

# The Moderating Effects of Resources and Control Systems on the Relationship between Diversification Strategy and Performance

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## ABSTRACT

This paper attempts to examine the moderating effects of resources and control systems on the relationship between diversification strategies and performance. Empirical results from 127 diversified firms reveal that generating better performance from different diversification strategies requires distinctly different control systems and resources. Firms pursuing lowly diversification to realize better performance need to adopt control systems of either strategic controls or financial controls and focus on organizational, human and intangible resources; while those pursuing highly diversification need to adopt financial controls and focus on resources of human and intangible resources. These findings suggest that executives of diversified firms should be cognizant of several contingencies that might have the effects on the performance of their firms. The value of any approach to diversification strategies can be augmented or diminished by simultaneously managing the firm resources and control systems..

Keywords: diversification, resources, control systems

## INTRODUCTION

The diversification strategy is considered to be a powerful strategy when firms attempt to expand and develop their businesses. Therefore, the relationship between diversification strategy and performance has been the focus of extensive research (e.g. Rumelt, 1974; Wernerfelt & Montgomery, 1988; Hill, Hitt & Hoskisson, 1992). However, the findings of studies attempting to demonstrate the effects of diversification on performance remain inconclusive. One of the possible explanations is a significant amount of research has ignored the importance of implementation on the strategy-performance relationship. It is argued that the success of a diversification strategy depends on how it is implemented (Chandler, 1962). Diversification strategy alone will not produce superior performance. To

realize the economic benefits of diversification, the firm must make good use of resources and adopt the appropriate internal control systems.

Accordingly, the objective of the current study is to explore how resources and control systems influence the relationship between diversification strategy and performance. More specifically, the study presented here is conducted in the context of conglomerates in Taiwan, where the diversification strategy is a key to develop. This paper makes a substantial contribution to understanding resources and control systems as moderating variables because little empirical evidence has been available on the effects of performance in diversified firms.

The intent of this article is to demonstrate the relationship of diversification strategy and performance and to present evidence of its related specific moderating effects. The paper is organized as follows. The next section gives a summary of the foundations for the research, presents the proposed model and variables as well as the specific hypotheses to be tested. Section 3 of the paper describes the data collection procedures and research variables. Section 4 presents the results of analyses and discusses the degree to which they support the model and the hypotheses. Section 5 presents a summary of the results.

## **LITERATURE REVIEW AND HYPOTHESES**

### **1. Diversification Strategy**

Firms implement a diversification strategy as their corporate-level strategy for many reasons, including enhancing the strategic competitiveness of the entire company, gaining market power relative to competitors, neutralizing a competitor's market power, or expanding a firm's portfolio in order to reduce managerial employment risk (Hitt, Ireland & Hoskisson, 1997). Whatever reason for diversification a firm has, diversified firms vary according to the level of diversification and connection between and among their businesses. The categories of businesses according to increasing levels of diversification involve single business, dominant business, related business and unrelated business (Rumelt, 1974). Apparently, single business is the lowest level of diversification.

### **1.1. Dominant Business**

These firms have long-linked chains of activities. The role of corporate management in such firms is to coordinate these chains and keep them smooth (Harrigan, 1983). Rumelt (1974) argued that in this type of firm general management must view the firm as a whole when considering the effect of any change in operations or resource allocation.

### **1.2. Related Business**

Firms own a number of different business units, all of which are related in some way. Under related diversification firms utilize common distribution channels, engage in common advertising campaigns when their products are compatible, share marketing and technological information for mutual gain, transfer skills between activities, and share manufacturing facilities. Therefore, related diversification allows for reciprocal information flow from corporate managers to divisional managers.

### **1.3. Unrelated Business**

Unrelated firms diversify into substantively different areas that have little in common with each other. The coordination requirements imposed on top management are primarily financial and consist of allocation capital and monitoring performance through highly quantitative control systems (Dundas and Richardson, 1982). Corporate managers generally refrain from direct intervention in divisional strategy and do not seek synergistic relations between divisions, as both those activities would compromise divisional autonomy and accountability, hence destroying the efficiency of capital allocation and performance monitoring (Hoskisson, 1987; Williamson, 1975). This leads to corporate managers treating divisions as if they were part of a portfolio. In addition, it allows firms to pool cash flows from divisions and reallocate cash to divisions in accordance with financial criteria (Rowe and Wright, 1997).

## **2. Diversification and Control Systems**

It is argued that the multidivisional structure (M-form) is the appropriate organizational form for diversified firms (Chandler, 1962) and the evidence

suggests that most diversified firms do operate with an M-form structure (Hill and Pickering, 1986; Rumelt, 1974). In addition, the M-form has replaced the U-form and become the predominant structural organizational form (Hoskisson, Harrison, and Dubofsky, 1991). In Taiwan, diversified firms develop into the conglomerates that is the implementation of M-form structure. Williamson (1975) posited that use of the M-form overcomes the problems of loss of control and loss of direction inherent in U-form as they become larger. The adoption of M-form structure and internal controls facilitate the development of diversification. In the mean time, the match between control systems and strategy is a must to accomplish the economic benefits of diversification (Hill and Hoskisson, 1987). Therefore, control systems in a conglomerate are a key to the success of diversification. It is suggested that control arrangement within a basic M-form framework must be consistent with a firm's corporate diversification if the firm is to realize the economic benefits associated with that strategy (Baysinger and Hoskisson, 1989; Goold, Campbell, and Alexander, 1994; Hill and Hoskisson, 1987).

