differs from traditional risk management approach, in which risks are managed individually based on their category, firm or department where they arise. Moreover, ERM advocate a mutual and understandable language and delivers perfect direction and supervision in managing risks and to create and protect the stakeholder's value.

ERM in an organization aims is to improve the value of the firm by encouraging risk manager to ensure management of the company's total risk (Lai et al., 2017). In this light, the oil and gas (O&G) industry is one of the many industries that has received much attention when it comes to the management of risks. It is due to the fact that the O&G industry as a whole does not have a very good track record in the management of unexpected risks in an integrated and systematic manner (Wood, 2011). Because risk exists in every single operation in upstream and downstream, even down to refining and to retailing at the filling stations. In addition, O&G industry is relatively sensitive to and volatile with political, economic, social, technological, legal and environmental development (Tasmin & Muazu, 2017). An integrated risk management programs therefore are crucial to consider for multiple risks and demanding regulatory compliance in this industry. It also provides a guide to systematically assess, treat, monitor and review risks aimed to improve an entity's ability to anticipate and prepare itself to face the imminent risks.

As such in Malaysia, the O&G industry is the main player of the economy and of strategic importance in supporting future sustainable development plans of the Malaysian economy. There exist a number of risks such as the regulatory compliance, workplace health and safety, environmental and social issues, apart from the primary operational risk of the business itself (Osabutey et al., 2013; Tasmin & Muazu, 2017). Therefore, more risk management efforts are required in this industry to improve the firm's overall value.

ERM also plays a significant role in sustainable development of the organization. It improves economic

efficiency and enhance investors' confidence. Moreover, recent changes in the world-wide business environment, new regulations, geopolitical threats, and increasing stakeholder demands, have compelled organizations for a change of approaches to holistic and effective ERM framework in a way to enhance their economic performance and sustainable development (Lam and Quinn, 2014; Ramanathan and Badlani, 2014). Although, ERM contributes to the firm's performance but its adoption among companies in Malaysia is still at infancy stage. There are numerous studies conducted on ERM, but a clear understanding of the association between ERM implementation and firm performance has yet to be exhaustive and conclusive. This paper aims to shed some light by examining the influence of ERM implementation on enhancing firm financial performance among Malaysian O&G listed companies.

2. Literature Review

Enterprise Risk Management (ERM) has become a popular approach to manage risks holistically. Implementation of ERM in an organization is believed to generate numerous benefits. For instance, value maximization risk management theory assumes ERM adoption leads to various tangible and intangible advantages for organizations. These advantages includes, improving risk/returns profile, strengthening management's confidence in business operations and risk monitoring (Shad, Lai et al. 2019). Besides, it boosts corporate entrepreneurship, profitability and competitive advantage, reinforce corporate governance and internal control, and compliance to the regulatory bodies (Shad & Lai, 2015a; Zou et al., 2017; Lechner & Gatzert, 2017). In line with that, this study hypothesizes that the adoption of integrated ERM approach will have a positive influence on firm performance. Most of the empirical studies support this view such as the study by (Berry & Xu, 2018; Hoyt & Liebenberg, 2008; Lai et al., 2010; Lai & Shad, 2017; McShane et al., 2011; Zou et al., 2017). ERM implementation support in making strategic business plans and guide to achieve its business goals and objectives efficiently. Its adoption is beneficial in the reduction of taxes, mitigation of incentive conflicts, and to create new opportunities for an organization (Hoyt and Liebenberg, 2011). McShane et al., (2011) analyzed the relationship between ERM adoption and firm performance of the 82 US insurance companies. The results indicated that the shareholders' value was positively impacted by the adoption of an ERM. In addition, Lai et al., (2011) posit that ERM in the organization leads to the shareholders value creation. Elsewhere, Waweru and Kisaka, (2013) investigated the effect of ERM on firm value among 22 companies listed on Nairobi Stock Exchange (NSE). The study found a significant positive relationship between ERM and Tobin's Q. The results indicated that ERM in the companies listed in NSE was a non-regulatory requirement and it was used as a strategic business initiative.

