

The Role of Quality Board of Directors in Enterprise Risk Management (ERM) Practices: Evidence from Binary Logistic Regression

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Abstract

The purpose of this research is to examine the factors associated with the level of adoption of Enterprise Risk Management (ERM) among public listed companies in Malaysia. The aim of this particular study is to examine the relationship between the quality of Board of Directors (BOD) with regard to the level of ERM adoption within the companies involved. Binary Logistic Regression was conducted to test the hypothesis on surveyed firms selected from the seven industries listed on the main board of Malaysia Bourse. The specific research questions are: What is the level of ERM adoption among the Malaysian public listed companies?, Will quality of Board of Directors affect the level of adoption of ERM of Malaysian public listed companies? An interesting finding from this study is the positive correlation between the quality of BOD on the level of ERM adoption. This study will be able to shed some insights into the ERM activities of multinationals from a developing country's perspective by identifying the level of stages that Malaysian public listed companies are adopting ERM. Studies of the management of Enterprise Risk by multinationals from developing countries, including Malaysia meanwhile, have been scarce. This research aims to fill this research gap by analysing the management of risks in Malaysian multinationals, with a special focus on ERM.

Keywords: Enterprise risk management, Board of director

1. Introduction

Previously, risk management was often carried out by different people dispersed throughout the organization and was not part of a formal integrated risk management process. For example one person would handle business continuing planning, another would focus on safety equipment and a third would be in charge of purchasing insurance.

These individual would rarely meet to exchange information that could waste resources or could lead to gaps where each person would assume that someone else was handling a critical risk issue. Therefore, in larger organization this situation would result greater inefficiencies.

Today risk management is a more comprehensive function. Information is still gathered from all levels of the organization but is viewed and managed on an organization or enterprise wide level. Although there has been a very positive evolution, there is still room for improvement. One recent global survey of executives and management of public and privately held companies showed that only 18 percent of their boards of directors had a complete understanding of their organization's risk. In addition, Pritsch (2002) showed that 36 percent of

directors did not believe that they had a full understanding of the major risks facing their companies. Then by 2006, the percentage decreased to 10.5 percent.

The conference board issued a report titled 'The role of US corporate boards in ERM'. This landmark study confirms that boards of directors of publicly traded companies have been heavily focused on the Sarbanes-Oxley requirements over the past couple of years. The boards are also beginning to assess their evolving role in risk management oversight. The report notes that the most directors now realized they must advance their focus from the traditional role of internal control to a more comprehensive ERM framework (Moody, 2007).

As a result, it is important to organization to elect a leadership team that fits the current business like. Then, in deciding on the variety of board members to be elected, stakeholders should consult the business' ERM initiative, which highlights the most significant risks that require dynamic leadership. For example, strategic issues, human resources and information technology will govern the board's agenda and should influence the election of board members who can provide proactive guidance on these topics to the organization's executive management team. Furthermore, COSO (2004) suggests that in the first component in ERM, which is the internal environment, it provides discipline and structure and it is the basis for the other seven components of the framework, encompasses the responsibilities of the board of directors and the role sound organizational culture plays.

Therefore, the main objective of this study is to enhance the understanding of ERM practices among major companies in Malaysia. Based on this overarching goal, the objectives of this particular study can be described as follows:

- a) To determine the level of ERM adoption among the Malaysian companies;
- b) To examine whether quality of Board of Directors (QBODs) affect the level of ERM adoption within Malaysian companies

The study is structured as follows: First, a summary of literature on the concept of ERM and the quality of Board of Directors. Second, the methodology and sample are both described. Third, the findings are thoroughly discussed and finally the conclusion is provided by summarizing the results and discussing avenues for future research.

2. Literature Review

One of the challenges of discussing risk management is that the term "risk" carries with it multiple meanings, relevant in different context. A 1999 study prepared by PricewaterhouseCoopers for the International Federation of Accountant (IFAC) provides a useful guide to the distinct sense of the term "risk" when used in a management context: risk as opportunity, risk as hazard and risk as uncertainty. The IFAC's study can be defines risk as opportunity is implicit in the concept that a relationship exists between risk and return. The greater the risk, the greater the potential return. In this context, managing risk means using techniques to maximize the upside (performance) within the constraints of the organization's operating environment, given any limitations associated with having to minimize the downside (conformance).