Financial controls are used in unrelated diversification for managing firms decentralize responsibility and allocate resource through an internal competitive process (Dundas and Richardson, 1982; Hill and Hoskisson, 1987; Williamson, 1975). Baysinger and Hoskisson (1989) proposed that if highly diversified firms are to realize better firm performance, they must use financial controls. Further, Hill, Hitt and Hoskisson (1992) argued that unrelated firms using financial controls have the positive effect on performance. Herein, financial controls entail evaluating divisional performance solely on the basis of objective financial performance. Rowe and Wright (1997) argued that these unrelated firms use financial controls to produce an emphasis on fit among divisional practices.

In contrast, strategic controls are used in more limited diversification for managing firms emphasize resource sharing, cooperating, and working closely (Gupta, 1987; Hoskisson and Hitt, 1988). Baysinger and Hoskisson (1989) proposed that if related firms are to realize better firm performance, they must use strategic controls. Further, Hill, Hitt and Hoskisson (1992) argued that related firms using strategic controls have the positive effect on performance. Strategic controls entail seeking to control divisional performance through specifying and evaluating the types of activities in which the division is engaged and will engage. Rowe and

Wright (1997) argued that related firms use strategic controls to produce an emphasis on flexibility among divisional practices.

From the above discussion, the following hypotheses are proposed:

**H1a. Strategic control moderates the relationship between diversification strategy and performance: Lower diversification will be positively related to firm performance when the firm uses strategic control.**

**H1b. Financial control moderates the relationship between diversification strategy and performance: Higher diversification will be positively related to firm performance when the firm uses financial control.**

### 3. Diversification and Resources

Resources are inputs into a firm's production process such as capital equipment, the skills of individual employees, patent, finance and talented managers. Broad in scope, resources cover a spectrum of individual, social, and organizational phenomena (Meyer, 1991). Some of a firm's resources are tangible; others are intangible. Tangible resources are assets that can be seen and quantified, including financial, physical, human, and organizational resources (Barney, 1992; Grant, 1991). Intangible resources involve technological resources, resources for innovation, and reputation (Grant, 1991; Hall, 1992).

A firm must possess the resources required to make diversification economically feasible. As mentioned earlier, tangible, intangible and financial resources may facilitate diversification. Resources vary in their utility for value creation (Hitt, et. al., 1997). Physical resources usually include the plant and equipment necessary to produce a product. Such assets are less flexible, and any excess capacity of these resources often can be used only for very closely related products. Therefore, physical resources were excluded in this study. As for the other tangible resources may create resource interrelationships in production, marketing, procurement, and technology, defined earlier as activity sharing. Intangible resources would be more flexible than actual tangible physical assets in facilitating diversification. There is little sharing of tangible or intangible resources, thus no value is created. As for financial resources are more flexible and common, they are less likely to create value as compared to other types of resources. The

more flexible, the more likely the resources will be used for unrelated diversification; the less flexible, the more likely the resources will be used for related diversification (Hoskisson & Hitt, 1990).

Firms that have selected related diversification as their corporate-level strategy seek to exploit economies of scope between business units. Available to firms operating in multiple industries or product markets (Porter, 1985), economies of scope are cost savings attributed to transferring the capabilities and competencies developed in one business to a new business without significant additional costs. Firms seek to create value from economies of scope through sharing activities and transferring core competencies. Wherein, resources must be shared to create economies of scope (Hitt, Ireland & Hoskisson, 1997). In contrast, an unrelated diversification strategy can create value through financial economies. Financial economies are cost savings realized through improved allocations of financial resources based on investments inside or outside the firm (Hill, 1994). Apparently, a diversified firm must create value through employing resources appropriately.

The following hypotheses will therefore be tested:

**H2a. Organizational resources moderates the relationship between diversification strategy and performance.**

**H2b. Human resources moderates the relationship between diversification strategy and performance.**

**H2c. Intangible resources moderates the relationship between diversification strategy and performance.**

**H2d. Financial resources moderates the relationship between diversification strategy and performance.**

## METHODS

### 1. Research Framework

The research framework of this study was shown in Figure 1. As previously discussed, the relationship between diversification strategy and performance should be moderated by control systems and resources.

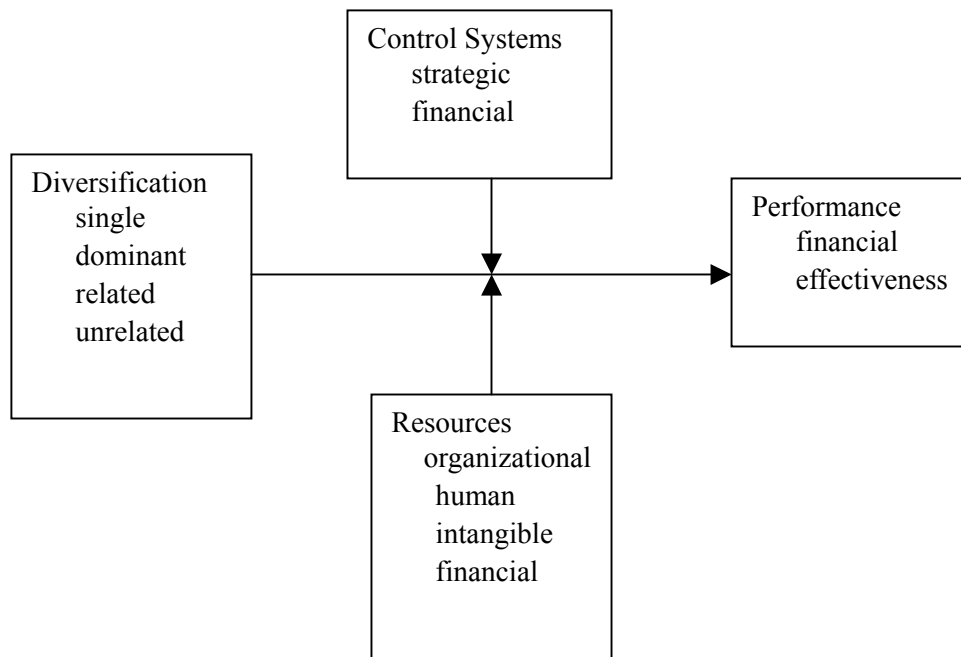


Figure 1. Research Framework

## 2. Sample and data collection

Because the objective of the study was to assess the performance of diversification strategy, it was important to consider diversified firms. In order to ensure the firms are diversified, the following criterion was retained: all firms operated in one more 4-digit SIC (Standard Industrial Classification) code segments. Data for the study was collected from companies selected from both “2000/1999 Group Companies in Taiwan” and “Top 500 Largest Corporations in Taiwan” published by China Credit Information Service, LTD. A total of 692 firms were identified and managed for the survey.