Nevertheless, not all the studies regarding ERM and Firm value have revealed significant positive relationship (Agustina & Baroroh, 2016; Eikenhout, 2015). For example, the results of the study by Tahir and Razali, (2011) who examined 528 companies listed in Bursa Malaysia indicated that there is positive but insignificant association between ERM and firm performance. Another study by Quon et al., (2012) investigated 156 Canadian non-financial companies revealed that the relationship between ERM information content and firm value is inadequate. Similarly, Pagach and Warr (2010) also found insignificant relation between ERM and firm's return on equity.

Hence, based on the above discussion, it is stated that different companies, industries and regions initiate different risk management frameworks with regard to identification, prioritization, quantification and management of risk. However, in this study COSO's ERM integrated framework is proposed to diffuse its risk mitigation effect, so as to enhance the firm's financial performance. COSO advocates that organizations should focus on ERM and implement it in the organizations to better identify and manage risks and to create and protect the stakeholder's value (COSO, 2004; Shad & Lai, 2015c).

In a nutshell, it can be stated that the association between ERM adoption and the firm's financial performance is inconclusive. This lack of clarity in the findings regarding ERM adoption and the firm's financial performance has yet to be exhaustive and conclusive. Hence, it is still an open question whether the practicing of ERM leads to an increase firm's performance. Furthermore, most of the prior studies conducted ERM research in developed countries, such as US, Italy, Germany, Netherlands, Singapore, China, with very few studies in emerging economies. Also, based on Togok (2016) emerging economies such as Malaysia are still lagging behind in practicing ERM. Therefore, it would be of great interest to carry out a research in the case of a developing nation such as Malaysia, focusing on O&G industry, which contributes a significant chunk to the country's gross domestic product (GDP). As such, the objective of this study is to investigate the causal relationship of the value creation of ERM for the Malaysian O&G listed companies.

3. Research Framework

Based on the literature reviewed, which in particular taking the reference from the value maximization concept of enterprise risk management (ERM), this paper postulates that ERM adoption will lead to value creation for the organizations (Shad and Lai, (2015b)). In this study, ERM implementation is an independent variables, whereas the dependent variable is the firm performance which is proxied by the accounting measure known as return on assets (ROA). In the research framework, it is shown that ERM Implementation significantly affects Firm Performance. See the research framework in figure 1 below.

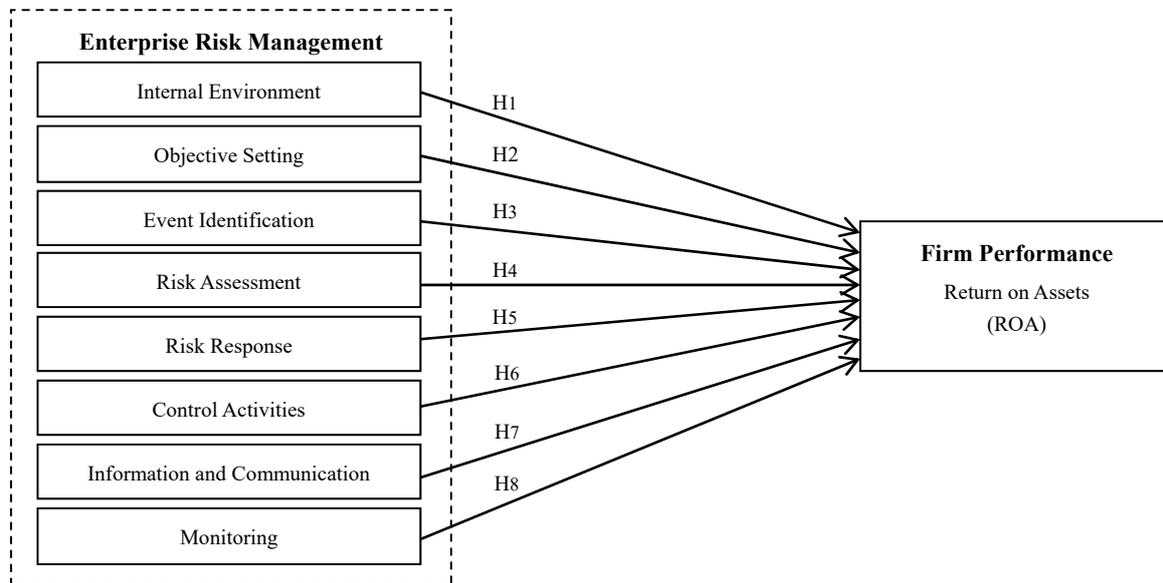


Figure 1. The research framework

Based on the conceptual framework, this research proposes following hypotheses;

