

# Mediating Role of Strategic Choice Between Top Management Team Diversity and Firm Performance: Upper Echelons Theory Revisited

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*Several studies attempt to relate top management team (TMT) demographic diversity to firm performance, and the findings are varied. This study examines the mediating role of strategic choice in affecting firm performance. The sample consists of 66 firms from the telecommunication industry that engaged in mergers and acquisitions. Strategic choices used are firm innovation and acquisition activity. Results indicate that (i) age diversity is negatively related to strategic choice, (ii) functional heterogeneity is positively related to strategic choice, and (iii) strategic choice mediates the relationship between functional heterogeneity and firm performance. Results thus provide support for the upper echelons theory.*

Ever since the publication of the seminal work of upper echelons theory (Hambrick & Mason, 1984), interest on the study of top management team (TMT) demographic characteristics and their effect on various organizational outcomes has

escalated. Building on the idea of dominant coalition (Cyert & March, 1963), the upper echelons theory posits that observable characteristics of TMTs (e.g. educational background, functional background, age) are the proxy measures of psychological factors (e.g. values, cognitive style, cognitive content) that influence strategic choice. Various studies demonstrate that organizations are the reflection of top managers. Finkelstein and Hambrick (1996) have noted that from 1984 to 1996, over two hundred studies concerning upper echelons theory were published, and researchers have continued to focus on this timely topic (Zhang & Rajagopalan, 2003; Peterson, Smith, Martorana, & Owens, 2003; Simsek, Veiga, Lubatkin, & Dino, 2005).

### *TMT Heterogeneity*

The central construct that emerged during the research on TMT is the heterogeneity of the team. Researchers have demonstrated both positive as well as negative effects of heterogeneity on various outcomes such as turnover, consensus, and performance. On the positive side, the imputed logic is that having a heterogeneous team enhances the knowledge base, cognitive abilities and overall problem-defining and problem-solving skills of the group (Bunderson, 2003; Hambrick, Cho & Chen, 1996). In fast changing, dynamic environments, information processing requirements call for identification of greater adaptive capabilities, thus favoring heterogeneous teams (Harrison, Price, Gavin, & Florey, 2002). TMT heterogeneity is of utmost importance to firms that operate in industries characterized by high velocity environments.

Some researchers, however, contend that heterogeneity generates tension or a gulf that constrains the information exchange and thus adversely affects firm performance (Ancona & Caldwell, 1992). Researchers have found that heterogeneous teams cause less social integration and communication frequency and high turnover in top management teams (Wagner, Pfeffer, & O'Reilly, 1984). Diverse viewpoints, different thinking wave-lengths, uncommon vocabularies, paradigms, and objectives often make a heterogeneous team a net liability to the organization (Hambrick, Cho, & Chen, 1996). Heterogeneous teams thus can create strains in the decision-making process, which may contribute negatively to organizational performance (Pfeffer, 1983).

The results of TMT heterogeneity on various outcomes such as performance, consensus, social integration, and decision-making processes are therefore mixed and often contradictory. For instance, Wiersema and Bantel (1992) demonstrated that heterogeneous teams will be more creative and will cast a wider net on information while evaluating various alternatives than homogeneous teams. A diametrically opposite view, suggested by O'Reilly, Snyder, and Boothe (1993), proposes that homogeneity promotes cooperation that is essential for implementing strategic decisions. Thus, heterogeneity may act as a 'double-edged sword' (Finkelstein & Hambrick, 1996).

One potential explanation for the inconsistent results could be that researchers assume a direct link between TMT heterogeneity and firm performance, whereas TMT heterogeneity is likely to indirectly affect firm performance through strategic choice. The equivocal results of TMT demographic diversity may also be due to the use of a composite measure of diversity (e.g. West & Schwenk, 1996). If different types of

diversity influence outcomes in different directions, the effect may be cancelled due to the problem of aggregation. To avoid this problem, some researchers prefer to measure demographic variables independently (e.g. Knight et al., 1999). This paper offers a more complex view of the relationship between TMT observable characteristics and firm performance mediated by strategic choice: merger and acquisition activity and internal innovation.

### *Strategic Choice*

The two strategic choice variables chosen for this study are growth-related strategies: (i) mergers and acquisitions and (ii) innovation inputs. To survive in the long run, firms embark upon formulating and implementing these strategies.

(i) Mergers and Acquisitions: Executives believe that mergers and acquisitions provide a quicker route to achieving growth and diversification objectives. Most of the merger and acquisition studies address the potential consequences of merger activities. Researchers have studied the inter-group dynamics for acquisitions (Haspeslgh & Hemison, 1991), organizational fit and acquisition performance (Datta, 1991), TMT turnover following mergers and acquisitions (Walsh, 1988), and the role of 'culture' in acquisitions and post-acquisition in success of acquisition ventures (Chatterjee, Lubatkin, Schweiger & Weber, 1992; Datta, 1991).

(ii) Innovation inputs: Firm innovation is a very important strategic choice for most growth-embarking firms (Franko, 1989). In fact, firm innovation has become an integral part in value creation for many industries (Hitt, Hoskisson, Johnson & Moesel, 1996). Research on innovation has shown how organizations create and retain structure to create innovative products (Kanter, 1983; Pinchot, 1985; Van de Ven, 1986). Firms resort to innovation as a potential strategic choice to see that organizations adapt to changes in markets, technology, and competition. Growing literature on product and process innovation suggests the organizational characteristics necessary to promote such innovative activities (Zirger & Maidique, 1990).