The presidents of each firm were contacted by phone to ask for their participation in the study. As part of a larger research project, each president was mailed a cover letter and a questionnaire designed to assess diversification strategy, control systems, resources and performance. After three weeks, a prompting letter and a second questionnaire identical to the first were mailed to all those presidents who had not yet responded. In total, 145 of 692 presidents returned questionnaires (21% response rate), and 127 were usable.

### 3. Measures

#### 3.1. Diversification Strategy

Self-typing is one of four methods of measuring strategy according to Snow and Hambrick (1980). Montgomery (1982) found that there was a high correlation between SIC-based measured of diversification and Rumelt's subjective measure. Hoskisson, Hitt, Johnson and Moesel (1993) found that it may be more appropriate to use the diversification factor with both the entropy and Rumelt subjective measures for maximum accuracy. Therefore, The questionnaire measured self-reported corporate strategy using Rumelt's (1974) classification of diversification strategies. The categories were presented along with their descriptions: (1) single business: 95 percent or more of sales are from one business, (2) dominant business: 70-94 percent of sales are derived from its largest business, (3) related business: firms in which the proportion of sales from its largest business is less than 70 percent and diversification has been primarily achieved through related products or similar markets, (4) unrelated business: firms whose proportion of sales from its largest single group of related businesses is less than 70 percent and diversification has been primarily achieved without regard to relationships between new and old business. From the questionnaire responses, we assigned a four-point ordinal scale based on degree of diversification (1=single to 4=unrelated). Previous empirical studies by Keats and Hitt (1988), Michel and Hambrick (1992) and Goll and Sambharya (1995) support assigning an ordinal ranking to Rumelt's diversification scheme.

#### 3.2. Control Systems

We employed two different measures to characterize control systems. (1) Financial controls. The financial control factor was composed of three items modified from a scale used by Hitt, Hoskisson, Johnson and Moesel (1996). These items assessed the importance of financial control measures and procedures in evaluating divisional managers' performance on a seven-point Likert scale. The four items were (a) return criteria such as return on assets, return on invested capital, and so on, (b) cash flows, (c) objective strategic criteria such as return on investment, and (d) formal reports from management information systems received



by headquarters. The coefficient alpha for the scale was 0.86. (2) Strategic controls. The strategic control variable was composed of three survey items used by Hitt, Hoskisson, Johnson and Moesel (1996). These items indicate the emphasis on using strategic controls in evaluating division managers' strategies and performance on a seven-point Likert scale. The three items were (a) formal face-to-face meetings between headquarters and subunit personnel, (b) informal face-to-face meetings between headquarters and subunit personnel, and (c) subjective strategic criteria, such as attributes of marketing strategy internal to a firm. The coefficient alpha for the scale was 0.87.

### **3.3. Resources**

To measure resources, we employed a sixteen-item, seven-point Likert scale adapted from the work of Lin (1996) and Wu (1996). Orthogonal factor analysis of the 16 items resulted in four factors, factor capturing organizational resources, factor individual resources, factor intangible resources and factor financial resources. The alpha coefficients for these factors were 0.85, 0.71, 0.75 and 0.73, respectively.

### **3.4. Performance**

There is increasing recognition in the literature that business performance is a complex and multi-dimensional phenomenon that incorporated diverse achievement (Ford & Schellenberg, 1982), and we designed our performance measure to reflect this broader conceptualization. We employed two different sets of measures to characterize performance. (1) Financial performance. This study measured financial performance through three variables: return on assets (ROA), return on equity (ROE) and sales growth. Respondents rated the performance compared to the competitors on a seven-point Likert scale. The reliability coefficient was 0.75. (2) Effectiveness. Effectiveness was measured using an eight-item, seven-point Likert scale developed by Quinn and Rohrbaugh (1983). The eight items were (a) flexibility: able to adjust well to shifts in external conditions and demands, (b) acquisition of resources: able to increase external support and expand size of work force, (c) planning: goals are clear and well understood, (d) productivity and efficiency: volume of output is high; ratio of output to input is high, (e) availability of information: channels of communication

facilitate informing people about things that affect their work, (f) stability: sense of order, continuity, and smooth functioning of operations, (g) cohesive work force : employees trust, respect, and work well with each other, (h) skilled work force : employees have the training, skills, and capacity to do their work properly. This measure had a reliability coefficient of 0.89.

### 3.5. Control Variables.

There are some factors other than those included in the theoretical model that may affect the performance of a diversified firm. We included two structural variables: firm size and R&D intensity. While these two factors were beyond the scope of this study, their effects were statistically removed to prevent any possible contamination or confounding of the findings. (1) Firm size. Firm size defined as the number of employees, has been shown to influence diversification (Hoskisson, et al., 1993) and was included in the study. This was measured using the number of full time employees. (2) R&D intensity. R&D intensity has been showed to impact the capability for firms to diversify (Baysinger and Hoskisson, 1989). We measured the variable through the ratio of expenditure of R&D in a firm.

