



Corporate risk management and firm performance: Sri Lankan perspective

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Abstract

Risk management and firm performance in organizations became crucial when it involves research over a previous couple of decades and remains widely discussed globally. The tendency is to take a holistic overview of risk management instead of considering risk management from a silo-based view. This holistic approach to risk management is usually mentioned as Corporate Risk Management (CRM). There are so many shreds of evidence for the statement that organizations will enhance their performance by using the CRM concept. The main objective instigated during this study is that the proper match between corporate risk management (CRM) and, therefore, the firm factors: namely, Industry competition (CI), firm size (FS), firm complexity (FC), and monitoring by the board of directors (MBD) and the relationship among CRM and firm performance (P). Supported a sampling of 60 firms in CSE, reflecting the maintaining of their CRM operations in their annual reports, empirical evidence supports the main argument instigated above. These findings mean that firms should implement the CRM in aggregation with the appropriate variables adjoining the firm.

Keywords: contingency theory, corporate risk management index, firm performance and Sri Lanka

Introduction

In today's world, risk management is an important matter. In late years, there has been a standard change within the manner the risk management is considered. Instead of viewing risk management from a silo-based approach, the tendency is to require a holistic view of risk management. This approach used to manage the risk of a firm is usually mentioned as corporate risk management (CRM). The study will empower the banks, diversified financials, insurance, energy, and retailing firms in Sri Lanka to reinforce their risk management system and embrace better methodologies to reinforce firms' performance through the risk management strategies. Decades ago, there is no evidence that Risk Management practice leads to better performance. Therefore, further research is needed to examine the link between corporate risk management implementation and firm performance. The main objective instigated during this study is that the relationship among corporate risk management (CRM) and firm performance (P) depends on the



proper match between CRM. Therefore, the firm factors: namely, industry competition, firm complexity, firm size, and monitoring by the board of directors.

Literature Review

There are debates and controversies on the effect of risk management on the performance of firms. Comprehensive studies on this substance are administrated by scholars and produced mixed results;. At the same time, some found that risk management had a positive impact on firm performance, some found negative relationships, and others suggested that other factors, aside from risk management, affected firm performance. Consistent with Hoyt and Liebenberg, 2009; Stulz, 1996; Barton et al., 2002; Nocco and Stulz, 2006; Lam, 2003, provide empirical shreds of evidence that the risk management system of a firm will enhance the performance of that firm eventually. The findings by Gates and Hexter, 2005, present that a lot of firms have adopted risk management, which has a positive impact on firms' performance.

Methodology

The sample for this study is taken from the CSE database. This study is implemented because companies indicate they were operating the CRM concept and presented it in their annual reports in the year of 2018. There are 86 companies in banks, diversified financials, insurance, energy, and retailing sectors. Thus, a final sample of 60 companies is used in this study for the analysis. This study's main objective can be tested by using Eq. (1), and Eq. (3) stated below. The high-performing firms are used to derive the coefficients for Eq. (1), and it describes the proper match between CRM and firm factors, as mentioned above. The connection among firm performance (P) and proper match between firm factors are considered in Eq. (3);, to obtain values for this Eq. (3), the absolute values of residuals (ARES) are regressed on firm performance (P) from Eq. (1).

$$CRM = \beta_0 + \beta_1 CI + \beta_2 FS + \beta_3 FC + \beta_4 MBD + \varepsilon$$

Eq. (1)

Table 1. Measuring the variables

Variables	Acronym	Measurement of variables
Firm Performance	P	Firm performance is calculated by the shareholders' one-year excess stock market return for 2018, $P_i = R_i - (R_f + \beta_i(R_m - R_f))$ Where, P_i =Firm performance, R_i = Firm i return, R_m =Market return, R_f = Risk-free rate of return, β_i = Beta for firm i .