ERM is, in essence, the latest name for an overall risk management approach to business risks. As a relatively new field of practice, ERM has quickly taken on a number of different terms. This leads to confusion as people talk about ERM and it may appear that they are talking about seemingly different things. Several texts and periodicals have introduced and discussed 'corporate risk management', 'business risk management', "strategic risk management", 'integrated risk management', 'holistic risk management' and 'enterprise-wide risk management' (D'Arcy, 2001). Although each of these terms has a slightly different focus but these concepts are similar to, even synonymous with, ERM as they all emphasize a comprehensive view of risk management, a movement away from the "silo" approach of managing different risks within an organization distinctly and the view that risk management can be a value-creating exercise, in addition to risk mitigating process. According to Liebenberg and Hoyt (2006), they articulated that ERM is an integrated approach to managing risk that shifts the focus of the risk management function from primary defensive to increasing offensive and strategic.

With regards to the types of risk subject to ERM, it consists of hazard risk, financial risk, operational risk and strategic risk. Hazard risks are those risks that have traditionally been addressed by insurers including fire, theft, windstorm, liability, business interruption, pollution, health and pension. Financial risks cover potential losses due to changes in financial markets including interest rates, foreign exchange rates, commodity prices, liquidity risks and credit risks.

In addition, operational risks cover a wide variety of situations including customer satisfaction, product development, product failure, trademark protection, corporate leadership, information technology, management's fraud and information risk. Strategic risks include such factors as completion, customer preference, technological innovation, regulatory or political obstacles. Although there can be disagreement over which category would apply to a specific instance, the primary point is that ERM considers all types of risk an organization faces.

Therefore, in this particular study, the COSO (2004) ERM framework was used in order to examine the Level of ERM Adoption

Boards size is one of the well studied board characteristics from two different perspectives. First, the number of directors may influence the board functioning and hence corporate performance. Based on sample of large US public companies, similar results were reported using European data. The study by Conyon and Peck (1998) showed an inverse relationship between return on shareholders' equity and board size for five European countries.

Second, researchers have started to study board of directors as decision making groups by integrating literature on group dynamics and workgroup effectiveness. Hence, board size can have both positive and negative effects on board performance. Larger boards are more difficult to coordinate and may experience problem with communication and organization. Besides, large boards may face decreased levels of motivation and participation and are prone to develop factions and coalitions.

Boards also need to consider how they can structure themselves to support good governance and risk management. Farrell (2004) made the case that rather than responsibility for internal control being delegated to an organization's financial group, responsibility for evaluation of risk and control should be done by those most directly involved in each process of daily operation. Directors' perspectives also have their own views on what constitutes a good board of directors. Based on in-depth interviews with 60 board members of Belgian listed companies, the directors were asked to sum up what they believe are elements of a good board of directors. The result shown that the quality of the board meetings is the most frequently reported element, followed by a balanced composition of the board and the board of directors as a decision making group (Berghe & Levrau, 2004).

In order to have an effective and constructive boards meeting, several conditions need to be fulfilled. The first issue is concerns information. Information refers to the documents the directors receive in advance. Information also includes data and the format in which these data are presented during the board meetings. In addition, information also refers to the willingness of directors to learn about the company's businesses outside the board meetings. The second issue is the quality of the discussions or debates. Real, open, in depth debates are essential for an effective board meeting. Moreover, discussions must take place inside the board room and not 'behind the scenes'. Finally, the board of directors must be critical, but at the same time preserve a comfortable and constructive climate. In this study, quality of board of directors' characteristics towards ERM is measured by examining three elements (Berghe & Levrau, 2004 and Harun et al., 2006): (1) quality of the boards' structure, (2) quality of boards' composition and (3) quality of boards meetings.

3. Methodology

The population of this research comprised of seven industries listed on the main board of Malaysia Bourse, 2007. Unit of analysis is a multinational company listed on the main board of Malaysia Bourse in 2007. The seven industries, totaling 587 companies, consist of construction, consumer product, industrial product, plantation, properties, trading and services and also construction. Financial industry is excluded as they are known to have more stable, ERM in practice. Stratified proportionate random sampling technique was used to get the amount of samples in this study. Table 1 is the sample of companies applied under this study.

The questionnaires were sent on the 16th of December 2007 to 500 main board listed companies listed in Malaysia Bourse. The mail questionnaire is posted together with a self stamped returned envelope to ensure a high response rate. The questionnaires were addressed to the company's Chief Executive Officer (CEO)/Board of Directors (BOD). The usable sample that can be used in the study is 89 whereas 39 samples were unusable because some were not answered, returned to sender and incomplete answers given.

The survey questionnaires consisted of (2) two sections. Section A focused on gathering information pertaining to the demographic profile of respondents and their firms or companies while Section B examined the quality of BOD.

4. Results

A Descriptive Analysis was performed to provide the general background of respondents and companies that have participated in this study. Empirically, the result of this particular study proved that ERM was being practiced by Malaysian companies. However, the ERM practices are still at the early stage but appear to be developing fast. A total of 37 companies confirmed the complete adoption of ERM, 33 companies had partially adopted ERM, four (4) companies planned to adopt ERM, 12 were still investigating to adopt ERM and only three (3) companies announced that they do not have any intention to implement ERM. Table 2 below shows the summary of cross tabulation analysis with regard to the level of ERM adoption amongst companies under study.