## RESULTS

Table 1. Means, Standards Deviations and Intercorrelations

Variables	Mean (SD)	1	2	3	4	5	6	7	8	9	10
1.Size	2.72 (1.65)										
2.R&D	1.81 (0.39)	-0.02									
3.Diversification	2.38 (0.91)	0.43	0.02								
4.Organizational R.	5.61 (0.74)	-0.20	0.17	-0.29							
5.Individual R.	5.62 (0.73)	-0.09	-0.03	-0.26	0.39						
6.Intangible R.	5.36 (0.90)	0.05	0.02	0.02	-0.01	0.28					
7.Financial R.	5.59 (0.64)	0.39	0.04	0.29	-0.22	-0.08	0.02				
8.Strategic Controls	5.04 (1.27)	-0.01	0.15	0.07	0.17	0.30	0.24	0.01			
9.Financial Controls	4.36 (1.46)	0.26	0.03	0.01	0.24	0.25	0.29	0.17	0.37		
10.Performance	5.21 (0.98)	0.29	0.03	0.05	0.18	0.34	0.36	0.21	0.39	0.76	
11.Effectiveness	5.09 (0.85)	0.24	0.16	0.05	0.01	0.32	0.51	0.22	0.36	0.52	0.62

Note: R=resource

$|r| > 0.18$  is significant at  $p < 0.05$

The means, standard deviations, and correlations are showed in Table 1. In order to eliminate the effect of multicollinearity on the interaction of variables, this study transformed all independent variables into centered mean for the following analysis (Cronbach, 1987).

## 1. Diversification, Control Systems and Performance

In this section, we examined the moderating effect of strategic and financial controls respectively.

### 1.1. Strategic Controls and Performance

Table 2. Hierarchical Regression of Strategic Controls and Performance (N=127)

Dependent Variable	Financial Performance			Effectiveness		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	5.43***	5.43***	5.45***	5.09***	5.09***	5.11***
Size	0.19***	0.20***	0.20***	0.13**	0.15**	0.15**
R&D Intensity	0.03	-0.07	0.01	0.36*	0.25	0.32+
Diversification (D)		-0.06	-0.13*		-0.10	-0.16+
Strategic Control (S)		0.21***	0.14**		0.23***	0.18**
D × S			-0.25***			-0.20***
R-square	0.17	0.29	0.43	0.09	0.21	0.29
F	12.53***	10.24***	18.55***	5.84**	8.08***	9.79***
ΔR-square		0.12	0.14		0.13	0.08
F change		25.24**	29.72**		9.27**	13.63**

Note: + $p < 0.10$ , \* $P < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Table 2 shows the results of hierarchical regression analysis for the effect of strategic controls on financial performance and effectiveness. The regression analysis in model 1 controls variables that might confound the empirical relationships of interest. For example, firm size and R&D intensity were entered into the equation as a set to eliminate their extraneous effects on financial performance. This analysis showed R-square=0.17 (F=12.53,  $p < 0.001$ ) for financial performance and R-square=0.09 (F=5.84,  $p < 0.01$ ) for effectiveness.

After controlling for firm and organizational context, model 2 examined the direct effects of diversification strategy and strategic controls on the dependent variables. This model was statistically significant for both financial performance ( $\Delta R$ -square=0.12,  $F$  change=25.24,  $p < 0.01$ ) and effectiveness ( $\Delta R$ -square=0.13,  $F$  change=9.27,  $p < 0.05$ ). The use of strategic controls was a positive predictor of both financial performance ( $\beta = 0.21$ ,  $t = 4.48$ ,  $p < 0.001$ ) and effectiveness ( $\beta = 0.23$ ,  $t = 4.28$ ,  $p < 0.001$ ).

In model 3, the interaction between diversification strategy and strategic controls was added. This model also had an incremental effect on financial performance ( $\Delta R$ -square=0.14,  $F$  change=29.72,  $p < 0.01$ ) as well as effectiveness ( $\Delta R$ -square=0.08,  $F$  change=13.63,  $p < 0.01$ ). The interaction of strategic controls and diversification strategy was negative for both financial performance ( $\beta = -0.25$ ,  $t = -5.61$ ,  $p < 0.001$ ) and effectiveness ( $\beta = -0.20$ ,  $t = -3.66$ ,  $p < 0.001$ ).

These results can be seen graphically in Figures 2 and 3 by using the data from the regression equation to plot four different prediction coordinates (Stone and Hollenbeck, 1984, 1989). In Figure 2, when a combination of high strategic controls (operationalized as one standard deviation above the mean for that variable) and low diversification (one standard deviation below the mean) were entered into the prediction equation, the predicted value for financial performance was above 0.59. In contrast, when the combination of high strategic controls and high diversification were entered into the prediction equation, the predicted financial performance was -0.23.

