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PERFORMANCE IMPLICATIONS OF ENVIRONMENT-STRATEGY-GOVERNANCE MISFIT*

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This study examines the impacts of matching competitive environment, business strategy, and corporate governance structure on firm performance. We predict that in a dynamic environment, firms pursuing a product differentiation strategy will perform better than firms pursuing a strategy of cost leadership, but the performance differential is affected by the level of board independence and managerial share ownership. In a stable environment, we predict that firms pursuing a strategy of cost leadership will perform better than firms pursuing a product differentiation strategy, and the performance differential is affected by the level of board independence and managerial share ownership.

Overall, the results are consistent with the predictions of this study. Board independence and managerial ownership affect the performance differential between product differentiators and cost leaders in a dynamic environment. In a stable environment, however, the results are not statistically significant.

Keywords: business strategy; competitive environment; corporate governance; performance

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* The data are available from public sources. A list of sample firms is available from the corresponding author upon request. We gratefully acknowledge the valuable comments and suggestions from participants at the 2008 Asian Academic Accounting Association conference, Dubai, UAE.

Introduction

The purpose of this study is to investigate the performance implications of a misfit among competitive environment, business strategy and governance structure. We argue that in a dynamic environment, firms that pursue a product differentiation strategy will perform better than those that pursue a cost leadership strategy. This is because by focusing on satisfying customers' needs in terms of innovative products, quality, and special features, product differentiators will respond better to the dynamic environment characterized by rapid changes in product designs, improved quality, and product features. Moreover, we predict that the performance advantage of product differentiators over cost leaders will be affected by the levels of board independence and managerial share ownership.

In contrast, by focusing on efficiency, a cost leadership strategy is a good fit with a stable environment. Therefore, we predict that in a stable environment characterized with standardized products and processes, cost leaders will outperform product differentiators. The performance advantage of cost leaders over product differentiators will be affected by the levels of board independence and managerial share ownership.

In this study, we measure business strategy based on cluster analyses using R&D Intensity, Asset Utilization Efficiency, and Premium Price Capability. Board independence is measured based on the ratio of outside directors to total number of directors on the board. Managerial ownership is determined as the ratio of shares beneficially owned by all directors and executive officers of the firm to total number of common shares outstanding. We use return on investment (ROI) to measure firm performance.

The remainder of the paper is organized as follows. Section two discusses previous related literature, hypotheses and the regression model used to test the predictions. Section three explains the research method and how to measure the variables used in this study. Section four presents the results of the statistical analyses followed by general discussion of the main results, recommendations, and direction for future research in this area.

Related Literature and Hypotheses

Competitive Environment, Strategic Orientation, Board Independence and Firm Performance

Researchers argue that board of directors helps a firm to obtain advice and access to information from directors with different backgrounds, skills, and networks (Dallas 2001), to coordinate with external environment (Pfefer and Salancik 1978), to reduce transaction costs associated with environmental interdependency (Williamson 1975), and to enhance monitoring of the firm's activities (Byrd and Hickman

1992; Fama and Jensen 1983). Previous studies investigating the relationship between degree of board independence and firm performance have focused their investigation on the management-monitoring function of the boards.

Dallas (2001) reports that board of directors performs multiple roles. Besides the manager-monitoring (supervisory) role, board of directors also performs relational and strategic management roles. Relational role refers to the role of board of directors in facilitating the sharing of information among a firm's various stakeholders, such as shareholders, customers, and the legal and financial community, and to ensure that the firm continues to support these stakeholders. Strategic management role refers to the role of board of directors to facilitate the development and implementation of the firm's competitive strategy. The multiple roles of the board of directors often come into conflict with each other. Performing the relational and strategic management roles by the boards, for example, may be in conflict with manager-monitoring activities by the board.

Zahra (1996) argues that because of the multiple roles performed by the board, firms with different board characteristics may pursue different strategies that positively affect the firm performance through management's choice of more or less risky strategies. On one hand, firms that pursue a strategy of differentiation, for example, will benefit more from boards composed predominantly of outside directors. This is because outside directors with greater knowledge about and experience with external affairs seem to be a viable way of co-opting with a dynamic environment and reducing environment uncertainty (Dallas 2001) and to deal more effectively with uncertainties of firms' customers, competitors, suppliers, technologies, and economic circumstances (Zahra and Pearce 1998). Furthermore, based on the basic premise of Porter's (1980) framework of generic strategy, competitive environment plays a crucial role in firms' strategic formulation. Firms need to consider the nature of their environment, and then choose either to compete on the basis of low cost and production efficiency or on the basis of superior quality and specialized product design to be able to compete effectively. Previous studies examining the link between competitive environment and strategy tend to support the notion that under a dynamic competitive environment, firms will compete more effectively by adopting product differentiation strategy. Zahra (1996) and Jauch et al. (1980), for example, report that environmental dynamism is positively associated with product differentiation strategy and negatively associated with cost leadership strategy. Other studies (e.g., Gupta 1987; Govindarajan 1986; Dess and Davis 1984; Miller and Friesen 1982) have also found similar pattern of relationship between competitive environment and strategy. In addition, outside directors tend to rely on output