- H₁: Supportive internal environment has significant relationship with firm performance;
- H₂: Objective setting has significant relationship with firm performance;
- H₃: Event identification has significant relationship with firm performance;
- H₄: Risk assessment has significant relationship with firm performance;
- H₅: Risk response to identified risk has a significant relationship with firm performance;
- H₆: Control activities of ERM implementation has significant relationship with firm performance;
- H₇: Information and communication of risk management has significant relationship with firm performance;
- H₈: Monitoring of ERM implementation has significant relationship with firm performance;

4. Research Methodology

4.1 Variables Operational Definition

Enterprise Risk Management (ERM): It is an independent variable and is operationalized as; a holistic framework premeditated to assist businesses to establish, assess and enhance their internal control and maximize the opportunity to achieve four different levels of organization-wide objectives involving strategic, operational, compliance and reporting. The ERM framework comprised of eight components which are interrelated i.e., supportive internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication as well as monitoring. ERM framework consider activities at all levels of the organization: such as; enterprise-level, division or subsidiary and business unit processes.

Firm Performance: It is a dependent variable and is measured by Return on Assets (ROA). ROA is an indicator that shows profitability of an organization relative to its total assets. It is computed by dividing a company's annual net income by its total assets.

4.2 Data and Sample Selection

Content analysis was performed to collect data about companies' ERM practices. This study adopted the eight components of COSO's ERM integrated framework to measure the companies' ERM practices. Through content analysis, this study measured the level of disclosure of ERM practices by the companies via the dichotomous (0, 1) scoring approach, where the value of 1 is assigned if an item in the ERM index was detected in the annual report whilst a value of 0 is assigned if otherwise. In this study, the data was extracted from the annual reports of the sampled companies over the period of 10 years (2008 to 2017). The total population of this study was 41 public listed companies operating in the O&G industry. 11 companies were chosen as a sample in this study based on the availability of the required data. The annual reports were downloaded from the Bursa Malaysia's website as well as the websites of the respective companies. Return on assets (ROA), which were estimated by dividing a company's annual net income by its total assets, were used as proxy for the financial performance of the observed firms. It is presumed that the ROA estimates, which were obtained from the audited financial statements within the annual reports, provide a more reliable source of information regarding the financial performance of the companies listed in the stock exchange. Table 1 presents the summary of the sampling design of the study.

Table 1. Sampling Design Summary

Population	41 O&G Companies Listed in the Malaysian Stock Exchange (Bursa Malaysia).
Sampling Frame	Corresponding List of O&G listed companies compiled from Bursa Malaysia's online database.
Sample Size	<ul style="list-style-type: none"> • 11 Companies • 10 Years data for each item • 54 Items per company • 5940 Observations
Analytic	Multiple Regression Analysis, Direct Causal Effect with ERM predicting ROA.

5. Statistical Model Specification

In order to observe the effect of the components of COSO's ERM framework on the firm performance (ROA), this study establishes the following regression model.

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \varepsilon$$

Where,

Y = Return on Assets (ROA) (Dependent variable)

X_i = (Independent variables)

X₁ = Supportive Internal Environment

X₂ = Objective Setting

X₃ = Event Identification

X₄ = Risk Assessment

X₅ = Risk Response

X₆ = Control Activities

X₇ = Information and Communication

X₈ = Monitoring

β_i = Co-efficient (the change in ROA for each 1 increment change in an independent variable)

a = Intercept of ROA

ε = Error term

6. Empirical Results

6.1 Penetration of ERM Practices

Descriptive statistics were employed to examine the penetration level of ERM practices by the sampled 11 out of the 41 O&G listed companies in Malaysia. The results indicate that the dependent variable, ROA measure, has a mean score of 0.503 (50.3% return on assets). The positive and moderately higher ROA suggests that the

organization is properly utilizing its capital for yielding adequate return. The mean value of the components of ERM framework are between the values of 0.6505 to 0.7222. This indicates that all the eight components of COSO's ERM framework are implemented by the sampled O&G companies with a rather significant penetration level (i.e. 65% to 72% penetration level vis-a-vis the benchmarked implementation framework). Table 2 indicates the mean and standard deviation of the independent and dependent variables.

Table 2. Descriptive Statistics (N = 110).