## **Theoretical Development**

The heterogeneity in TMT is considered to be a positive force leading to overall organizational performance (Finkelstein & Hambrick, 1996). The imputed logic is that firms require diverse capabilities of executives to formulate and implement strategic decisions. Heterogeneous teams are expected to bring greater variance in creativity, innovation, ideas, ideologies, etc., thus enabling organizations to perform better (Jackson, May & Whitney, 1995). Hambrick and Mason (1984) argue that the psychological and cognitive characteristics of the members of the TMT are critical to corporate choices they make on which the performance of the firm largely depends. It is therefore indispensable to examine the link between heterogeneity in the TMT and strategic choices such as mergers and acquisitions and internal innovation.

### *TMT Diversity and M&A Activity*

Although it is contended that TMT heterogeneity affects the process of making decisions much more than it does the content of those strategies (Bunderson &

Sutcliffe, 2002), the composition of the TMT does affect strategic choice. For instance, TMTs dominated by executives with sales and marketing experience will perceive the information from the environment such that they favor product innovation and differentiation (Hambrick & Mason, 1984). On the other hand, TMTs dominated by executives with finance and accounting backgrounds will have a tendency to diversify through acquisitions (Song, 1982). Research also supports the idea that companies perform better to the degree that executive backgrounds fit the firm's chosen strategy (Michael & Hambrick, 1992). Heterogeneous teams may be able to study the industry environment, assess the strengths of the firms, and weigh the pros and cons of acquisitions, more than the homogeneous teams are able to.

Prior research investigating the relationship between team heterogeneity and organizational outcomes has made a distinction between job-related and non-job related demographic characteristics of executives. Functional background, educational background, and tenure of executives are highly job-related attributes, whereas age and gender are low in job-relatedness (Pelled, Eisenhardt & Xin, 1999). If the heterogeneity is high with respect to highly job-related attributes, then these attributes are apt to have a stronger relationship with strategic choices. For example, Ancona and Caldwell (1992) demonstrated that product development teams use the members' technical skills, information, expertise, and experience in the industry as well as in the organization to develop new products, and these attributes are directly related to members' functional and educational backgrounds. Several researchers also argued that functional background and educational background are especially relevant to strategic tasks (Sessa & Jackson, 1995; Milliken & Martins, 1996; Pelled, 1996).

In sharp contrast, age is low in job-relatedness. As Sessa and Jackson (1995) observed, age helps form the context of social relationships, rather than be related to tasks. Diversity researchers call this form of diversity social category diversity, which focuses on readily detectable differences (van Knippenberg, De Dreu, & Homan, 2004). Research has shown that groups that are more homogenous in social category diversity (e.g. age) tend to have higher overall group performance than those groups that are more heterogeneous (Jehn, Northcraft, & Neale, 1999; Simmons, Pelled, & Smith, 1999). This type of diversity may create in-group and out-group categories that may be detrimental to strategic decision making. For example, the heterogeneity in non-job-related attributes may trigger affective conflict such that the executives may not be able to reach consensus and in some cases may even avoid evaluating the strategic choices on the cognitive platform. We specifically argue that the greater the diversity in age, the less the potential for consensus in making new acquisitions; hence, a negative relationship is expected between age diversity and acquisition activity.

Conversely, high job-related heterogeneity (e.g. functional background) will affect cognitive tasks such that members spend considerable time and energy in assessing the appropriateness of strategic choices. Job-related attributes capture experiences and skills necessary to perform cognitive tasks. The logic behind this argument is that cognitive tasks, such as the selection of desirable acquisitions, will demand experience and knowledge obtained through exposure to various functional areas. These diverse experiences provide a solid basis of competency that would allow functionally diverse teams to comfortably agree on engaging in complex transactions such as mergers and

acquisitions. Based on the above arguments, the following hypotheses can be advanced:

Hypothesis 1: There will be a positive relationship between TMT functional heterogeneity and mergers and acquisitions.

Hypothesis 2: There will be a negative relationship between TMT age diversity and mergers and acquisitions.

#### *TMT Heterogeneity and Innovation Inputs*

Research suggests that heterogeneous teams are able to evaluate alternatives along several dimensions and make high-quality decisions (Schweiger, Sandberg & Rechner, 1989). Bantel and Jackson (1989) found that heterogeneity in functional backgrounds of the team members is positively associated with innovation. In other studies, heterogeneity in educational specialization is related to innovation, whereas age heterogeneity, team size, and tenure heterogeneity were not significantly related to innovation (Coff, 2003; Wiersema & Bantel, 1992). However, the results between firm tenure heterogeneity, age heterogeneity, and innovation are mixed in one study (O'Reilly, Caldwell & Barnett, 1989). Consistent with Bantel and Jackson (1989), the positive relationship between functional background heterogeneity and firm innovation is expected, because this is task-related diversity. Age diversity, however, may create differences in values and attitudes that could hinder the process of investing in innovation inputs because the members of the team may have dysfunctional conflict. In addition, age diversity may create different perspectives on strategic choice since TMTs with older, more tenured members may be less likely to pursue innovation strategies since such investments are often not realized until the long term. The previous arguments suggest the following hypotheses:

Hypothesis 3: There will be a positive relationship between TMT functional heterogeneity and internal innovation.

Hypothesis 4: There will be a negative relationship between TMT age diversity and internal innovation.

