

TOP MANGAMENT TEAM HETEROGENEITY AND FIRM PERFORMANCE

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Abstract:

At this research will try to analyze the direct relation that the Upper Echelons Theory establishes between the diversity of the demographic characteristics of the top management teams and the performance. As Hambrick and Mason (1984: 193), we consider that “organizational outcomes are viewed as reflections of the values and cognitive bases of powerful actors in the organization: the top managers”. Moreover, “managerial characteristics of these top managers are indicators of firm performance” (1984: 196). Premise that we will try to test in this research across the empirical contrast of five hypotheses and a theoretical model. The results of our research reveal us how of five raised hypotheses, three are fulfilled in its entirety, one was fulfilling partially to the being the sense of the existing relation the inverse one to the raised one, and one is not fulfilled.

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INTRODUCTION

Thompson (1967) described how the variable humanizes was concerning the organizational actions. Later, Hambrick and Mason (1984: 197) indicated that the organizations were not any more than the reflex than its top managers, and the demographic characteristics of these top managers "determinants of the strategic election and, across this election, the organizational performance".

The importance of the human element in the firm is equally supported for:

- 1) Huselid (1995); Wright, Smart and McMahon (1995) and Finkelstein and Hambrick (1996); they suggest that the attributes of the human capital (including education, experience and skills) and, especially, the characteristics of the top managers concern the results of the company;
- 2) Daily, Certo and Dalton (2000), think that the executives represent the only sources of resource for the company;
- 3) Hitt, Bierman, Shimizu and Kochhar (2001) establish, according to the theory based on the resources and the capacities, on the one hand, that "the differences at the companies throughout the time can be attributed to the variations in the resources and capacities of these companies", and on the other hand, "the companies change in the yield because they differ in the human capital "(p. 13).
- 4) Roure and Keeley (1990), and Simons, Pelled and Smith (1999) thought that the diversity of the functional experience of the top management teams constituting an important predictor of the financial performance in the company. Smith and his collegians (1994), in the same sense, they indicate to that the educational heterogeneity of the top managers was associated with this financial performance. An influence on the financial performance of the demographic characteristics, concretely, of the heterogeneity of the same, which of equal form they will be analyzed later by Simons and his collegians (1999).

All these positions in favour of the existence of the relation between these magnitudes it is not any impediment, unfortunately, in order that there comes together. Also, in

this literature what many authors, as Lawrence (1997), have coincided in naming as "black box of the organizational demography". A Certain "empirical emptiness", "heterogeneity of "incongruous" results", according to some that another investigator, that they give place:

- 1) "That one cannot determine: what heterogeneous specific term is represented from several demographic variables, if the theoretical explanation offered by the empirical relations they are better or worse than other commendable explanations or the directly practicable implication for the executives " (Priem, Lyon and Dess, 1999: 943);
- 2) According to the same investigator, "the specific mechanisms from which the theory Upper Echelon suggests that the heterogeneity of the top management team can influence on the firm performance remain generally unexplored (1999: 935); and
- 3) to which in an attempt of "saving" this obstacle, the majority of the investigations subject to the theory Upper Echelons suggests that the heterogeneity of top management team influences on the firm performance indirectly across other variables, as the election of the strategy, the process of group interaction, the cohesion inside the group or the effective implementation (e.g., Hunt, Boal and Sorenson, 1990 or Finkelstein and Hambrick, 1996).

Inside all this controversy, the same belief seems to be shared by an investigators' great variety, especially for the defenders of the Upper Echelon. A position that it thinks that the literature about the demography of the top management team and the performance has helped to treat to a great extent of manager the attention of the investigation towards the top managers, putting of manifest, from many of the results of these investigations, that these are important for the firm performance (Priem, Lyon and Dess, 1999).

In this literature, we think that a bigger diversity of the top management team is related with: a major creativity of this teams (Bantel and Jackson, 1989), a higher innovation of the same one (Wiersema and Bantel, 1992); or an increase in the cooperation, in the number of perspectives and considered alternatives and in the quality of the group performance (Cox, Lobel and McLeod, 1991; Ancona and Caldwell, 1992; McLeod and Lobel, 1992; Watson, Kumar and Michaelsen, 1993; Milliken and Martins, 1996). Nevertheless, a few results put of manifest that: "the diversity of the top management teams, really directed, there has much that to contribute to the organization " (Brickson, 2000: 82), especially, in the measurement in which, definitively, they all contribute that from this diversity a better company performance is reached in a turbulent environment (Haleblian and Finkelstein, 1993).