Variables	Mean	Std. Deviation
Supportive Internal Environment	0.6737	0.374
Objective Setting	0.6909	0.370
Event Identification	0.7216	0.360
Risk Assessment	0.7051	0.360
Risk Response	0.7051	0.360
Control Activities	0.6664	0.352
Information and Communication	0.6818	0.448
Monitoring	0.6505	0.347
Return on Assets	0.5037	0.252

6.2 Hypotheses Testing

To evaluate the impact of the components of COSO's ERM Implementation framework on the firm's performance, regression analysis is performed. Hypothesis testing results indicate that the H₁, H₂, H₆ and H₈ are supported while H₃, H₄, H₅ and H₇ are not supported. Test results from multiple regression analysis show that the overall research model fit is significant at an alpha of 0.05 with the F-statistic of 3.198. The coefficient of multiple determination (R²) for the model indicates that the model explains approximately 20% of the variability of the response data around its mean. At the individual predictor's level, the results show that four components of the ERM framework namely, event identification, risk assessment, risk response, as well as information and communication are not significant, indicating that they have no impact on the firm's ROA. On the other hand, the predictors of the supportive internal environment, objective setting, control activities, and monitoring are significant at an alpha of 0.05 with the coefficient values of 0.61, 0.82, 0.46 and 0.64 respectively on the firm's ROA. The results of hypotheses testing are presented in Table 3.

Table 3. Hypotheses testing results

Hi	Model Dependent Variable (ROA)	Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
	(Constant)	0.50	0.05		9.35	0.000
H ₁	Supportive Internal Environment	0.61	0.17	0.30	3.43	0.001
H ₂	Objective Setting	0.82	0.141	0.476	5.87	0.000
H ₃	Event Identification	-0.28	0.67	-0.40	-0.42	0.676
H ₄	Risk Assessment	-0.03	0.07	-0.05	-0.49	0.621
H ₅	Risk Response	-0.61	0.77	-0.88	-0.79	0.430
H ₆	Control Activities	0.46	0.23	0.71	1.9	0.049
H ₇	Information and Communication	-0.05	0.18	-0.01	-0.03	0.972
H ₈	Monitoring	0.64	0.18	0.89	3.53	0.001
	F-Stat	3.19				
	Sig F	0.005				
	R	0.446				
	R-square	0.199				

7. Discussion

This study vindicates the effectiveness of COSO's ERM Framework adoption for value creation. COSO's ERM framework encompasses eight key components that help organizations to manage risk and provide reasonable assurance about meeting their objectives. The results on COSO's ERM value enhancement through testing of

hypotheses have discovered that value of the organization can be created by adopting rigorous ERM system. Particularly, multiple regression analysis results indicate that overall research model's goodness-of-fit is significant, with a significance level $p < 0.05$, and r-square value of 0.199 indicating that ERM implementation predicted 19.9 % variance in return on assets. However, results revealed that COSO's ERM integrated framework, when measured at lower order level (eight components), gives varying results. For instance, only four components of the ERM framework (internal environment, objective setting, control and monitoring activities) are found positive and significant predictor of firm's performance. In contrast, the study found an insignificant relationship between the other four components of ERM framework namely; event identification, risk assessment, risk response, as well as information and communication and firm's performance. This could be attributed to the fact that the O&G companies are yet to have an efficient risk management process that could enhance risk awareness and help in strategic decision making and ultimately enhance their financial performance. Overall, the study concludes that higher penetration level of ERM (as measured by the combined ERM score) is associated with the enhanced financial performance among O&G companies in Malaysia.

8. Conclusion

This paper aims to validate whether ERM implementation can enhance firm performance. Empirical results found that ERM implementation has a positive effect on firm performance. The literature illustrates that there is a strong evidence to show that ERM implementation in organizations promotes competitiveness and enhance firm's value. In line with that current study, demonstrates that firm performance is significantly enhanced through the implementation of enterprise risk management. In a nutshell, this study develops a predictive model among the hypothesized variables which will not only direct organization to enhance their performance but also it ensures their sustainable development. Both practitioners and academics might find this article useful, as it sketches the efficacy and potential strengths of ERM implementation in the O&G companies. Moreover, the awareness and understanding of enterprise risk management will also be useful to the board of directors, top management, auditors and other relevant stakeholders in formulating policies and evaluation of the organizations performance.

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