#### *Strategic Choice and Firm Performance*

Hambrick & Mason (1984) posit that strategic choice consistent with environmental demands will lead to positive outcomes. One strategic choice is mergers and/or acquisitions. Firms engage in acquisition activity with the intention of enhancing performance; thus, a positive relationship can be expected between acquisition activity and firm performance. There is support that post-acquisition performance is positive (Ravenscraft & Scherer, 1987; Kedia, 2002). Further, recent research shows that acquisitions restore vitality in an organization, which in turn, positively affects firm performance (Vermeulen, 2005).

Internal innovation is another strategic choice that is made by firms and this is reflected through spending on Research and Development (R&D) inputs. Lawless and Anderson (1996) point out in their study of microcomputer manufacturing firms, that innovation is related to firm performance in dynamic environments. Further, innovation speed enhances the organizational performance (Lawless & Anderson, 1996), and

increased R&D spending is positively related to firm performance (Chaney & Devinney, 1992). Based on the above arguments, the following hypotheses can be advanced:

- Hypothesis 5: There will be a positive relationship between mergers and acquisitions and firm performance.
- Hypothesis 6: There will be a positive relationship between firm innovation inputs and firm performance.

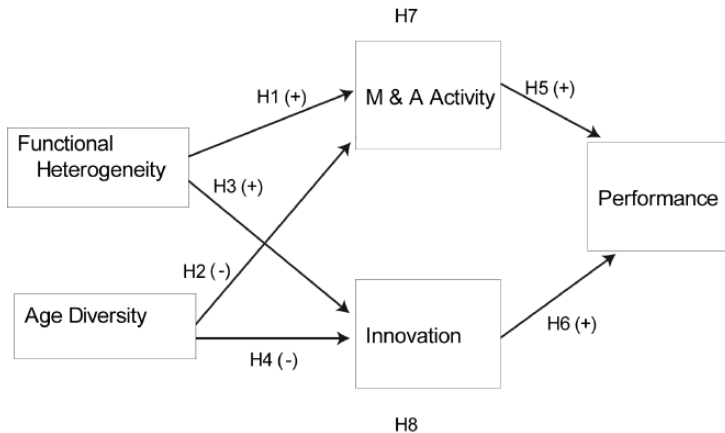
### *Strategic Choice as a Mediator*

Considerable prior research has examined the direct effects of TMT characteristics on strategic choice or firm performance. For example, Gupta (1984) found support that TMT characteristics are related to firm strategies and performance. Yet, there are many that argue TMT characteristics will indirectly affect firm performance through strategic choice (Finkelstein & Hambrick, 1996; Priem, 1990). For example, we argue that a functionally diverse TMT will engage in acquisitions, which in turn will impact firm performance. In addition, we argue that functionally diverse executive teams will engage in strategic inputs such as innovation, which will provide positive returns to the firm. Age diversity, however, has received very little theoretical and empirical support regarding its effect on firm performance. Thus, we argue only the mediation effects strategic choice will have on functional diversity and firm performance, but not on social category diversity as an indirect predictor of firm performance.

- Hypothesis 7: Mergers and acquisitions will mediate the effects of TMT functional diversity on firm performance.
- Hypothesis 8: Internal innovation will mediate the effects of TMT functional diversity on firm performance.

The conceptual model is presented in Figure 1.

**Figure 1:** *Conceptual Model and hypothesized relationships*



## Methodology

### *Sample*

The sample for this study consisted of the TMTs of 66 firms operating in the telecommunications industry. The starting point was to compile the list of all acquisitions featured in the acquisition rosters in the quarterly issues of *Mergers and Acquisitions*. Only firms that engaged in mergers and acquisitions were included, since the focus of this study is on the mediation effects of mergers and acquisitions. To ensure that only acquisitions completed during 1999-2000 were included, all the partial acquisitions were eliminated from the study. Initially a sample of 70 companies was considered, but due to lack of available data for four companies, the number was reduced to 66.

In addition to the *Mergers and Acquisitions* quarterly issues, Annual Reports from the SEC filings of these companies were examined and the number of acquisition activities during the two-year span of the study was recorded. The data concerning the innovation inputs (which is measured as Research and Development expenditure as a percent of sales) is compiled both from the Annual Reports of the companies and from the Research Insight (Compustat database) for some companies (wherever the data was not available).

The size of the sample may be of concern here. However, some of the classic studies on TMTs involve small sample sizes. For example, Wiersema and Bantel (1993) studied 85 firms in examining the role of environment on TMT turnover, while West and Schwenk (1996) analyzed 65 firms in their study of TMT diversity-consensus and firm performance relationship. In addition, Singh and Montgomery (1987), Knight et al. (1999), Hopkins (1987), Yip (1982), and Miller and Friesen (1982) all had small sample sizes in their TMT studies with 105, 89, 64, 59, and 52 firms studied, respectively.

### *Measures*

Some researchers prefer to compute demographic homogeneity as the sum of TMT heterogeneity index scores across all the demographic variables (e.g. gender, education) subtracting from a positive constant (e.g., West & Schwenk, 1996). We prefer to consider them separately, because the aggregate measure may not capture the individual impact (Bantel & Jackson, 1989).