Industry Competition	<i>CI</i>	(1 – <i>HHI</i>), One minus the Herfindahl – Hirschman Index is used to measure the industry competition. The total of the squared market shares of all companies in the same industry is used to derive <i>HHI</i> .
Firm Complexity	<i>FC</i>	This is measured by the number of operating segments for each firm.
Firm Size	<i>FS</i>	Firm size is measured as the natural logarithm of average total assets.
Monitoring by Board of Directors	<i>MBD</i>	Board of directors monitoring is measured by dividing the number of directors for each company by the natural logarithm of sales.

$$CRMI = \sum_{k=1}^2 Strategy_k + \sum_{k=1}^2 Operation_k + \sum_{k=1}^2 Reporting_k + \sum_{k=1}^2 Compliance_k \text{ Eq. (2)}$$

Table 2. Measuring the independent variable CRMI

Variables	Measurement of variable
Strategy 1	$Strategy_1 = \frac{Sales_i - \mu_{Sales}}{\sigma_{Sales}}$ <p>Where, $Sales_i$= Sales of firm i in 2018, μ_{Sales}= Average industry sales in 2018, σ_{Sales}= Standard deviation of sales of all firms in the same industry.</p>
Strategy 2	$Strategy_2 = \frac{\Delta\beta_i - \mu_{\Delta\beta}}{\sigma_{\Delta\beta}}$ <p>Where, $\Delta\beta_i$=(β_i in 2018 - β_i in 2017), β_i= Firm i's beta (Data from CSE), $\mu_{\Delta\beta}$= Average industry $\Delta\beta$ in 2018, $\sigma_{\Delta\beta}$= Standard deviation of $\Delta\beta$'s of all firms in the same industry.</p>
Operation 1	$Operation_1 = \frac{Sales}{TotalAssets}$
Operation 2	$Operation_2 = \frac{Sales}{NumberofEmployees}$
Reporting 1	$Reporting_1 = \frac{(MaterialWeaknesses) + (AuditorOpinion) + (Restatement)}{ NormalAccruals }$ $Reporting_2 = \frac{ NormalAccruals + AbnormalAccruals }{AuditorFees}$
Reporting 2	
Compliance 1	$Compliance_1 = \frac{AuditorFees}{TotalAssets}$
Compliance 2	$Compliance_2 = \frac{SettlementNetGain (Loss)}{TotalAssets}$

$$P = \beta_0 + \beta_1 ARES + \varepsilon \text{ Eq. (3)}$$

Where, P = Firm performance, $ARES$ = The Absolute value of residual from Eq. (1), β_i = various parameters, $i=0$ to 3, ε = error term.

The residuals are derived from Eq. (1), underlines the basic concept that the residual analysis model shows the ‘lack of fit’ within the corporate risk management and proper match among firm factors.

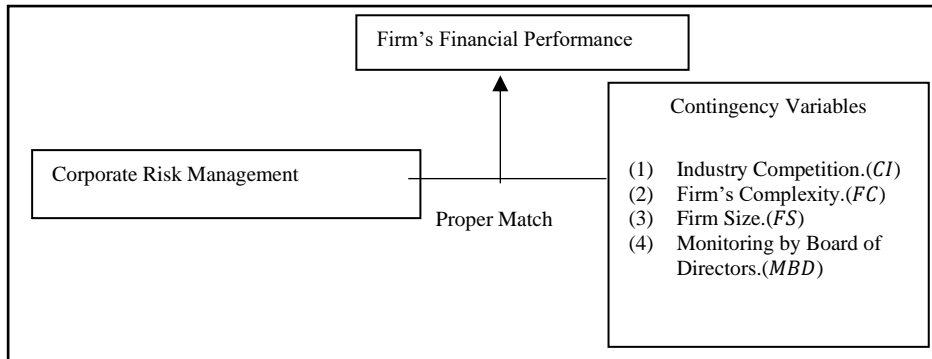


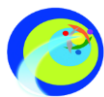
Fig 1. Conceptual Framework

Results and Discussions

Descriptive statistics are provided for the entire sample, and the high performing firms and therefore, the other firms. There are 26 high performing firms and 34 the other firms according to the cutoff of 2% one-year excess return. However, the average *CRMI* of high performing firms are greater than the other firms. In the correlation analysis, *FC* is highly correlated with the *FS*. This strong correlation suggests the likelihood of multicollinearity within the results of the analysis. For this purpose, the researcher also measures the Variance Inflation Factor (VIF) and Tolerance, in consort with the analysis.

Table 3, Panel A shows the results from the regression analysis for the entire sample and high-performing firms and other firms. Industry competition, firm complexity, and firm size significantly affect the effectiveness of the *CRMI* in high performing firms. The board of directors monitoring is the only firm factor that is not causing a significant effect on the *CRMI*. Since contextual factors are usually exogenous variables, the outcomes indicate that the firms with high performing highly concern the firm mentioned above factors than the firms which are not the high performers in maintaining their CRM practices. The other finding as per Table 3, Panel A, is that the VIFs and tolerances are very low and high respectively for all repressors. Thus, multicollinearity does not cause any problem in the regression analysis.