Given the small number of companies that responded to the industry survey, the level of ERM adoption was

divided into two (2), namely, those companies that have adopted ERM completely and those that have partially adopted ERM. The companies that have adopted ERM partially planned to adopt ERM and those companies which are still in the process of investigating to adopt ERM were considered as 'partially adopted ERM.' Companies that have no plan to implement ERM were omitted for further analysis. Therefore, the results show that 37 companies or 43 percent which adopted ERM completely and 49 companies or 57 percent have partially implemented ERM. The level of ERM adoption status among the companies is shown in Table 3.

It is important to note that the overall study provides an important initial attempt to identify the level of ERM adoption by Malaysian listed companies. Interestingly, on a positive note, the result shows that companies which had been established earlier are more likely to adopt ERM. The result also shows that most companies which adopted ERM were audited by the 'Big Four' audit firms. It could be argued that companies which engage in higher quality audits are more likely to improve its corporate governance by implementing ERM.

The Reliability Test was conducted on the independent variables to check for the internal consistency of the measurement instrument. The Cronbach's alpha for the variable scales was in the range of 0.74, which was well above the minimum accepted reliability of 0.60 as suggested by Sekaran (2005) (Table 4). At this stage, the variable was kept for further analysis. The Logistic Regression was performed to predict and explain the two (2) groups' categorical variable of this study (complete ERM in place/partial ERM in place). Importantly, the overall result shows that the quality of BOD was statistically significant in the adoption of ERM as a Table 4.

In this particular study, the sample size is 86 companies, 37 are complete ERM in place and 49 partial implementation of ERM in place. Based on Table 5, partial implementation of ERM is indicates the number of 0' and complete ERM is indicates the number of 1'. According to Table 6, the first step, called step 0, includes no predictors and just the intercept. By looking at the overall percentage, this gives the percent of cases for which the dependent variable was correctly predicted by the given of the model. In this output, it shown that the null model is 57.0 percent (49/86).

From the Omnibus tests of model coefficients, this is the chi-square statistic and its significant level. In this model, the statistics for the step, block and model are the same because stepwise logistic regression or blocking have not used. The value given in the sig. column is the probability of obtaining the chi-square statistic given that the null hypothesis is true. In other words, this is probability of obtaining this chi-square statistic (16.809) if there is in fact no effect of the independent variables, taken together, on the dependent variable. This is, of course, the p-value, which is compared to a critical value, perhaps .05 or .01 to determine if the overall model is statistically significant. In this case, the model is statistically significant because the p-value is less than .00 based on Table 7.

According to Table 8, the overall measure of how well the model fits is given by likelihood value (-2 log likelihood). A well fitting model will have a small value for -2log likelihood. The minimum value for it is a 0, achieved at a perfect fit that has a likelihood of 1. The -2 likelihood for this study is 100.73 and the value of Nagelkerke-R² of 0.238 for this logistic regression has suggested that the accuracy of the factors influencing the level of ERM can be explained by the predictor variables under study at 23.8%.

The Hosmer and Lemeshow test in Table 9 provides the chi-square value of 4.070 with p=0.772 and it indicates that the binary logistic model fits well for the data. Hence, the validity of the model has been tested. Referring to Table 10 below, these are the predicted values of the dependent variable based on the full logistic regression model. This table show how many cases are correctly predicted (36 cases are observed to be 0 and are correctly predicted to be 0, 21 cases are observed to be 1 and are correctly predicted to be 1), and how many cases are not correctly predicted (13 cases are observed to be 0 but are predicted to be 1; 16 cases are observed to be 1 but predicted to be 0). By looking at the overall percentage, this gives the overall percent of cases that are correctly predicted by the model whereby this percentage has increased from 57.0 for the null model to 66.3 for the full model.

The summary of the fitted binary logistic regression model found that it signifies 1 predictor variable, which is quality of board of directors influenced the level of ERM adoption. In addition, after using stepwise logistic regression, the result had found that quality of board of director is positively associated with the level of ERM adoption at sig. value 0.040. Therefore, hypothesis 1 is supported.

H1: There is positive relationship between quality of BOD and level of ERM adoption

In general, this study shows that the adoption of ERM is associated with the quality of BOD. By having quality BOD, companies are likely to adopt ERM because most of the directors seek to protect their reputations as expert monitors.

Consequently, the adoption of ERM demonstrates their commitment and awareness of improved risk management in companies as ERM is the latest technique in protecting companies from potential risk exposures.