In the line of the arguments previously used, the major object of this research is determining the effect of the diversity of the demographic characteristics of the top management teams on the organizational performance. The importance that, so much with a view to the managerial reality, principally, since to the society in general, secondarily, it has the knowledge of these relations we believe that they are more than sufficient to justify this study.

We begin by examining the current situation and the importance of the knowledge of demographic characteristics of top management teams for the firms. Thereafter, demographic literature, concretely, Upper Echelon Theory are introduced as the basis for the subsequent model development. Following, we suggest a number of hypotheses regarding the relationship between key variables and firm performance. Finally, we present implications for research and management of our findings, particularly the implications for the firm performance of top manager team' demographic heterogeneity.

MODEL AND HYPOTHESIS

Upper echelons studies typically emphasize the efforts of the entire team, not a single person, based on the belief that teams are essential to maintain the specialized work in organization (Barnard, 1938). According to these researches "top management team (TMT)'s characteristics have important impacts on organizational outcomes because top executives are empowered to make strategic decisions for organizations" (Pegels et al, 2000: 912). Based on this logic, researchers have investigated the link between TMT characteristics and the behaviour of firms such as organizational innovation (Bantel and Jackson, 1989), strategic planning (Finkelstein and Hambrick, 1990, Grimm and Smith, 1991) and firm performance (Hambrick and D'Aveni, 1992, Boeker, 1997). Further, strategy researchers have extended Hambrick and Mason's (1984) perspectives argue that if demographic diversity has implications for top team behaviours and those behaviours integral to effective management, then heterogeneity is likely to be reflected in firm performance (Carpenter, 2002). In this line, Pegels et al (2000: 913) manifest that "TMT heterogeneity (particularly in demographic characteristics) is an important driving force for the organizational processes and outcomes".

"The demographic indicators used in the investigations that have treated the relation heterogeneity of top management team - performance, have helped to show the importance that of fact has the top managers for the results of your companies "(Priem, Lyon and Dess, 1999: 935). In fact, the literature on managerial demography and performance has helped to treat to move the attention of the investigation towards the top man-

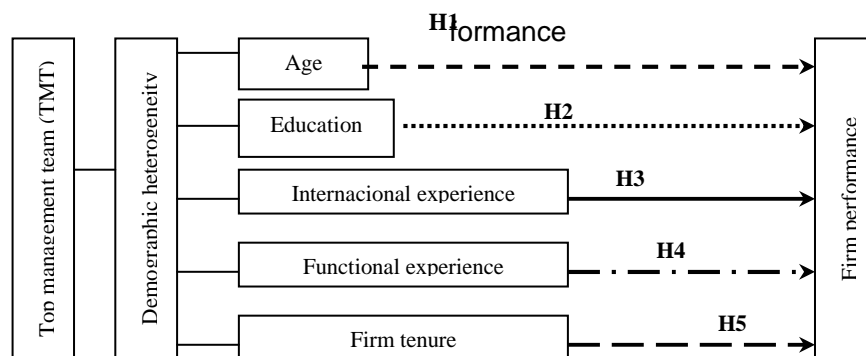
agers, showing that these are important for the firm performance. This way, this literature has thought, for example, that the most wide diversity of the top management team is related to the best firm performance in a turbulent environment (Haleblian and Finkelstein, 1993), the highest innovation (Wiersema and Bantel, 1992) or the major creativity of the top management team (Bantel and Jackson, 1989).

Nevertheless, Priem, Lyon and Dess (1999) considers that the results of this literature do not allow determine: 1) what heterogeneous specific term is represented from several demographic variables, 2) if the theoretical explanation offered by the empirical relations they are better or worse than other commendable explanations and 3) the practical implication for the executives.

These investigators believe and aim: "the studies of heterogeneity of the top management team are limited by a series of intrinsic balances which sacrifice the validity of the term at the moment of effecting a trustworthy measurement, the explanation of the prediction, and the description of the phenomenon" (1999: 935).

These limitations of the studies on the demographic characteristics of the top management teams have been an obstacle for specifying how the top managers influence on the firm performance. In an attempt of saving the latter problem we formulate the model and the five hypotheses relative to the relation demographic heterogeneity – performance below (figure 1).