Functional diversity is calculated using Blau's (1977) heterogeneity index  $H = (1 - \sum i^2)$ , where  $i$  = the proportion of the group in the  $i$ 'th category. A low  $H$  score represents functional homogeneity, whereas a high score means variability in the functional responsibilities among the members of the team. This measure is consistent with prior research (Knight et al., 1999). To determine the functional background of executives, we followed the procedures outlined in Wiersema and Bantel (1992), Knight et al. (1999), and Pegels, Song and Yang (2002). Information from proxy statements of SEC filings were used to classify senior executives (CEOs, presidents, COOs) based on a review of the individual's career background. If the CEO had a designated function associated with a previous title (for example, Senior VP of Finance), then the CEO was assigned to that function (i.e. finance). If the CEO

performed a variety of functions before becoming CEO, then the individual's functional perspective was reflected in his/her educational specialization as well as the length of his/her career in that particular function (Pegels et al., 2000).

Age diversity is calculated using the coefficient of variation computed as follows: Coefficient of Variation =  $(\sigma/x)$ , where  $\sigma$  is the standard deviation and  $x$  is the mean. This is consistent with previous research (Knight et al., 1999). Gender diversity, as a control variable, is calculated using Blau's (1977) heterogeneity index.

### *Strategic Choice Variables*

Mergers and acquisitions (M&A) activity was measured using the count measure rather than the value of transactions. This is because (i) most transactions reported in Mergers & Acquisitions are without specific value involved in acquisitions of the companies involved, (ii) the frequency with which companies are involved in acquisitions depict the acquisition intensity, (iii) considering the acquisition value might distort the results because only valued acquisitions are taken into account, and (iv) count measures are consistent with previous research and hence become comparable (Davis, Diekmann, & Tinsgley, 1994; Haunschild, 1993; Hitt et al., 1996; Vermulen & Barkema, 2001).

The innovation inputs were measured using the R&D intensity (R&D expenditures as a percentage of sales), and this is consistent with previous research (Harrison, Hitt, Hoskisson, & Ireland, 1990; Hitt et al., 1996). For the purpose of this study, R&D intensity is calculated for the years 1999-2000.

The three-year average of the firm's Return on Assets (ROA) was used to measure organizational performance. The compound growth rate of ROA over a three year period was the most common measure used in numerous studies on TMT characteristics and organizational outcomes (Iaquinto & Fredrickson, 1997; Kim, Hwang and Burgers, 1989; Krishnan, Miller & Judge, 1997). All the data on ROA was gathered from the COMPUSTAT database.

### *Control Variables*

Since prior organizational performance is expected to be related to present performance, it is necessary to control for prior performance (Hambrick & Schechter, 1983; Tushman & Romanelli, 1985). The three-year average of ROA prior to 1999 was used to control for past performance, and the data was obtained from the COMPUSTAT database.

Because organizational performance is also influenced by the size of the firm, it is necessary to control for firm size. Firm size was measured using the natural logarithm of total assets, which is consistent with previous research (Iaquinto & Fredrickson, 1997).

Another control variable is TMT size. The present study utilizes the definition consistent with prior research, which includes the two highest levels of management within the firm. These are top tier and second tier of management. The top tier consists of Chairman, CEO, President and COO. The second tier includes the most senior level of Vice Presidents listed for the firm. The sample of 66 companies had 636 individuals within top management teams, with the average size of the team being 9.5 members. The mean age of the members of the TMT was 49.4 years (with standard



deviation of 5.26). Members who are not on the list by virtue of age (over 65 years) are eliminated, thus controlling for normal retirements. This is consistent with the approaches followed by previous researchers (Puffer & Weintrop, 1991; Wiersema & Bantel, 1993).

## Results

Means, standard deviations, and zero-order correlations are reported in Table 1. Our initial analysis of the descriptive statistics suggests that M&A activity and innovation have correlations of .65 and .63 respectively. Kennedy (1979) suggests that correlations of .8 or higher may be problematic from the viewpoint of multicollinearity. We also performed a statistical check for multicollinearity, using the variance inflation factor (VIF) of each independent variable. The largest VIF was less than 2, suggesting that multicollinearity should not be a problem (Kennedy, 1979).

**Table 1:** Means, Standard Deviations, and Intercorrelations (N=66)

Variable	Mean	S.D	1	2	3	4	5	6	7	8	9
1 Firm Size <sup>a</sup>	8.93	1.63	1.0								
2. Team Size	9.48	4.69	.19	1.0							
3. Past Performance	6.96	5.52	.38***	.02	1.0						
4. Age Diversity	.13	.05	-.22*	-.09	-.18	1.0					
5. Functional heterogeneity	.79	.08	.59***	.39***	.22*	-.13	1.0				
6. Gender diversity	.09	.13	-.12	.18	-.22*	.25**	.19	1.0			
7. Merger & Acquisition Activity	3.69	2.03	.57***	.08	.32**	-.39***	.49***	-.01	1.0		
8. Innovation	7.52	4.81	.45***	.01	.26**	-.30**	.43***	-.03	.64***	1.0	
9. Performance	6.43	3.40	.47***	.03	.23*	-.24**	.45***	.03	.65***	.63***	1.0

\*p<0.1; \*\*p<0.05; \*\*\* p<0.01

a. Measured as natural logarithm of total assets.

Multiple regression analysis was used to test the hypothesis that age diversity has a negative influence and functional heterogeneity has a positive influence on M&A activity and innovation. In addition, we checked for mediation of M&A activity and innovation in the relationship between functional heterogeneity and firm performance. The results are presented in Table 2.