due to their lack of firm specific knowledge (Baysinger and Hoskisson 1990). Simons (2000) argues that by using output control, managers are free to create solutions and opportunities that managers had not previously contemplate resulting in higher innovation.

On the other hand, firms that pursue a cost leadership strategy will compete more effectively under a stable competitive environment, and will benefit more from a board composed predominantly of inside directors. With greater knowledge about company affairs and internal operations, inside directors can enhance operational efficiencies and focus on internal businesses through a better control of working assets (Dallas 2001). In addition, inside directors tend to employ behavioral control by observing the actual behavior of management (Dallas 2001). When efficiency is critical to success, firms should use behavioral control through standard operating procedures, detailed job descriptions, and manuals specifying in great detail how a task should be performed (Simons 2000).

Previous discussion indicates that firms pursuing a product differentiation strategy will benefit more from an outsider-dominated board of directors, and firms pursuing a strategy of cost leadership will benefit more from an insider-dominated board of directors. Furthermore, the strategic management literature has shown that a product differentiation strategy is more appropriate for firms operating in dynamic environments while a strategy of cost leadership is more appropriate for firms that operate in stable environments (e.g., Jermias and Gani 2004; Robinson and Mcdougall 2001; Simerly and Li 2000; Homburg et al.. 1999; Zahra 1996; Lynn 1994; Rolfe 1992; Govindarajan 1986; Porter 1985; Miller and Friesen 1982; Jauch et al.. 1980; Miles and Snow 1978). We expect that performance advantage of product differentiators on cost leaders will be affected by the board independence.

In a dynamic environment, outside directors will assist a firm in establishing linkage with its external environment (Pfeffer 1981), managing its external dependency (Pfeffer and Salancik 1978), and reducing its environmental uncertainty (Pfeffer 1981). Firms pursuing a product differentiation strategy tend to face a higher degree of uncertainty as compared to firms pursuing a strategy of cost leadership because innovative firms obtain their competitive advantage by trying to satisfy the changing demand of their customers by producing new products or by entering new markets (Porter 1985) while firms that adopt a strategy of cost leadership tend to focus on producing standardized products and try to benefit from economies of scale. Therefore, we predict that when competitive environment is dynamic, firms pursuing a product differentiation strategy will perform better than firms pursuing a strategy of cost leadership; and the performance differential will increase as the level of board independence rises. This is because product differentiators will ben-

efit more from outside directors as compared to firms pursuing a strategy of cost leadership.

On the other hand, when competitive environment is stable, firms pursuing a cost leadership strategy will do better than those pursuing a product differentiation strategy. The performance differential will be affected by the level of board independence. Given that environment uncertainty is low, the potential benefits of having outside directors will be lower as compared to firms competing in a dynamic environment, and firms pursuing a product differentiation strategy will benefit more from having outside directors as compared to firms that adopt cost leadership strategy. Furthermore, by having more outside directors, the potential benefits of matching cost leadership strategy with the stable environment will diminish because of the lost of opportunity to take advantage of firm specific knowledge possessed by inside directors. The following hypotheses are tested:

H1: In a dynamic environment, firms pursuing a product differentiation strategy will perform better than firms pursuing a strategy of cost leadership, and the performance differential will increase as the degree of board independence increases.

H2: In a stable environment, firms pursuing a strategy of cost leadership will perform better than firms pursuing a product differentiation strategy, but the performance differential will decrease as the degree of board independence increases.

Competitive Environment, Strategic Orientation, Managerial Share Ownership and Firm Performance

Distribution of share ownership can have a significant impact on how a company will be managed. Shareholders may exercise their rights to influence important decisions made by the manager of a company. Jensen (1993) argues that managerial share ownership helps align the interest of shareholders and managers. Some studies, however, find that the relationship between managerial share ownership and performance is not linear. Morck et al. (1988), for example, report that for managerial ownership level between 0-5 percent, the relationship between managerial ownership and performance is positive, but for ownership level between 5-25 percent, the relationship is negative. McConnell and Servaes, (1990) also report a nonlinear pattern of relationship between managerial ownership and performance similar to that of Morck et al. (1988). They argue that while Jensen's (1993) convergence of interest hypothesis holds over small percentage of managerial ownership, the increasing level of managerial ownership can transfer additional risk to managers beyond their non-diversifiable human capital that might lead to risk avoidance behavior on the part of manage-

ment that is not in the best interest of shareholders.