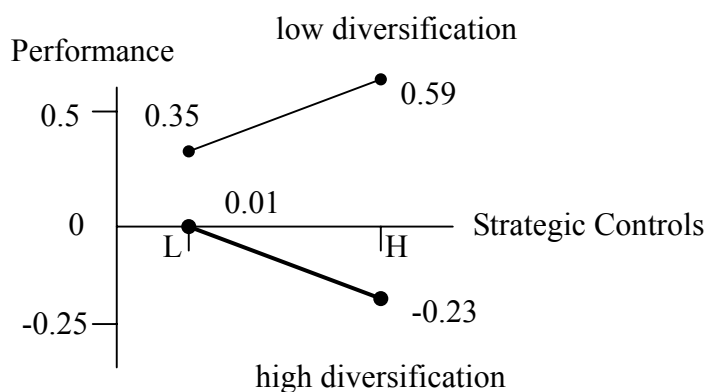


Figure 2. Strategic Controls and Performance

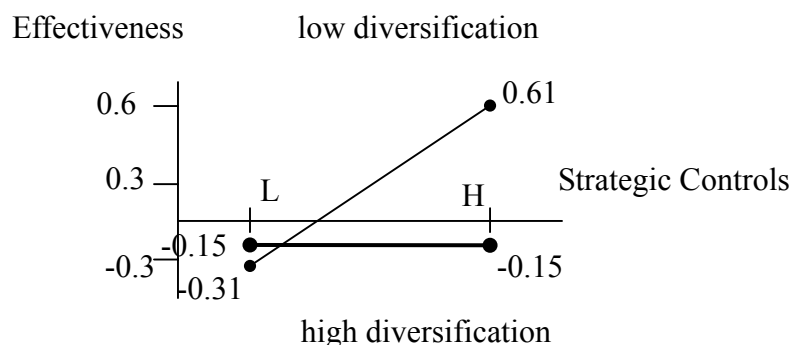


Figure 3. Strategic Controls and Effectiveness

Figure 3 shows that the plots look different for effectiveness. The highest predicted value of effectiveness occurred with the combination of high strategic controls and low diversification (0.61), the lowest predicted value of the dependent variables occurred with the combination of low diversification and low strategic controls (-0.31).

Overall, these findings indicate that when a firm is lowly diversified, the emphasis on strategic controls will make the firm perform better. In contrast, if a firm is highly diversified, the emphasis on strategic controls will make the firm suffer. These findings support H1a.

### 1.2. Financial Controls and Performance

The statistical analysis was repeated once more, this time using financial controls as the focal control systems (results are shown in Table 3). After controlling for firm and structural context, the set of variables entered in model 2 was significant for both financial performance ( $\Delta R$ -square=0.38, F change=51.51,  $p < 0.01$ ) as well as effectiveness ( $\Delta R$ -square=0.22, F change=19.45,  $p < 0.01$ ). In addition, the use of financial controls was a positive predictor of both financial performance ( $\beta = 0.33$ ,  $t = 10.38$ ,  $p < 0.001$ ) and effectiveness ( $\beta = 0.28$ ,  $t = 6.16$ ,  $p < 0.001$ ).

In model 3, the interaction of diversification strategy and financial controls was also significant for both financial performance ( $\Delta R$ -square=0.03, F change=8.64,  $p < 0.01$ ) as well as effectiveness ( $\Delta R$ -square=0.02, F change=3.61,

$p < 0.1$ ). The interaction of diversification strategy and financial controls was a significant predictor for both financial performance ( $\beta = -0.08$ ,  $t = -2.45$ ,  $p < 0.05$ ) as well as effectiveness ( $\beta = -0.09$ ,  $t = -1.88$ ,  $p < 0.1$ ).

Table 3. Hierarchical Regression of Financial Controls and Performance (N=127)

Dependent Variable	Financial Performance			Effectiveness		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	5.43***	5.43***	5.43***	5.09***	5.09***	5.09***
Size	0.19***	0.10**	0.12***	0.13**	0.07	0.09+
R&D Intensity	0.03	-0.02	-0.03	0.36*	0.33*	0.31+
Diversification (D)		0.03	0.01		-0.02	-0.04
Financial Control (F)		0.33***	0.34***		0.28***	0.29***
D × F			-0.08*			-0.09+
R-square	0.17	0.55	0.58	0.09	0.31	0.33
F	12.53***	38.65***	33.39***	5.84**	13.47***	11.71***
$\Delta R$ -square		0.38	0.03		0.22	0.02
F change		51.51**	8.64**		19.45**	3.61+

Note: + $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Figure 4 shows the interaction between diversification strategy and financial controls plotted for financial performance. In this graph, the highest predicted value of performance was for low diversification and high financial controls (0.59). However, the lowest predicted performance occurred when the use of low financial controls was combined with low diversification (-0.61).

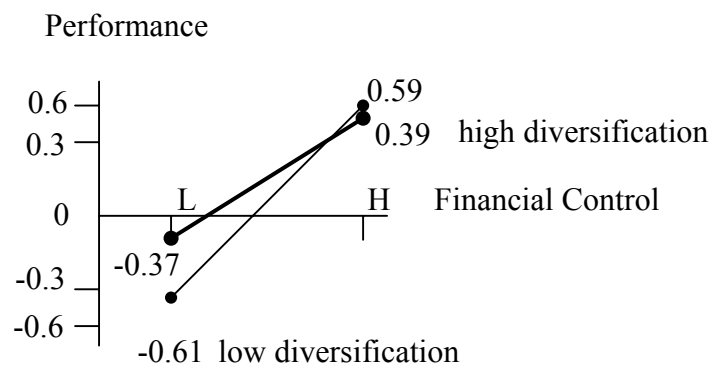


Figure 4. Financial Controls and Performance

Figure 5 shows that the pattern of the interaction is similar when plotted for effectiveness. The highest predicted value of effectiveness was for low diversification and high financial controls (0.58). The lowest predicted value occurred when low diversification was combined with low financial controls (-0.50).

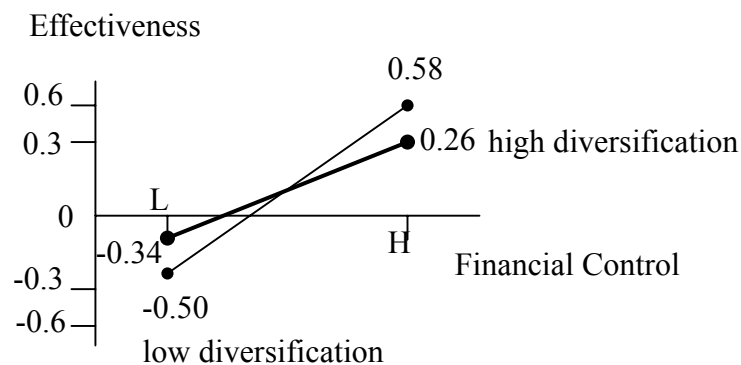


Figure 5. Financial Controls and Effectiveness

Overall, these findings indicate that no matter what diversification strategy a firm uses, the emphasis on financial controls will make the firm perform better. However, the effect of financial controls on performance is greater for lowly diversified firms than for highly diversified firms. These findings support H1b.