As shown in Column 1 of Table 2, the control variables model explained 35 percent of variance in M&A activity ( $F=8.06$ ,  $p<.001$ ). In Model 2, we entered heterogeneity variables (Column 2). Functional heterogeneity is positively related to M&A activity ( $\beta=.26$ ,  $p<.05$ ) and age diversity is negatively related to M&A activity ( $\beta= -.29$ ,  $p<.05$ ) thus supporting H1 and H2. The main effects model explained 47 percent of the variance in M&A activity ( $F = 8.53$ ,  $p<.001$ ). Introduction of heterogeneity variables increased the explanatory power of the model by 12 percent ( $\Delta F=4.60$ ,  $p<.001$ ).

Columns 3 and 4 from Table 2 show the results of our analysis of effect of heterogeneity on internal innovation. As shown in Column 3, the control variables model explained 22 percent of variance in internal innovation ( $F=4.43$ ,  $p<.001$ ). In

Model 2 we entered heterogeneity variables (Column 4). Functional heterogeneity is positively related to internal innovation ( $\beta = .32, p < .05$ ) and age diversity is negatively related to innovation ( $\beta = -.32, p < .05$ ), thus supporting H3 and H4. The main effects model explained 32% of the variance in internal innovation ( $F = 4.77, p < .001$ ). The introduction of heterogeneity variables increased the explanatory power of the model by 10 percent ( $\Delta F = 4.60, p < .001; \Delta R^2 = 10.6$ ).

**Table 2:** Regression Analysis of TMT Heterogeneity on M&A Activity and Innovation

Variables	DV= M&A Activity		DV= Innovation	
	Model 1 (Column 1)	Model 2 (Column 2)	Model 1 (Column 3)	Model 2 (Column 4)
Step 1: Control Variables				
Past Performance	.13 (1.16)	.09 (.93)	.09 (.77)	.07 (.63)
Firm Size	.54*** (4.69)	.35** (2.67)	.43*** (3.49)	.23 (1.57)
Team Size	-.05 (-.46)	-.14 (-1.38)	-.08 (-.70)	-.19* (-1.65)
Gender Diversity	.86 (.79)	.09 (.89)	.66 (.55)	.05 (.39)
Step 2. Main Variables				
Age Diversity		-.29** (-2.92)		-.23** (-1.99)
Functional Heterogeneity		.26** (2.00)		.32** (2.13)
R <sup>2</sup>	.35	.47	.22	.32
Adjusted R <sup>2</sup>	.30	.41	.18	.26
F-Value	8.06***	8.53***	4.43***	4.77***
Change in R <sup>2</sup>		.12		.10
Change in F-Value		4.60**		3.08**
df	4,62	2,59	4,62	2,59

\*\*\*  $p < .001$ , \*\*  $p < .05$ , \*  $p < .10$

Standardized coefficients are reported, with t-values in parentheses

Results of mediation analysis of M&A activity and innovation on performance are reported in Table 3. To test mediation, first control variables were entered in Step 1. Main variables are entered in Step 2. Column 1 from Table 3 shows the results of the main effects model. Functional heterogeneity ( $\beta = .30, p < .05$ ) is significantly related to firm performance. When the mediator variable M&A was entered in Step 3 (column 2), the beta coefficients of functional heterogeneity became non-significant and the beta coefficient of M&A activity was statistically significant ( $\beta = .51, p < .01$ ). The M&A mediator model (Model 2) explained 46 percent of the variance in firm performance ( $F = 6.94, p < .001$ ; adjusted  $R^2 = .39$ ; change in  $R^2 = .14$ ;  $\Delta F = 14.60$ ) thus supporting H5 and H7.

We tested for the mediation effect of firm innovation by entering internal innovation in Step 3 (Column 3). Main variables were entered in Step 2. Column 1 from Table 3 shows the results of the main effects model. Functional heterogeneity ( $\beta = .30, p < .05$ ) is significantly related to firm performance. The results suggest that the beta coefficient for innovation is statistically significant ( $\beta = .47, p < .01$ ) and the beta coefficient of functional heterogeneity became non-significant thus supporting both H6 and H8. Model 3 (innovation as a mediator) explained 47 percent of the variance in firm performance ( $F = 7.23, p < .001$ ; adjusted  $R^2 = .40$ ; change in  $R^2 = .15$ ;  $\Delta F = 15.98$ ).

When M&A activity and innovation were entered as mediators in Step 3 (Column 4), results support full mediation of M&A activity and innovation. The beta

**Table 3: Results of Mediation Analysis of M&A Activity and Innovation on Performance**

Variables	DV=Performance Model 1 (Column 1)	DV=Performance Model 2 (Column 2)	DV=Performance Model 3 (Column 3)	DV=Performance Model 4 (Column 4)
Step 1: Control Variables				
Past Performance	.05 (.41)	.01 (.01)	.01 (.41)	-.01 (-.09)
Firm Size	.28** (1.94)	.10 (.77)	.17 (1.33)	.08 (.66)
Team Size	-.18 (-1.53)	-.10 (-1.00)	-.09 (-.84)	-.06 (-.64)
Gender Diversity	.08 (.72)	.04 (.36)	.06 (.60)	.04 (.37)
Step 2. Main Variables				
Age Diversity	-.16 (-1.43)	-.01 (-.13)	-.05 (-.55)	.01 (.14)
Functional Heterogeneity	.30** (2.01)	.17 (1.20)	.15 (1.10)	.10 (.77)
Step 3: Mediator				
M&A Activity		.51*** (3.82)		.34** (2.48)
Innovation			.47*** (3.99)	.33** (2.71)
R <sup>2</sup>	.32	.46	.47	.52
Adjusted R <sup>2</sup>	.25	.39	.40	.45
F-Value	4.60***	6.94***	7.23***	7.76***
Change in R <sup>2</sup>		.14	.15	.19
Change in F-Value		14.60***	15.98***	11.78***
df	2,59	1,58	1,58	2,57