If substantial managerial share ownership leads to undesirable risk avoidance behavior, then for a firm that pursues a product differentiation strategy, increasing level of managerial share ownership will have a negative impact on the firm performance. This is because for an innovative firm, creativity and innovativeness are crucial to a firm's long term success. Unwillingness to engage in risky but strategically important projects such as investments in research and development activities might jeopardize the firm's sustainable competitive advantages. Therefore, we predict that the negative effect of increased managerial share ownership will be greater for firms that pursue a strategy of product differentiation as compared to those pursuing a strategy of cost leadership. For a firm that operates in a stable environment, however, the risk avoidance behavior of management might cause managers to choose safety investments and run the firm more efficiently. This argument leads to the following hypotheses:

H3: In a dynamic environment, firms pursuing a product differentiation strategy will perform better than firms pursuing a strategy of cost leadership, but the performance differential will decrease as the level of managerial ownership increases.

H4: In a stable environment, firms pursuing a strategy of cost leadership will perform better than firms pursuing a product differentiation strategy, and the performance differential will increase as the level of managerial ownership increases.

Research Method

To test the hypotheses, the following regression model is used:

$$PERFORM_i = \gamma_0 + \gamma_1 STRATEGY_i + \gamma_2 IND_i + \gamma_3 MOWN + \gamma_4 STRATEGY_i * IND_i + \gamma_5 STRATEGY_i * MOWN_i + \gamma_6 ASSET_i + \gamma_7 LEV_i + \gamma_8 BSIZE_i + \gamma_9 OWN5\%_i + \varepsilon_i \quad (1)$$

where:

$PERFORM_i$ = performance of firm *i* in terms of ROI

$STRATEGY_i$ = an indicator equal to 1 for firms pursuing a product differentiation strategy and equal to 0 for firms pursuing a strategy of cost leadership

IND_i = the percentage of external members on the board of directors of firm *i*

$MOWN_i$ = the percentage of managerial share ownership of firm *i*

$ASSET_i$ = log of total assets of firm *i*

LEV_i = debt to equity ratio of firm *i*

$BSIZE_i$ = number of members on the board of directors of firm *i*

$OWN5\%_i$ = the percentage of stock owned by 5 percent shareholders of firm *i*

Equation (1) allows us to estimate the effects of *STRATEGY, IND, MOWN, STRATEGY*IND, and STRATEGY*MOWN* on firm performance. In a dynamic environment, we predict positive coefficients on *STRATEGY* and *STRATEGY*IND* but a negative coefficient on *STRATEGY*MOWN*. In a stable environment, however, we predict a negative coefficient on *STRATEGY* and *STRATEGY*IND* but a positive coefficient on *STRATEGY* MOWN*..

Sample Selection

The sample consists of firms listed on the Compustat S&P 500 database for five consecutive years starting from 1997. Information regarding the board and ownership data is obtained from proxy statements filed by the firms found in the EDGAR database. The U.S. Department of Commerce provides information on industry concentration through its 1997 economic census. The sample is restricted to firms with complete data for assets, liabilities, shareholders equity, net income, cost of goods sold, research and development expenses, number of outstanding shares, number of directors in the boards, number of outside directors in the boards, number of shares owned by executive directors, and number of shares owned by other institutions. In addition, industry concentration ratios for the firm's standard industry code (SIC) must be available in the U.S. 1997 economic census. Our final sample consists of 129 firms.

Variable Measurements

The following variables are constructed using the raw data from Compustat S&P 500 and proxy statements filed by the firms.

Strategic Orientation (STRATEGY). A firm's strategic orientation is determined based on cluster analyses on the following variables: R&D Intensity (ratio of research and development expenses to total sales revenues), Asset Utilization Efficiency (ratio of total sales revenues to total assets), and Premium Price Capability (ratio of gross margin to total sales revenues). Two distinct clusters are extracted from a hierarchical cluster analysis. Cluster one consists of 58 firms and cluster two consists of 71 firms. T-tests are performed to compare between the two clusters in terms of R&D Intensity, Asset Utilization Efficiency and Premium Price Capability. The results of these tests indicate that cluster one has significantly higher scores for R&D Intensity and Premium Price Capability but a significantly lower score for Asset Utilization Efficiency as compared to cluster two. Consequently, we consider firms in cluster one as those that pursue a product differentiation strategy and firms in cluster two as those that pursue a strategy of cost leadership.