## 2. Diversification, Resources and Performance

In this section, we examined the moderating effect of organizational, individual, intangible and financial resources respectively.

### 2.1. Organizational Resources and Performance

Table 4 shows the results of hierarchical regression analysis for the effect of organizational resources on financial performance and effectiveness. After controlling for firm and structural context, the effects of diversification strategy and organizational resources in model 2 did not have a significant increase in financial performance as well as in effectiveness. The set of organizational resources was a positive predictor of financial performance ( $\beta = 0.17, t = 1.86, p < 0.1$ ).

In model 3, the interaction of diversification strategy and financial controls was added. This model had a significant incremental effect on effectiveness ( $\Delta R$ -square=0.03,  $F$  change=4.12,  $p < 0.05$ ) but not on financial performance. The interaction of diversification strategy and financial controls was a significant predictor for effectiveness ( $\beta = -0.26$ ,  $t = -1.86$ ,  $p < 0.1$ ).

Table 4. Hierarchical Regression of Organizational Resources and Performance (N=127)

Dependent Variable	Financial Performance			Effectiveness		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	5.43***	5.43***	5.42***	5.09***	5.09***	5.04***
Size	0.19***	0.20***	0.20***	0.13**	0.14**	0.12*
R&D Intensity	0.03	-0.02	-0.02	0.36*	0.36+	0.41*
Diversification (D)		0.01	0.01		-0.07	-0.08
Org. Resources (O)		0.17+	0.16+		0.02	-0.02
D × O			-0.02			-0.26+
R-square	0.17	0.19	0.19	0.09	0.09	0.12
F	12.53***	7.25***	5.76***	5.84**	3.06*	3.19**
$\Delta R$ -square		0.05	0.00		0.00	0.03
F change		2.47+	0.00		0.00	4.12*

Note: + $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Figure 6 show the interaction between diversification strategy and organizational resources plotted for effectiveness. In this graph, the highest predicted value of performance was for low diversification and high organizational Resources (0.24). However, the lowest predicted performance occurred when the use of high organizational resources was combined with high diversification (-0.26).

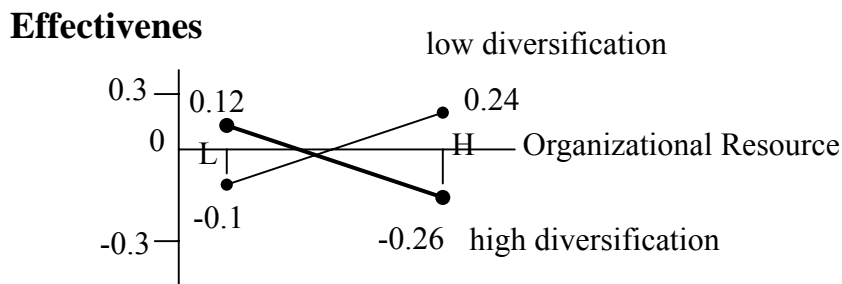


Figure 6. Organizational Resources and Performance



Overall, these findings indicate that the emphasis on organizational resources will facilitate the effectiveness of lowly diversified firms, but in contrary, may have a negative effect on highly diversified firms. These findings partially support H2a.

## 2.2. Human Resources and Performance

Table 5 shows the results of hierarchical regression analysis for the effect of human resources on individual resources and effectiveness. After controlling for firm and structural context, the effects of diversification strategy and human resources accounted for a statistically significant increase in financial performance ( $\Delta R$ -square=0.07,  $F$  change=5.62,  $p<0.05$ ) and effectiveness ( $\Delta R$ -square=0.12,  $F$  change=9.27,  $p<0.01$ ). In addition, the set of human resources was a positive predictor of both financial performance ( $\beta = 0.28$ ,  $t=3.27$ ,  $p<0.001$ ) and effectiveness ( $\beta = 0.41$ ,  $t=4.25$ ,  $p<0.001$ ).

Table 5. Hierarchical Regression of Human Resources and Performance (N=127)

Dependent Variable	Financial Performance			Effectiveness		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	5.43***	5.43***	5.38***	5.09***	5.09***	5.03***
Size	0.19***	0.19***	0.19***	0.13**	0.14**	0.13**
R&D Intensity	0.03	0.05	0.01	0.36*	0.39*	0.34*
Diversification (D)		0.03	0.03		0.02	0.02
Human Resources (H)		0.28**	0.26**		0.41***	0.39***
D × H			-0.30**			-0.40***
R-square	0.17	0.24	0.29	0.09	0.21	0.28
F	12.53***	9.43***	9.76***	5.84**	8.01***	9.45***
$\Delta R$ -square		0.07	0.05		0.12	0.07
F change		5.62**	8.52**		9.27**	11.76**

Note: + $p<0.10$ , \* $P<0.05$ , \*\* $p<0.01$ , \*\*\* $p<0.001$

In model 3, the interaction of diversification strategy and human resources was also significant for both financial performance ( $\Delta R$ -square=0.05,  $F$  change=8.52,  $p<0.01$ ) as well as effectiveness ( $\Delta R$ -square=0.07,  $F$  change=11.76,  $p<0.01$ ). The interaction of diversification strategy and human resources was a significant predictor for both financial performance ( $\beta = -0.30$ ,  $t=-2.95$ ,  $p<0.01$ ) as well as effectiveness ( $\beta = -0.40$ ,  $t=-3.50$ ,  $p<0.001$ ).