According to Panel A of Table 3, from the high-performing firms representing the proper match between *CRM* and, therefore the firm factors used to derive the coefficients for Eq. (1). As per Table 3, Panel B, the *ARES* is negative and



not significant. To put it another way, *ARES* and firm performance are negatively related. In conclusion, Panel B of Table 3 provides the shreds of evidence to fulfill the basic argument that the proper match between CRM and the firm factors are key drivers for firm performance. According to Hexter, Gates, 2005, it represents confirming earlier empirical evidence, the firms that have adopted CRM will improve the firm performance.

Table 3. Regression Analysis

No. of observations	Total Sample 60		High performing firms (excess return >2%) 26		The other firms (excess return ≤ 2%) 34	
	Coe(p-value)	VIF (Tolerance)	Coe(p-value)	VIF (Tolerance)	Coe(p-value)	VIF (Tolerance)
<i>Panel A. Regression of CRMI on contingent variables: $CRMI_i = \beta_0 + \beta_1 CI_i + \beta_2 FC_i + \beta_3 FS_i + \beta_4 MBD_i + \varepsilon_i$</i>						
β_0 (Intercept)	11.490 (0.357)	N/A (N/A)	6.739 (0.756)	N/A (N/A)	-7.779 (0.325)	N/A (N/A)
β_1 (CI)	-30.697 (0.001)	1.013 (0.987)	-36.251 (0.001)	1.025 (0.975)	-9.686 (0.034)	1.081 (0.925)
β_2 (FC)	-0.490 (0.213)	1.324 (0.755)	-1.488 (0.097)	1.265 (0.791)	0.104 (0.565)	1.591 (0.628)
β_3 (FS)	1.034 (0.048)	1.299 (0.770)	1.808 (0.080)	1.531 (0.653)	0.789 (0.019)	1.448 (0.690)
β_4 (MBD)	-13.156 (0.157)	1.131 (0.884)	-32.099 (0.149)	1.310 (0.763)	-1.276 (0.758)	1.142 (0.876)
F-Statistic (p-value)	9.421 (<0.001)		5.602 (0.003)		4.212 (0.008)	
R^2	0.407		0.516		0.367	
Variable						Coe(p-value)
<i>Panel B. Residual analysis (all 60 CRM firms): $P_i = \beta_0 + \beta_1 ARES_i + \varepsilon_i$</i>						
Intercept						0.010 (0.361)
<i>ARES</i>						-0.001 (0.701)
F-Statistic (p-value)						0.149 (0.701)
R^2						0.003

P is measured by the one-year excess stock market return at the year-end of 2018 as $P_i = R_i - (R_f + \beta_i(R_m - R_f))$. CI is calculated as $(1 - HHI)$, HHI denotes the sum of squared market shares of all firms in the market. FC is measure by the number of operating segments for each firm. FS is measure as the natural logarithm of average total assets. MBD is measure by the numbers of directors for each firm divided by the natural logarithm of sales, where the number of directors was collected from the 2018 annual reports of



firms.
$$\widehat{CRMI}_i = 6.739 - 36.251CI_i - 1.488FC_i + 1.808FS_i - 32.099MBD_i.ARES_i = |CRMI_i - \widehat{CRMI}_i|$$

Conclusions and Recommendations

With a sample of 60 firms, focusing that the firms may use corporate risk management practices in their 2018 annual reports, this study examines whether firms' CRM and performance depend upon the proper match between CRM and above mentioned four firm factors. The findings from this study can be used to confirm the main argument that the relationship between CRM and firm performance depends on the proper match between CRM and four firm factors, and also the findings from the analyses advocate that the CRM Index (*CRMI*) is a sound measure of the effectiveness of CRM.

Future research can be conducted by expanding the research to be more representative sectors that are not presented in the sample. Furthermore, this study was conducted in a developing country where corporate risk management is not mandatory. Therefore, this study can be done in a developed country where corporate risk management is mandatory. Finally, this study can be further enhanced by incorporating the firm performance indicators as independent variables into the regression model used.

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