Board Independence (IND). Board independence is proxied by the ratio of outside directors to total number of directors in the board. Outside directors are those whose principal occupations are not with the company as indicated in the proxy statements. Retirees who are on the board of directors are also considered outside directors.

Managerial Ownership (MOWN). Managerial ownership is measured as the ratio of shares beneficially owned by all directors and executive officers of the firm to total number of common shares outstanding. This ratio excludes unexercised option shares exercisable in future periods.

Performance (PERFORM). Various measures have been used in the literature to measure firm performance. While market-based measures tend to be more objective than accounting-based measures, they are affected by many uncontrollable factors. Hutchinson and Gul (2003) argue that accounting-based performance measures reflect the result of managers' actions and therefore are preferable to be used when investigating the relationship between corporate governance variables and firm performance. In this study, return on investment (ROI) is used to measure firm performance. Return on investment is measured as income before extraordinary items divided by total invested capital which is the sum of total long-term debt, preferred shares, minority interest and total common shares equity. Simons (2000) argues that since investors in a firm monitor their investment returns carefully and hold top managers accountable for these returns, it is not surprising that the single most important measure for investor is return on investment.

Control Variables. We control for firm size (ASSET), leverage (LEV), board size (BSIZE), and large shareholders (OWN 5%). Firm size has been extensively used as a control variable in the empirical analysis of firm performance. A number of authors (e.g., Frank and Goyal 2003; Ramaswamy 2001) have suggested that firm size might influence firm performance. We use logarithm of average total assets as the indicator of size. Leverage influences firm performance through monitoring activities by debt holders. We measure leverage as total liabilities divided by total equity. The size of the board of directors is expected to be associated with firm performance through the relative influence of CEO on various board sizes. Yermack (1996) argues that larger boards are less effective and more susceptible to the influence of the CEOs. Total number of directors on the board is used to measure board size. Previous studies (e.g., Core et al.. 1999; Cyert et al. 2002) indicate that large shareholders also affect firm performance by monitoring the CEOs to mitigate agency problems and to increase efficiency. We measure large shareholders as the ratio of stock owned by five percent or more shareholders to total number of common shares outstanding.

Data Analysis and Result

Table 1 shows the Pearson's correlation for all variables used in this study without partitioning by competitive environment and strategic orientation. Consistent with previous findings (e.g., Young 2003; Singh and Davidson III 2003; Hermalin and Weisbach 1991), the direct effect of board independence and managerial share ownership are not statistically significant. The relationship between board independence and performance is positive but not statistically significant while the relationship between managerial ownership and performance is negative but not statistically significant.

Table 2 presents descriptive statistics on the variables used in this study for all sample and partitioned by competitive environment and strategic orientation. We use the Herfindahl index that represents the degree of industry concentration[1] as a proxy for competitive environment. Following Cohen at al. (2003) suggestion, we use units of standard deviation of the mean to indicate the types of competitive environment. We classify our sample firms into dynamic, stable, and medium competitive environment. A firm is classified as operating in a dynamic environment if the Herfindahl index of the firm is one-half standard deviation below the mean. If a firm's Herfindahl index is one-half standard deviation above the mean, the firm is considered to be operating in a stable environment. A firm is considered operating in a medium competitive environment if the Herfindahl index of the firm is between the two extreme values.

Table 1. **Pearson's Correlations among Variables for Overall Sample**

Variable	1	2	3	4	5	6	7
ROI	1						
IND	0.161	1					
MOWN	-0.078	-0.228 **	1				
ASSET	0.019	0.264 ***	-0.234 ***	1			
LEV	0.041	0.344 ***	-0.098	0.342 ***	1		
BSIZE	-0.144	0.199 **	-0.303 ***	0.619 ***	0.345 ***	1	
OWN5%	-0.108	-0.047	0.102	-0.257 ***	-0.098	-0.016	1

[1] The industry concentration ratios are calculated as the sum of the squares of the market shares of all firms in an industry. The higher the ratios, the more concentrated the industry. Therefore, higher ratios are associated with stable competitive environment and lower ratios are associated with dynamic competitive environment.