\*\*\* p<.001, \*\* p<.05, \*p<.10

Standardized coefficients are reported, with t-values in parenthesis

coefficients for M&A activity ( $\beta = .34$ ,  $p < .05$ ) and for innovation ( $\beta = .33$ ,  $p < .05$ ) were statistically significant and explained 52 percent of variance in firm performance. The model explained an additional 19 percent of the variance in firm performance when compared to the main effects model ( $F = 7.76$ ,  $p < .001$ ; adjusted  $R^2 = .45$ ; change in  $R^2 = .19$ ;  $\Delta F = 11.78$ ), thus providing support for full mediation of both strategic variables.

## Discussion

The primary objective of this research was to examine the relationship between TMT heterogeneity and performance, mediated through the strategic choice variables of acquisition activity and innovation inputs. At a time when upper echelons theory (Hambrick & Mason, 1984) has paved the way for several studies on TMT demographic variables to show their effect on firm performance, inconclusive and mixed results for over two decades have been prompting researchers to conduct tests for the direct relationships between the heterogeneity, content (choice), and firm performance. In fact, Hambrick & Mason (1984) have postulated that TMT characteristics would affect firm performance directly, as well as indirectly through strategic choices. While some studies have considered an aggregate measure of heterogeneity and others have studied demographic variables in isolation, results have been inconclusive (Finkelstein & Hambrick, 1996).

Ignited by some of the non-significant studies, the present research was aimed at unraveling the mediated relationship between the TMT heterogeneity and firm performance through strategic choice variables. Contrary to non-significant findings of West and Schwenk (1996), the present study found significant relationships

between demographic variables, strategic choice variables, and firm performance. The results suggest that demographic variables need to be considered independently rather than aggregately (i.e. global measures) because individual demographic variables may have different outcomes. For example, age diversity was negatively related to strategic choice variables whereas functional heterogeneity was positively related to both strategic choice variables and firm performance. The litmus test shows significant relationships between demographic variables of TMT and firm performance mediated by strategic choice variables, M&A activity, and innovation.

The results from this study are encouraging in that they provide support for upper echelons theory. The present study also provides avenues for further research. The effect of organizational culture, trust of TMT members as related to “team” years, and prior successes of the team (not just the tenure of the CEO or other top tier members), are areas of study that could be explored in future research. As well, interpersonal trust, cultural differences, international experiences of team members, and the CEO's influence on members may be additional mediator variables that can be explored in the relationship between heterogeneity and firm performance. For example, the role of a CEO in influencing members of a cognitively diverse TMT to promote cohesion and reduce interpersonal (affective) conflict may influence firm performance. Diversity of opinions may negatively affect group cohesion (Hambrick, Cho, & Chen, 1996). Heterogeneous teams tend to be non-cohesive, at least in the short run, as executives challenge opinions put forth by other team members; this may eventually precipitate affective conflict (Pfeffer, 1983; O'Reilly, Snyder, & Boothe, 1993). The greater the power exerted by the CEO in moderating the relationships between heterogeneous teams and consensus, the greater will be the impact on the team's strategic choices and the resulting performance.

Examining the role of interpersonal trust among the members of the TMT could be another interesting extension of the present research. So far research has been scant on the role of trust on TMT decision making, with the exception of one study by Dooley & Fryxell (1999). It was empirically demonstrated that perceptions of loyalty within teams has the potential to strengthen the relationship between dissent and decision quality, while the perceptions of competence of team members strengthens the relationship between dissent and decision commitment. It might be useful, therefore, to consider the effect of various components of trust while examining the relationships between heterogeneity in the TMT, strategic choice, and performance outcomes.

This study found that functional heterogeneity is positively related to strategic choice variables and firm performance; therefore, it is likely that functional heterogeneity stimulates cognitive conflict. Conversely, since age diversity is negatively related to strategic choice variables, it is likely that age diversity is conducive to affective conflict. Therefore, another potential area of research is to identify the linkage between the aspects of heterogeneity that contribute to cognitive conflict and those that promote affective conflict. Without separation of the different aspects of diversity and their effects on conflict, the composite measure becomes suspect, the effects are negated, and the results are mixed and inconclusive.

Overall, the effect of TMT heterogeneity on strategic choices and firm performance places a premium on understanding top management team demographic

characteristics and their roles on strategic choices and validates upper echelons theory. Quite conceivably, richer understanding of the team demographic characteristics is expected to benefit practitioners and theorists alike.