Figure 1: A model of effect of demographic heterogeneity of top management teams on firm performance



Our model is founded on the argument that the firm performance is influenced by forces both for and against TMT demographic characteristics, concretely, by demographic heterogeneity of these teams. We coincide, in this argument, between others, with Priem (1990), Wiersema and Bantel (1992) or Goll, Sambharya and Tucci (2001).

These forces are outlined in our model through the five hypothesis that we following describe.

The association between the age of top managers and organizational outcomes has been the subject of many studies, but the few that exist yield strikingly consistent results. A related finding of these studies is that volatility of sales and earnings also is associated with managerial youth. So Child (1974) consider that older executives may have less physical and mental stamina; Chown (1960) believe that this older executives may be less able to grasp new ideas and learn new behaviours; Stevens, Beyer and Trice (1978) that older executives have greater psychological commitment to the organizational status quo; and Carlsson and Karlsson (1970) suggest that older executives tends at this moment of their live at financial security and career security and that any risky actions that might disrupt these generally are avoided. In line with the before aspects we think that they can be important inhibitors of the higher firm performance so we hypothesized that:

- Hypothesis 1 (H1): *The heterogeneity of the age of the top managers influences positively on firm performance.*

Differences in cognitive structures will create more diverse information collection, interpretation, and solution generation among top management team members, which, in turn, will contribute to a greater impetus for strategic change (Dutton and Duncan, 1987) and performance in the firm (Murray, 1989). Theses diversity of knowledges are obtain by top management teams though a high educational heterogeneity from theirs top managers.

- Hypothesis 2 (H2): *The heterogeneity of the education of top managers influences positively on firm performance.*

Schneider (1983) argued that organizational survival in turbulent environments may be aided by attracting, selecting and retaining demographically diverse managers. In the actual environment international experience's top managers is a resource very estimated by the firms. Top management teams are more effective to solve the complex, non-routine problems when are composed of individuals with variety of skills, knowledge, abilities and perspectives about the function to do or problem to resolve in this context international. Executives from different functional areas may view organizational problems from different perspectives (Waller et al, 1995). Furthermore, managers form different countries tend to have different frameworks for approaching a wide range o issues (Hoftede, 1980, Laurent, 1986).

Thus based on prior research and, in general, upper echelon theory, we decided on important indicator such as heterogeneity of international experience of the top manag-

ers would predict firm performance over a wide range of attitudes, beliefs, and values relevant to organizational decision making inside the top management team. We recognize that this indicator is not usually used in the demographic literature, nevertheless we thought it is important to test it.

- Hypothesis 3 (H3): *The heterogeneity of the international experience of the top managers influences positively on firm performance.*

Grinyer and Spender (1979) argued that strategic reorientation is facilitated by the appointment of new executives whose prior experience enables them to import successful for implementing strategic change. More recently, Boeker (1997) suggested that firms planning to enter a new product market can benefit from the prior experience provided by executives. Research on managerial cognition has shown that with experience, individuals develop more complex knowledge structures, and this leads to more efficient information processing, more accurate predictions and better outcomes firm (Stabell, 1978; Ford and Baucus, 1987). Moreover, Westphal and Fredrickson (2001) believe that the influence of an individual director's home company experience in determining the new CEO's background will increase home company performance. These before finds suggest after hypothese:

- Hypothesis 4 (H4): *The heterogeneity of the functional experience of the top managers influences positively on firm performance.*

Heterogeneity in tenure increases the chance that a top management team will break with past patterns and practices and will attempt to reconfigure an organization's strategy (Wiersema and Bantel, 1992). Thus, tenure heterogeneity within a top management team should lead to diverse opinions and be associate with changes in strategy and consequently, with different level of performance. In this sense Boeker (1997: 158) hypothesized that: "Poorly performing organizations with homogeneous top management tenure distributions will exhibit less strategic change than successful organizations". Nerveless, we consider that:

- Hypothesis 5 (H5): *The heterogeneity of the tenure of the top managers influences positively on the firm performance.*

METHODS

Sample

Our study tries to analyze the effect of the heterogeneity of the demographic variables of the top management teams at the big companies on the performance that these obtain. In consequence the unit of analysis of this investigation is the company, must obtain in-

formation brings over so much of the demographic characteristics of the complete top management teams as of other magnitudes that allow to measure the performance. So, after establishing the initial sample of companies (500, between companies and groups of societies), the following step is directed to look for the members of the top management teams. The results of this search are the obtaining of the teams of 330 companies (approximately 1531 executives), obtained across the alternative ways (i.e. pages webs of the companies, seekers of Internet, other magazines of the managerial sector, year-books...).