Table 2. **Descriptive Statistics**

	ROI	IND	MOWN	ASSET	LEV	BSIZE	OWN5%
Panel A: All Sample (n=129)							
Mean	8.762	0.745	0.062	3.665	1.557	10.127	0.162
S.D.	16.027	0.111	0.089	0.519	1.308	2.652	0.132
Min	-116.350	0.290	0.060	2.560	0.110	4.000	0.000
Max	40.150	0.950	0.400	5.100	7.640	17.000	0.791
Panel B: Partitioned by Competitive environment and Strategic Orientation							
High Intensity (n=59)							
a. Product differentiation strategy (n=25)							
Mean	14.683	0.748	0.051	3.719	1.299	10.757	0.150
S.D.	9.606	0.094	0.090	0.500	0.813	2.106	0.120
Min	4.440	0.490	0.006	3.030	0.350	6.400	0.000
Max	40.150	0.860	0.328	4.550	3.340	14.400	0.480
b. Strategy of Cost leadership (n=34)							
Mean	9.057	0.757	0.076	3.837	2.014	11.086	0.179
S.D.	6.606	0.116	0.105	0.536	1.397	2.775	0.139
Min	-3.580	0.470	0.026	2.570	0.230	4.000	0.000
Max	27.830	0.930	0.051	5.100	7.640	17.000	0.578
t-test	2.761***	0.298	0.946	0.860	2.289**	0.488	0.821
Medium Intensity (n=28)							
a. Product differentiation strategy (n=9)							
Mean	14.472	0.783	0.056	3.472	2.091	9.867	0.181
S.D.	9.127	0.076	0.049	0.513	2.232	2.435	0.156
Min	0.990	0.670	0.014	2.820	0.300	7.400	0.000
Max	27.530	0.890	0.123	4.330	7.500	13.800	0.512
b. Strategy of Cost leadership (n=19)							
Mean	11.139	0.743	0.056	3.557	1.765	9.832	0.185
S.D.	11.261	0.098	0.097	0.433	1.377	2.256	0.185
Min	-3.410	0.580	0.003	2.830	0.370	6.800	0.000
Max	42.520	0.880	0.401	4.120	4.880	15.200	0.791
t-test	0.773	-1.084	-0016	0.457	0.477	-0037	0.061

Continued from Table 2

	ROI	IND	MOWN	ASSET	LEV	BSIZE	OWN5%
Low Intensity (n=42)							
a. Product differentiation strategy (n=24)							
Mean	-0163	0.696	0.080	3.446	0.603	7.957	0.129
S.D.	30.155	0.133	0.101	0.547	0.467	2.621	0.101
Min	-116.350	0.290	0.007	2.560	0.110	4.800	0.000
Max	24.200	0.950	0.369	4.590	1.840	14.800	0.355
b. Strategy of Cost leadership (n=18)							
Mean	6.516	0.769	0.037	3.769	1.836	10.819	0.161
S.D.	11.689	0.111	0.033	0.467	1.191	2.262	0.094
Min	-35.570	0.540	0.003	3.000	0.120	5.600	0.000
Max	18.160	0.910	0.112	4.600	5.070	13.800	0.333
t-test	-0889	1.893*	-1.727*	2.015*	4.631***	3.682***	1.050***

***, **, and *, denote significance level at .01, .05, and .10 respectively.

Table 3. **Regression of Return on Investment on Strategic Orientation, Board Independence, Managerial Ownership, Total Assets, Board Size, and Leverage Partitioned by Competitive environment**

		Results		
Variable	**Prediction**	**Coefficient β**	**t-values**	**p-values[a]**
Panel A: Dynamic competitive environment (n=59)				
Intercept			6.374	0.000 ***
STRATEGY	+	0.672	1.880	0.033 **
IND	+	0.199	1.665	0.050 **
MOWN	-	-0080	-0647	0.261
STRATEGY*IND	+	0.479	3.973	0.000 ***
STRATEGY*MOWN	-	-0201	-1.661	0.052 *
ASSET	+	0.233	1.977	0.027 **
LEV	-	0.054	-0426	0.336
BSIZE	?	0.211	1.777	0.081 *
OWN5%	-	0.284	-2.422	0.009 ***
R^2		0.229		
Adjusted R^2		0.215		
F				0.000 ***