Furthermore, directors with multiple directorships tend to be more supportive in respect of monitoring the company's business operations to avoid company's poor performance that may lead to eventual corporate failures. As an overall result, there is a significant positive association between quality of BOD towards the level of adoption of ERM in companies listed in the Malaysia Bourse.

5. Conclusions

Firstly, the response rate was quite low that is only 89 out of 500 samples chosen. Perhaps, if the response rate is at least 100, then it will be more appropriate to make generalizations and inferences. Secondly, this study was conducted based on non-public listed companies from the main board of Malaysia Bourse only. Any finding, discussion or suggestion in this study might be irrelevant to any other party except for the companies as mentioned above. Finally, this study did not make any attempt to measure companies' performance after adopting ERM.

Based on the limitations of the study, future researches on similar topic are recommended for enhancement in certain area of interest. First of all, there is a need to investigate the companies' performance after applying the ERM framework. A study of more than one (1) year would be necessary to examine a trend or pattern of performance for companies that applied the ERM framework. Therefore, it is strongly suggested that the research approach could possibly utilize a qualitative research approach such as in-depth interviews, case studies or in combination with survey questionnaires. In addition, additional variables could be included to create a new framework for the study.

To conclude, the study shows that both the quality of BOD influence companies level of ERM adoption. Finally, it must be emphasized that key findings of this study reveals that some of the companies in Malaysia had already adopted the ERM framework to their advantage. On a positive note, it is highly optimistic that many more companies and organizations may tend to follow suit by eventually adopting ERM for effective management of risks in an increasingly complex business environment where the future is unknown but undoubtedly, full of risks and uncertainties that may catch business entities by surprise.

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Table 1. Sample of Companies

Type of Industry	Number of Companies (population)	Companies Selected (sampling frame)	Companies Participated
Technology	18	15	9
Industrial Product	156	134	8
Property	94	81	16
Consumer Product	87	75	19
Plantation	44	37	6
Trade and Services	141	121	20
Construction	44	37	11
Total	584	500	89

The sample of companies applied under this study.

Table 2. Level of ERM Adoption

		Level of ERM Adoption					Total
		No plan exist	Investigating to adopt ERM	Planning to implement ERM	Partial ERM in place	Complete ERM in place	
Years of company established	1-5 Years	0	1	0	0	0	1
	6-10 Years	0	2	0	2	0	4
	11-15 Years	2	1	1	8	7	19
	16 Years and Above	1	8	3	23	30	65
Total		3	12	4	33	37	89

The summary of cross tabulation analysis with regard to the level of ERM adoption amongst companies under study

Table 3. Level of ERM Adoption Status

Level of ERM Adoption	Frequency (N=86)	Percentage	ERM Status
Complete ERM	37	0.43	Complete
Partial ERM	33	0.38	Partial
Planning to adopt ERM	4	0.05	
Investigating to adopt ERM	12	0.14	

The level of ERM adoption status among the companies

Table 4. Reliability Analysis for all variables

Variables	Number of Items	Cronbach's Alpha
Quality of BOD	17	0.741

The overall result shows that the quality of BOD was statistically significant in the adoption of ERM

Table 5. Dependent Variable Encoding

Original Value	Internal Value
Partial implementation of ERM	0
Complete ERM in place	1

Partial implementation of ERM is indicates the number of 0' and complete ERM is indicates the number of 1'

Table 6. Classification Table

Observed			Predicted		
			Level of ERM adoption		Percentage Correct
			Partial implementation of ERM	Complete ERM in place	
Step 0	Level of ERM adoption	Partial implementation of ERM	49	0	100.0
		Complete ERM in place	37	0	.0
	Overall Percentage				57.0

a Constant is included in the model.

b The cut value is .500

It shown that the null model is 57.0 percent (49/86)

Table 7. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	16.809	2	.000
	Block	16.809	2	.000
	Model	16.809	2	.000

The model is statistically significant because the p-value is less than .00

Table 8. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	100.732(a)	.178	.238

a Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

The -2 likelihood for this study is 100.73 and the value of Nagelkerke-R² of 0.238 for this logistic regression has suggested that the accuracy of the factors influencing the level of ERM can be explained by the predictor variables under study at 23.8%.

Table 9. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.070	7	.772

Provides the chi-square value of 4.070 with p=0.772 and it indicates that the binary logistic model fits well for the data

Table 10. Classification Table (a)

Observed			Predicted		
			Level of ERM adoption		Percentage Correct
			Partial implementation of ERM	Complete ERM in place	
Step 1	Level of ERM adoption	Partial implementation of ERM	36	13	73.5
		Complete ERM in place	16	21	56.8
	Overall Percentage				66.3

a The cut value is .500

The overall percent of cases that are correctly predicted by the model whereby this percentage has increased from 57.0 for the null model to 66.3 for the full model