For the obtaining of the demographic information, we use both principal lines of work that the investigators in managerial demography have come using. Principally, sources of secondary information: yearbooks, newspapers and specializing magazines (Westphal and Milton, 2000; Pegels, Song and Yang, 2000), secondarily, in order to complete this information, primary information obtained from the putting in touch with our population aim. As for the not demographic information, to aim that this information was obtained from strictly secondary sources consolidated enough.

The results of these searches described previously are translated, finally, in a final sample of 157 complete top management teams (approximately 846 top managers). These firms were representative of major European and U.S. industrial corporations with business in Spain from 1999 through 2002.

Analytical approach

Hypothesis were tested by information about two panels of variables (demographic characteristics and firm performance), cross-sectional data; linear regression analysis with fixed-effects in a model was used to control for unobserved differences between firms as the methodology generally adopted on organizational demography (e.g., Kimberly and Evanisko, 1981; Pfeffer, 1981; Wiersema and Bantel, 1992; Pegels, Song and Yang, 2000).

Measures

Dependent variable. Firm Performance was measured as average of return on assets (ROA) and return on sales (ROS) the two years (for the years between the TMT demographic heterogeneity and firm performance observations), following with Denis and Denis (1995). In order to verify the consistency of the obtained results, the variation of the sales was used to for this measurement. The variation of the sales it is not habitual indicator in the previous investigations but nevertheless, another excellent indicator of

the performance (Salancik and Meindl, 1984; Boeker, 1992; Boeker and Goodstein, 1993).

Independents variables. Following other upper echelons studies, select TMT demographic characteristics comprised the set of independent variables used to test all the hypotheses. To develop the panels of TMT demographic characteristics, we assessed teams in the year 2000, which themselves precede the firm performance observations by two years (observations in 1999-2002). “Using a two-year lag (versus a longer or shorter one) between the top team and performance observations reduced the possibility of other factors confounding the relationship between demographics and firm performance, and it also allowed enough time for potential top team effects to become apparent” (Carpenter and Fredrickson, 2001: 538).

Data for TMT characteristics were obtained from the executives’ career histories reported in sources of secondary information and primary information.

For each TMT I coded five demographic characteristics expected to gauge the breadth of their demographic differences. As mentioned above, age, education, international experience, functional experience and firm tenure were chosen because they are the most widely used in TMT demographics research.

Educational (level and background) and functional background are categorical variables, and I categorized these demographic characteristics following Wiersema and Bantel (1992). International Experience was calculated as dichotomy variable. Age was calculated depending on the biographical information of the top managers and, finally, firm tenure was calculated using respective tenure of the top managers on the firms.

We would like to specify that, in the measurement and analysis of the magnitudes once again, we was basing on the existing literature. So, the degree of heterogeneity of demographic characteristics like educational heterogeneity, international experience heterogeneity and professional background heterogeneity was calculated using the indicators Blau’s (1977) index. This index is calculated as $1 - \sum (P_i)^2$, where P_i is the percentage of individuals in the i th category. Firm tenure heterogeneity and age heterogeneity was calculated using the Coefficient of variation of Allison (1978) (standard deviation divided by the mean). Allison (1978) noted that among inequality measures, the coefficient of variation is preferable when interval-level data such as age or time are used (Carpenter and Fredrickson, 2001: 538).

RESULTS

The results of the empirical analysis put of manifest that the heterogeneity of the demographic characteristics of the top management teams affects on the firm performance. This way it statisticians indicate so much the levels of significance of different test realized (test F and t), as the values of R^2 .

All these previous reflections rely on the information that, across tables and for the different contrasts of hypothesis that we have approached, we present later.

- 1) Heterogeneity in the specialization in the firm area and the heterogeneity in the professional background (both indicators of the functional heterogeneity of the top management team) influence positively on the firm performance (see table 1).

Such and as support Bantel and Jackson (1989), Murray (1989) or Hambrick, Cho and Chen (1996), between others: the different functional experiences of the members of the top management teams represents important resources in order that this teams could solve the problems and to take decisions. The different functional precedents on teams are related to the results that the company obtains.

This direct relation supports the previous relation between demographic characteristics and strategic change (managerial decisions), though also it reflects that there exist many variables and relations that could not have been considered in the present study.