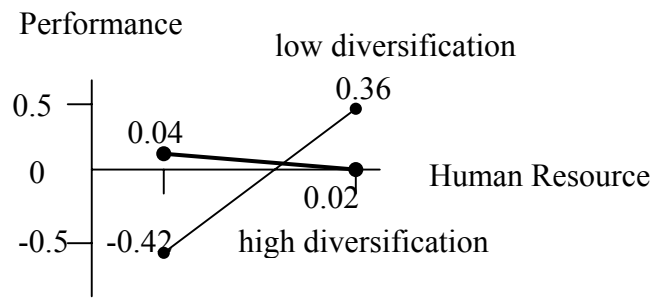


Figure 7. Human Resources and Performance

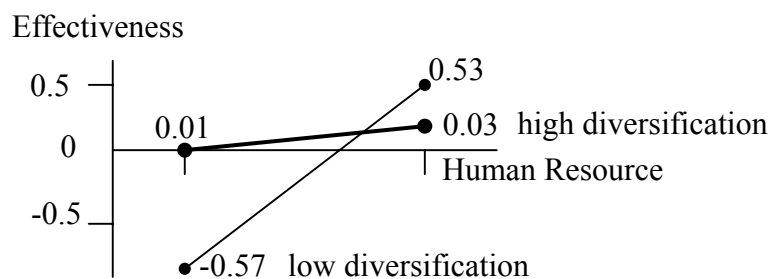


Figure 8. Human Resources and Effectiveness

Figure 7 show the interaction between diversification strategy and human resources plotted for financial performance. In this graph, the highest predicted value of performance was for low diversification and high human resources (0.36). However, the lowest predicted performance was for low diversification and low human resources (-0.42).

Figure 8 show that the pattern of the interaction is similar when plotted for effectiveness. The highest predicted value of performance was for low diversification and high human resources (0.53). The lowest predicted performance was for low diversification and low human resources (-0.57).

Overall, these findings indicate that human resources facilitate the performance of only those lowly diversified firms. A firm pursuing low diversification strategy will be affected greatly by human resources. These findings support H2b.

### 2.3. Intangible Resources and Performance

Table 6. Hierarchical Regression of Intangible Resources and Performance (N=127)

Dependent Variable	Financial Performance			Effectiveness		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	5.43***	5.43***	5.43***	5.09***	5.09***	5.09***
Size	0.19***	0.19***	0.18***	0.13**	0.04**	0.12**
R&D Intensity	0.03	0.02	-0.01	0.36*	0.35*	0.29+
Diversification (D)		-0.03	-0.03		-0.07	-0.07
Intang. Resources (I)		0.26***	0.23**		0.46***	0.42***
D × I			-0.13			-0.21*
R-square	0.17	0.26	0.27	0.09	0.33	0.36
F	12.53***	10.78***	7.07***	5.84**	15.12***	13.40
ΔR-square		0.09	0.01		0.24	0.03
F change		7.42**	1.66		21.85**	5.67*

Note: +p<0.10, \*P<0.05, \*\*p<0.01, \*\*\*p<0.001

Table 6 shows the results of hierarchical regression analysis for the effect of intangible resources on individual resources and effectiveness. After controlling for firm and structural context, the set of variables entered in model 2 was significant for financial performance ( $\Delta R$ -square=0.09, F change=7.42,  $p<0.01$ ) as well as effectiveness ( $\Delta R$ -square=0.24, F change=21.85,  $p<0.01$ ). In addition, the set of intangible resources was a positive predictor of both financial performance ( $\beta=0.26$ ,  $t=3.89$ ,  $p<0.001$ ) and effectiveness ( $\beta=0.46$ ,  $t=6.63$ ,  $p<0.001$ ).

In model 3, this model had a significant incremental effect on effectiveness ( $\Delta R$ -square=0.03, F change=5.67,  $p<0.05$ ) but not on financial performance. The interaction of diversification strategy and intangible resources was a significant predictor for effectiveness ( $\beta=-0.21$ ,  $t=-2.17$ ,  $p<0.05$ ).

Figure 9 show the interaction between diversification strategy and intangible resources plotted for financial performance. In this graph, the highest predicted value of performance was for low diversification and high intangible resources (0.61). However, the lowest predicted performance was for low diversification and low intangible resources (-0.49).

Overall, these findings indicate that no matter what diversification strategy a firm uses, the emphasis on intangible resources will make the firm perform better.

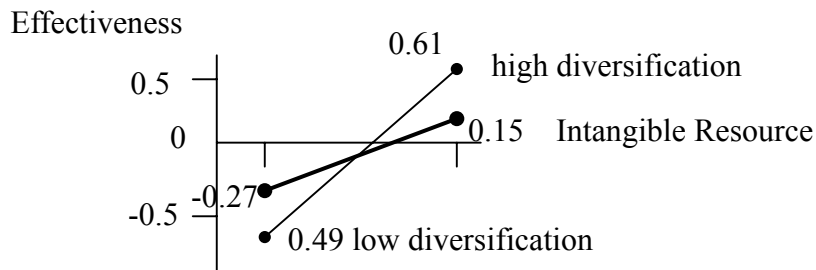


Figure 9. Intangible Resources and Performance

However, the effect of intangible resources on performance is greater for lowly diversified firms than for highly diversified firms. These findings support H2c.