Continued from Table 3

Variable	Prediction	Results		
		Coefficient β	t-values	p-values[a]
Panel B: Medium Competitive environment (n=28)				
Intercept			5.971	0.000 ***
STRATEGY		0.145	0.797	0.216
IND		-0070	-0380	0.354
MOWN		-0059	-0317	0.377
STRATEGY*IND		0.007	0.418	0.340
STRATEGY*MOWN		0.046	0.246	0.404
ASSET		-0136	-0718	0.240
LEV		-0079	-0420	0.339
BSIZE		-0102	-0551	0.587
OWN5%		-0384	-2.119	0.022 **
R^2		0.147		
Adjusted R^2		0.114		
F				0.440
Panel C: Stable competitive environment (n=42)				
Intercept			0.657	0.516
STRATEGY	-	-0161	-0223	0.412
IND	+	0.341	0.560	0.289
MOWN	-	-0180	-0209	0.418
STRATEGY*IND	-	-0144	-0268	0.395
STRATEGY*MOWN	+	0.103	0.110	0.456
ASSET	-	-0279	-1.067	0.147
LEV	+	0.098	0.405	0.344
BSIZE	?	-0020	-0035	0.486
OWN5%	+	-0029	-0144	0.443
R^2		0.083		
Adjusted R^2		0.076		
F				0.310

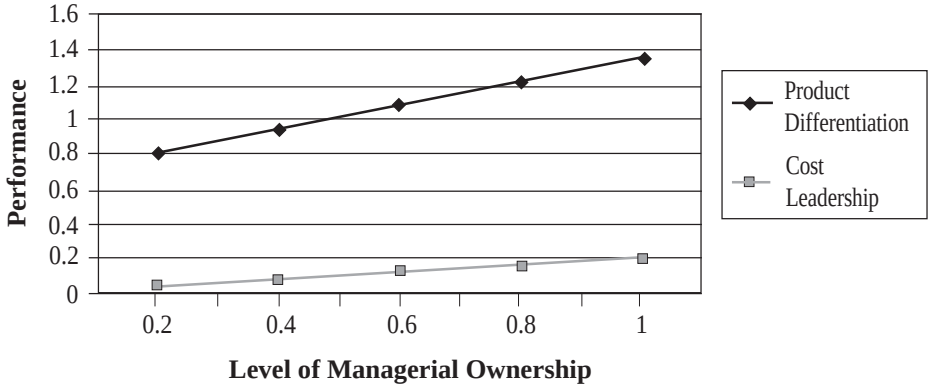
[a] The p-values are based on two-tailed tests, except in cases of a directional prediction, where we use a one-tailed test.

As predicted, when the competitive environment is dynamic, firms pursuing a product differentiation strategy perform better than those pursuing a strategy of cost leadership (t=2.761, p<0.01). However, the results indicate that although cost leadership firms perform better than product differentiation firms in a stable environment (as predicted), the performance differential is not statistically significant. The performance differential of these two groups of firms is also not statistically significant for firms operating in a medium competitive environment.

Table 3 presents the results of the regression analysis. In a dynamic competitive environment (Panel A), the F-statistics is highly significant (p<0.01; Adjusted R^2 = 0.215). Consistent with the descriptive evidence, when the competitive environment is dynamic, $\tilde{a}_1$, the coefficient on STRATEGY, is significantly positive (t = 1.880, p = 0.033), indicating that firms pursuing a product differentiation strategy perform better than those pursuing a strategy of cost leadership. The performance advantage of firms pursuing a product differentiation strategy over firms pursuing a strategy of cost leadership increases as the level of board independence increases (i.e., the coefficient on STRATEGY*IND is significantly positive, t = 3.973, p<0.001). These results support hypothesis H1. Also as expected, managerial ownership mitigates the performance advantage of firms pursuing a product differentiation strategy over firms pursuing a strategy of cost leadership (i.e., the coefficient on STRATEGY*MOWN is marginally significantly negative, t = -1.661, p = 0.052). The result is consistent with hypothesis H3.

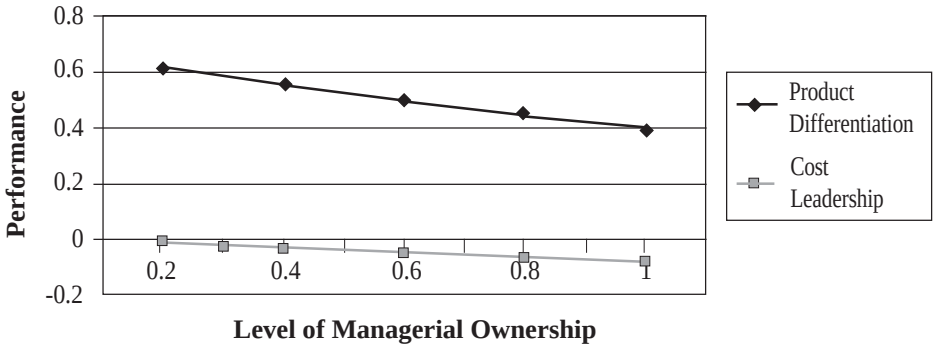
Figure 1. **Interactive Effect of Board Independence and Managerial Ownership on the Relationship between Strategic Orientation on Performance when Competitive Environment is High**