## References

- Ancona, D.G., & Caldwell, D.F. (1992). Demography and design: Predictions of new product team performance. *Organization Science*, 3, 321-341.
- Blau, P. (1977). *Inequality and Heterogeneity: A Primitive Theory of Social Structure*. Free Press, New York.
- Bantel, K.A., & Jackson, S.E. (1989). Top management and innovations in banking: Does the composition of the top team make a difference? *Strategic Management Journal, Summer Special Issue*, 10, 107-124.
- Bunderson, J.S. (2003). Team member functional background and involvement in management teams: Direct effects and the moderating role of power centralization. *Academy of Management Journal*, 46, 458-475.
- Bunderson, J.S., & Sutcliffe, K.M. (2002). Comparing alternative conceptualizations of functional diversity in management teams: Process and performance effects. *Academy of Management Journal*, 45, 875-893.
- Chaney, P.K., & Devinney, T.M. (1992). New product innovation and stock price performance. *Journal of Business Finance and Accounting*, 19, 677-695.
- Chatterjee, S., Lubatkin, M.H., Schweiger, D.M., & Weber, Y. (1992). Cultural differences and shareholder value in related mergers: Linking equity and human capital. *Strategic Management Journal*, 13, 319-332.
- Coff, R. (2003). Bidding wars over R&D-intensive firms: Knowledge, opportunism, and the market for corporate control. *Academy of Management Journal*, 46, 74-85.
- Cyert, R.M., & March, J.G. (1963). *A Behavioral Theory of the Firm*. Prentice-Hall, Englewood Cliffs, NJ.
- Datta, D.K. (1991). Organizational fit and acquisition performance: Effects of post-acquisition integration. *Strategic Management Journal*, 12, 281-290.
- Davis, G.F., Diekmann, K.A., & Tinsley, C.H. (1994). The decline of the conglomerate firm in the 1980s: The deinstitutionalization of an organizational form. *American Sociological Review*, 59, 547-570.
- Dooley, R.S., & Fryxell, G.E. (1999). Attaining decision quality and commitment from dissent: The moderating effects of loyalty and competence in strategic decision-making teams. *Academy of Management Journal*, 42, 389-402.
- Finkelstein, S., & Hambrick, D.C. (1996). *Strategic Leadership: Top Executives and their Effects on Organizations*. West, St. Paul, MN.
- Franko, L.G. (1989). Global corporate competition: Who's winning, who's losing and The R&D factor as one reason why. *Strategic Management Journal*, 10, 449-474.
- Gupta, A.K. (1984). Contingency linkages between strategy and general manager characteristics: A conceptual examination. *Academy of Management Review*, 9, 399-412.
- Hambrick, D.C., Cho, T.S., & Chen, M. (1996). The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly*, 41, 659-684.

- Hambrick, D.C., & Mason, P.A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9, 193-206.
- Hambrick, D.C., & Schechter, S. (1983). Turnaround strategies for mature industrial product business units. *Academy of Management Journal*, 26, 231-248.
- Harrison, D.A., Price, K.H., Gavin, J.H., & Florey, A.T. (2002). Time, teams, and task performance: Changing effects of surface-and deep-level diversity on group functioning. *Academy of Management Journal*, 45, 1029-1045.
- Harrison, J.S., Hitt, M.A., Hoskisson R.E., & Ireland, R.D. (1991). Synergies and post acquisition performance: Differences versus similarities in resource allocations. *Journal of Management*, 17, 173-190.
- Haspeslagh, P.C., & Jemison, D.B. (1991). *Managing Acquisitions: Creating value through corporate renewal*. Free Press, New York.
- Haunschild, P.R. (1993). Interorganizational imitation: The impact of interlocks on corporate acquisition activity. *Administrative Science Quarterly*, 38, 564-592.
- Hitt, M.A., Hoskisson, R.E., Johnson, R.A., & Moesel, D.D. (1996). The market for corporate control and firm innovation. *Academy of Management Journal*, 39, 1084-1119.
- Hopkins, D.C. (1987). Acquisition strategy and the market position of acquiring firms. *Strategic Management Journal*, 8, 535-547.
- Iaquinto, A.L., & Fredrickson, J.W. (1997). Top management team agreement about the strategic decision process: A test of some of its determinants and consequences, *Strategic Management Journal*, 18, 63-75.
- Jackson, S., May, K.E., & Whitney, K. (1995). Understanding the dynamics of diversity in decisions making teams. In R. A. Guzzo and E. Salas (eds.), *Team Effectiveness and Decision Making in Organizations*. Jossey-Bass, San Francisco, CA, 204-261.
- Jehn, K., Northcraft, G., & Neale, M. (1999). Why differences make a difference: A field study of diversity, conflict, and performance in workgroups. *Administrative Science Quarterly*, 44, 741-763.
- Kanter, R.M. (1983). *The change masers: Innovation for productivity in the American corporation*. New York: Simon & Schuster.
- Kedia, B.L. (2002). International business outlook 2002. *Business Perspectives*, 14, 22-25.
- Kennedy, P. (1979). *A guide to econometrics* (2nd ed.). Cambridge Mass.: MIT Press.
- Kim, W.C., Hwang, P., & Burgers, W.P. (1989). Global diversification strategy and corporate profit performance. *Strategic Management Journal*, 10, 45-57.
- Knight, D., Pearce, C.L., Smith, K.G., Olian, J.D., Sims, H.P., Smith, K.A., & Flood, P. (1999). Top management team diversity, group process, and strategic consensus. *Strategic Management Journal*, 20, 445-465.
- Krishnan, H.A., Miller, A., & Judge, W.Q. (1997). Diversification and top management team complementarity: Is performance improved by merging similar or dissimilar teams? *Strategic Management Journal*, 18, 361-374.
- Lawless, M.W., & Anderson, P.C. (1996). Generational technological change: Effects of innovation and local rivalry on performance. *Academy of Management Journal*, 39, 1185-1217.
- Michel, J.G. & Hambrick, D.C. (1992). Diversification posture and top management team characteristics. *Academy of Management Journal*, 35, 9-37.