## 2.4. Financial Resources and Performance

Table 7. Hierarchical Regression of Financial Resources and Performance (N=127)

Dependent Variable	Financial Performance			Effectiveness		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	5.43***	5.43***	5.40***	5.09***	5.09***	5.06***
Size	0.19***	0.14***	0.13**	0.13**	0.12*	0.10+
R&D Intensity	0.03	0.01	0.01	0.36*	0.35+	0.35+
Diversification (D)		-0.08	-0.08		-0.09	-0.09
Fin. Resources (F)		0.42***	0.45***		0.20+	0.24+
D × F			0.14			0.17
R-square	0.17	0.27	0.28	0.09	0.11	0.13
F	12.53***	11.36***	9.60***	5.84**	3.78**	3.49**
ΔR-square		0.10	0.01		0.02	0.02
F change		8.36**	1.68		1.37	2.78+

Note: + $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

An identical procedure was used to analyze the effect of financial resources (shown in Table 7). After controlling for firm and structural context, the set of variables entered in model 2 was significant for financial performance ( $\Delta R$ -square=0.10, F change=8.36,  $p < 0.01$ ). In addition, the set of financial resources was a positive predictor of financial performance ( $\beta = 0.42$ ,  $t = 4.14$ ,

$p < 0.001$ ). In model 3, the interaction of diversification strategy and financial resources was added. This model had not a significant incremental effect on financial performance and effectiveness.

Overall, these findings indicate that the set of financial resources is not the key resource for diversified firms to create value.

## DISCUSSION

The primary purpose of this study was to examine how the resources and controls systems of a diversified firm relate to the overall performance. The findings show several different connections to measures of financial performance and effectiveness. Some of these indicate a direct relationship between resources, control systems and performance, while others show the existence of several contingency relationships (based on the interaction of diversification strategy).

### 1. Control Systems and Performance

The direct effects of control systems on both financial performance and effectiveness suggest that, everything else aside, when firms focus on either strategic controls or financial controls, they tend to perform better. It manifests the importance of control systems for a diversified firm. In addition to the direct effects of behavior control, it appears that firms will perform better by matching control systems with their diversification strategy. Focusing on strategic controls, a lowly diversified firm will perform better than a highly diversified firm. Looking more precisely, the performance for firms focused on strategic controls may deteriorate when adopting high diversification strategy. It shows evidence that if corporate managers intervene in divisional strategy directly and seek synergistic relations between divisions, they will destroy the efficiency of operation in highly diversified firms (Hoskisson, 1987).

When taking a look at financial controls, it is interesting to find that financial controls enhance the performance of both lowly and highly diversified firms. In fact, the positive effect of financial controls on lowly diversified firms is stronger than on highly diversified firms. However, as past research demonstrates, if lowly diversified firms are to realize better performance they must use strategic controls

(Baysinger & Hoskisson, 1989). This study shows the use of financial controls is an alternative, too. One possible explanation for this finding is that firms uses financial controls will make managers tend to save money to make the bottom line look good and engage in less risk activities that are closely tied to value creation (Hoskisson & Hitt, 1994). That will make both lowly and highly diversified firms perform better at least in a short time.

## 2. Resources and Performance

Among four types of firm resources, human and intangible resources both have direct positive effect on overall firm performance; the set of organizational resources is only significantly positive related to financial performance; however, the set of financial resources doesn't show any significant effect on firm performance. These findings suggest that human and intangible resources both are the most useful resources for firms to implement the diversification strategy.

After considering the moderating effects, we can see the impact of resources on performance among different diversification strategy. Organizational resources make lowly diversified firms perform better on effectiveness, but on the other hand, make highly diversified firms suffer. It reveals that formal reporting structure and formal planning, controlling and coordinating systems is important for lowly diversified firms to realize better effectiveness, but in contrast, that will destroy the efficiency of operation in highly diversified firms. Since the economic benefits for highly diversified firms to realize is different from that for lowly diversified firms (Hill, et. al., 1992).

Human and intangible resources both will enhance the effectiveness of any type of diversified firms. Human resources can also facilitate the financial performance of any type of diversified firms. These findings confirm the direct positive effect of both resources. It is obvious that human and intangible both are the most important resources among all the resources. A diversified firm can't succeed without these two resources. Financially, the set of financial resources doesn't show any effect among different type of diversification strategy. It is possible that financial resources are more common, they are less likely to create value as compared to other types of resources.

## CONCLUSION AND IMPLICATIONS

In conclusion, our research indicates that generating better performance from different diversification strategies requires distinctly different control systems and resources. The results suggest that firms pursuing lowly diversification to realize better performance need to adopt control systems of either strategic controls or financial controls and focus on resources of organizational, human and intangible resources; while those pursuing highly diversification need to adopt financial controls and focus on resources of human and intangible resources.

There are important implications for general management in this study. The findings suggest that managers need to be sensitive to the control systems and resources necessary to implement diversification strategies. Different strategies are associated with different economic benefits. Unless managers adopt the appropriate set of control systems and resources, a diversification strategy may reduce, or at least not improve, firm performance.

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# 企業資源與控制型態對多角化策略與經營績效關係的節制效果之研究

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## 摘要

本研究旨在探討企業資源與控制型態對多角化策略與經營績效的節制效果，從 127 家公司回收問卷所得到的資料發現：不同的多角化策略須要與不同的控制型態與資源配合才能得到較佳的績效，低度多角化的公司在控制型態上必須採用策略控制或財務控制，在資源上須強化組織、人力、以及無形資源，才能得到較佳績效；高度多角化的公司則須採用財務控制，在資源上須偏重人力及無形資源才能有較佳績效。研究結果顯示企業領導人應深知企業多角化時影響經營績效的相關情境，多角化的效益能藉著公司資源及控制型態的掌控而有加乘或相減的影響。

關鍵詞彙：多角化，資源，控制型態