Panel A: Board Independence[a]



Continued from Figure 1

Panel B: Managerial Ownership[b]



[a] The graph shows predicted values of ROI base on the regression estimates reported on Table 3. The values of ROI for firms that pursue a product differentiation strategy are the sum of the estimated coefficients for the intercept, STRATEGY, IND, and STRATEGY*IND. The values of ROI for firms that pursue a strategy of cost leadership are the sum of the estimated coefficients for the intercept and IND.

[b] The graph shows predicted values of ROI base on the regression estimates reported on Table 3. The values of ROI for firms that pursue a product differentiation strategy are the sum of the estimated coefficients for the intercept, STRATEGY, MOWN, and STRATEGY*MOWN. The values of ROI for firms that pursue a strategy of cost leadership are the sum of the estimated coefficients for the intercept and MOWN.

In a stable competitive environment (Panel C), although cost leadership firms perform better than product differentiation firms (the coefficient on STRATEGY is negative), the performance differential is not statistically significant. Hypothesis H2 predicts that the performance advantage of cost leadership firms over product differentiation firms will decrease as the level of board independence increases. The result indicates that the effect of board independence on the performance differential is not statistically significant ($t = -0.268$; $p = 0.395$).

Hypothesis H4 predicts that the performance advantage of cost leadership firms over product differentiation firms will increase as the level of managerial ownership increases. The result reveals that the impact of managerial ownership on the performance advantage of cost leaders over product differentiators is not statistically significant ($t = 0.110$; $p = 0.456$).

Figure 1 illustrates the interactive effects of board independence and managerial ownership on the performance differential of product differentiation firms (cost leadership firms) in dynamic (stable) environments. Panel A of Figure 1 indicates that in a dynamic competitive environment, firms pursuing a product differentia-

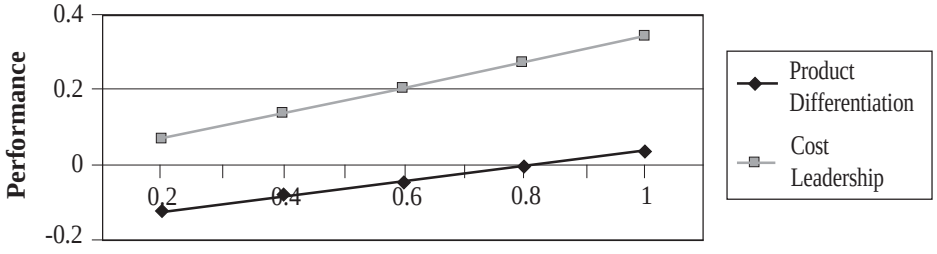
tion strategy perform better than firms pursuing a strategy of cost leadership, and the performance advantage increases as the level of board independence rises. This result supports the notion that in a dynamic competitive environment, firms pursuing a product differentiation strategy benefit more from increased level of board independence as compared to firms pursuing a strategy of cost leadership.

Panel B of Figure 1 reveals that in a dynamic competitive environment, managerial ownership negatively affects performance for firms pursuing a product differentiation strategy and firms pursuing a cost leadership strategy. Panel B of Figure 1 also shows that the performance differential of product differentiators over cost leaders decreases as the level of managerial ownership increases.

Figure 2 illustrates the interactive effects of strategic orientation and managerial share ownership on firm performance in a stable competitive environment. Panel A of Figure 2 indicates that in a stable competitive environment, firms pursuing a cost leadership strategy perform better than firms pursuing a product differentiation strategy and the performance advantage increases as the level of board independence rises. Panel B of Figure 2 reveals that in a stable competitive environment managerial ownership positively affects performance for both cost leaders and product differentiators; and the performance differential increases as the level of managerial ownership increases.