- Miller, D., & Friesen, P.H. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal*, 3, 1-25.
- Milliken, F.J., & Martins, L.L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review*, 21, 402-433.
- O'Reilly, C. A., Caldwell, D.F., & Barnett, W.P. (1989). Work group demography, social integration, and turnover. *Administrative Science Quarterly*, 34, 21-37.
- O'Reilly, C.A., Snyder, R.C., & Boothe, J.N. (1993). Executive team demography and organizational change. In *Organizational change and redesign: Ideas and insights for improving performance*, ed. G.P. Hunter and W.H. Glick. New York: Oxford.
- Pegels, C.C., Song, Y.I., & Yang, B. (2002). Management Heterogeneity, competitive interaction groups, and firm performance. *Strategic Management Journal*, 21, 911-923.
- Pelled, L. 1996. Demographic diversity, conflict, and work group outcomes: An intervening process theory. *Organization Science*, 7: 615-631.
- Pelled, L.H., Eisenhardt, K.M., & Xin, K.R. (1999). Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative Science Quarterly*, 44, 1-28.
- Peterson, R.S., Smith D.B., Martorana, P.V., & Owens, P.D. (2003). The impact of chief executive officer personality on top management team dynamics: one mechanism by which leadership affects organizational performance. *Journal of Applied Psychology*, 88, 795-808.
- Pfeffer, J. (1983). Organizational demography. In *Research in organizational behavior*, ed. L.L. Cummings and B.M. Staw. Vol.5: 299-357.
- Pinchot, G. (1985). *Intrapreneuring*. New York: Harper & Row.
- Priem, R.L. (1990). Top management team group factors, consensus, and firm performance. *Strategic Management Journal*, 11, 469-478.
- Puffer, S., & Weintrop, J. (1991). Corporate performance and CEO turnover: A comparison of performance indicators. *Administrative Science Quarterly*, 36, 1-19.
- Ravenscraft, D.J., & Scherer, F.M. (1987). *Mergers, Sell offs, and economic efficiency*. Brookings Institution, Washington, DC.
- Schweiger, D.M., Sandberg, W.R., & Rechner, P. (1989). Experiential effects of dialectical inquiry, devil's advocacy and consensus approaches to strategic decision making. *Academy of Management Journal*, 32, 745-772.
- Sessa, V.S., & Jackson, S.E. 1995. Diversity in decision-making teams: All teams are not created equal. In M.M. Chemers, S. Oskamp, & M.A. Costanzo (Eds.). *Diversity in organizations*, pp. 133-156. Newbury Park, CA: Sage.
- Simons, T., Pelled, L., & Smith, K. (1999). Making use of difference: Diversity, debate, and decision comprehensiveness in top management teams. *Academy of Management Journal*, 42, 662-673.
- Simsek, Z., Veiga, J.F., Lubatkin, M.H., & Dino, R.N. (2005). Modeling the multilevel determinants of top management team behavioral integration. *Academy of Management Journal*, 48, 69-84.
- Singh, H., & Montgomery, C. (1987). Corporate acquisition strategies and economic performance. *Strategic Management Journal*, 8, 377-386.

- Song, J.H. (1982). Diversification strategies and the experience of top executives of large firms. *Strategic Management Journal*, 3, 377-380.
- Tushman, M., & Romanelli, E. (1985). Organizational evolution: A metamorphosis model of convergence and reorientation, In L.L. Cummings and B.M. Staw (eds) *Research in Organizational Behavior*, (Vol 17) JAI Press, Greenwich, CT, 171-222.
- Van de Ven, A.H. (1986). Central problems in management of innovation. *Management Science*, 32, 590-607.
- van Knippenberg, D., De Dreu, K., & Homan, A. (2004). Work group diversity and group performance: An integrative model and research agenda. *Journal of Applied Psychology*, 89, 1008-1022.
- Vermeulen, F. (2005). How acquisition can revitalize companies. *MIT Sloan Management Review*, 46, 45-51
- Vermeulen, F., & Barkema, H. (2001). Learning through acquisitions. *Academy of Management Journal*, 44, 457-476.
- Wagner, G.W., Pfeffer, J., & O'Reilly, C.A. (1984). Organizational demography and turnover in top management groups. *Administrative Science Quarterly*, 29, 74-92.
- Walsh, J.P. (1988). Top management turnover following mergers and acquisitions. *Strategic Management Journal*, 9, 173-183.
- West, C.T., & Schwenk, C.R. (1996). Top management team strategic consensus, demographic homogeneity and firm performance: A report of resounding nonfindings. *Strategic Management Journal*, 17, 571-576.
- Wiersema, M., & Bantel, K.A. (1992). Top management team demography and corporate strategic change. *Academy of Management Journal*, 35, 91-121.
- Wiersema, M., & Bantel, K.A. (1993). Top management team turnover as an adaptation mechanism: The role of the environment. *Strategic Management Journal*, 14, 485-504.
- Yip, G. S. (1982). Diversification entry: internal development versus acquisition. *Strategic Management Journal*, 3, 331-345.
- Zhang, Y., & Rajagopalan, N. (2003). Explaining new CEO origin: Firm versus industry antecedents. *Academy of Management Journal*, 46, 327-338.
- Zirger, B.J., & Maidique, M. (1990). A model of new product development: An empirical test. *Management Science*, 36, 867-883.



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