Figure 2. **Interactive Effect of Board Independence and Managerial Ownership on the Relationship between Strategic Orientation on Performance when Competitive Environment is Low**

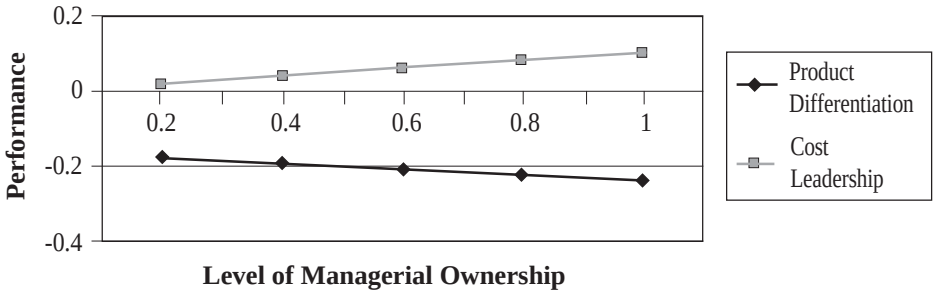
Panel A: Board Independence[c]



[c] The graph shows predicted values of ROI base on the regression estimates reported on Table 3. The values of ROI for firms that pursue a product differentiation strategy are the sum of the estimated coefficients for the intercept, STRATEGY, IND, and STRATEGY*IND. The values of ROI for firms that pursue a strategy of cost leadership are the sum of the estimated coefficients for the intercept and IND.

Continued from Figure 2

Panel B: Managerial Ownership[d]



[d] The graph shows predicted values of ROI base on the regression estimates reported on Table 3. The values of ROI for firms that pursue a product differentiation strategy are the sum of the estimated coefficients for the intercept, STRATEGY, MOWN, and STRATEGY*MOWN. The values of ROI for firms that pursue a strategy of cost leadership are the sum of the estimated coefficients for the intercept and MOWN.

Discussion, Limitations, and Implications for Future Research

This paper investigates the impacts of misfit competitive environment, business strategy and governance structure on the performance of firms. The results of this study indicate that in the dynamic environment, firms pursuing a product differentiation strategy perform better than those pursuing a strategy of cost leadership, and that board independence has a positive impact on the performance advantage of product differentiators over cost leaders. The results indicate that although product differentiators and cost leadership firms benefit from the increased level of board independence, firms pursuing a product differentiation strategy benefit more from increased level of board independence as compared to firms pursuing a strategy of cost leadership. This is because outside directors are able to perform relational and strategic management roles better than can inside directors in dealing with high environment uncertainty faced by product differentiators. This result supports previous studies proposing that a product differentiation strategy is a match with a dynamic competitive environment, and boards composed predominantly of outside directors will help product differentiators cope with uncertainty better (Zahra 1996).

With regards to managerial share ownership, the results show that as the level of managerial ownership increases, the performance advantage of product differentiators over cost leaders decreases. This result is consistent with our prediction that substantial managerial ownership leads to undesirable risk avoidance behavior and causes unwillingness to engage in risky

but strategically important projects such as research and development investments. This behavior causes the product differentiators' performance to decrease.

In the stable competitive environment, cost leadership firms perform better than product differentiation firms, and the performance differential is affected by board independence and managerial share ownership. The results show that the performance differential between cost leaders and product differentiators is not statistically significant. These results do not support our view and prediction that risk avoidance behavior of management may cause managers to choose safety investments, focus on the current operations, and run the firm more efficiently.

The results of this study may remind practitioners that despite the competitive environment and strategy chosen by a firm, increasing dominance of outside directors in the board will be beneficial to the firm. Outside directors are able to deal more effectively with uncertainties involving firms' customers, suppliers, technologies, and economic circumstances (Zahra and Pearce 1998), and their knowledge and experience of external affairs can more viably reduce uncertainties surrounding the formulation and implementation of strategy (Dallas 2001). On the other hand, practitioners have to consider carefully the level of managerial ownership in the product differentiation firms operating in a dynamic competitive environment since it decreases firm performance due to excessive risk carried by managers. But for cost leaders in the stable environment, high level of managerial ownership enables the owner-manager to have plenty of information to make decisions focusing on efficiency.

The findings of this study suggest that the misfit between environment, strategy and governance has a negative consequence on performance. These results are consistent with those reported by Burton et al. (2002). Based on a study of small- and medium-sized production and service corporations in Denmark, Burton et al. (2002) report that situational and contingency misfits negatively affect firm performance in terms of return on assets.

The results of this study should be interpreted in light of two limitations. Firstly, this study determines competitive environment based on the Herfindahl index published every five years, which represents the market share of the firms. Further research may consider other factors such as the incremental number of new firms in the industry and government regulations to capture the intensity of competition. Secondly, the strategy of a firm in this study is determined using R&D Intensity, Asset Utilization Efficiency and Premium Price Capability. These proxies might not accommodate all aspects of strategy formulation and implementation in the firms. Further study may consider using primary data to measure the intended strategy that managers choose to manage the company.

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