Table I. Results of the simple linear regression analyses estimating extent of effects of TMT's functional heterogeneity on ROS.

Model Summary ^{a,b}								
	R Square	Adjusted R Square	Std. Error of the Estimate	Statistics change				
				R squared change	F change	df1	df2	Sig. F change
<i>Model 1</i>	0,190	0,121	61,99543252	0,190	2,869	2	154	0,006
Coefficients ^{a,b}								
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
<i>Model 1</i>	(Constant)	8,427	12,138		0,694	0,009	15,552	32,405
	TMTspec.managerial area heterogeneity	50,820	27,396	0,147	1,855	0,004	4,939	73,300
	TMTprof.background heterogeneity	43,251	25,586	0,134	1,690	0,003	7,294	93,796

a. Predictors: (Constant), specialisation area firm heterogeneity (TMTspec. managerial area heterogeneity) and professional background heterogeneity top management team (TMTprof. background heterogeneity).

b. Dependent Variable: ROS.

- 2) Heterogeneity in the character of the formation (educational heterogeneity) and in the tenure in the company of the top managers influence the major levels of performance reached by the companies (see table 2).

Table II. Results of the simple linear regression analyses estimating extent of effects of TMT's firm tenure heterogeneity and specialisation educational heterogeneity on ROA.

- a. Predictors: (Constant), TMTfirm tenure heterogeneity and TMTEducational formation heterogeneity)
- b. Dependent Variable: ROA

3) Regarding the variation in the firm performance of our sample like consequence of major variations in its volume of sales, to emphasize that so much the heterogeneity in the level and in the educational specialization (heterogeneity in the formation) as in the tenure (functional heterogeneity) they are positive to this variation in the sales (see table 3). A variation in the sales, such and as an a bit more exhaustive study of the same contrast it allowed us to verify, that it turns out to be negative during the period study for the growth of a part of the big companies of our sample belonging to the primary sector and positive for the belonging ones to tertiary sectors.

Table III. Results of the simple linear regression analyses estimating extent of effects of TMT's background educational heterogeneity, level educational heterogeneity, functional background heterogeneity and sector on variation sales.

Model Summary ^{a,b}									
	R Square	Adjusted R Square	Std. Error of the Estimate	Statistics change					
				R squared change	F change	df1	df2	Sig. F change	
Model 3	0,218	0,158	6,934797972	0,218	3,859	2	154	0,003	
Coefficients ^{a,b}									
		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.	95% Confidence Interval for B		
							B	Std. Error	Beta
Model 2	(Constant)	2,543	1,165		-1,797	0,004	-5,338	-0,252	
	TMTfirm tenure heterogeneity	2,699	1,134	0,188	2,387	0,005	2,465	0,493	
	TMTEducational background heterogeneity	3,320	2,512	0,104	1,322	0,004	1,642	8,282	
	TMTEducational level heterogeneity	0,198	231,4434298	0,198	3,145	2	154	0,006	
	Sector	-118,528	112,750	-0,085	-1,051	0,006	-341,276	8,282	
Coefficients ^{a,b}									
		Unstandardized		Standardized	t	Sig.	95% Confidence		
		B	Std. Error				Beta	Interval for B	Lower Bound
Model 2	(Constant)	-82,653	48,777		-1,695	0,092	-179,012	13,705	
	TMTEducational formation heterogeneity	121,484	68,021	0,141	1,786	0,004	12,890	255,858	
	TMTfirm tenure heterogeneity	84,848	47,771	0,140	1,776	0,005	9,523	179,219	

- a. Predictors: (Constant), TMTEducational background heterogeneity, TMTEducational level heterogeneity, TMT tenure heterogeneity, and sector.
- b. Dependent Variable: Variation sales.

Table IV. Results of the simple linear regression analyses estimating extent of effects of TMT’s age heterogeneity and international condition of firm on variation sales.

Model Summary ^{a,b}								
	R Square	Adjusted R Square	Std. Error of the Estimate	Statistics change				
				R squared change	F change	df1	df2	Sig. F change
Model 4	0,367	0,304	4318,404576	0,367	3,687	2	150	0,006
Coefficients ^{a,b}								
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
Model 4	(Constant)	1462,373	535,089		2,733	0,004	405,256	2519,491
	TMTage heterogeneity	-2142,324	726,936	-0,130	3,215	0,002	-946,824	-3727,873
	International condition	-1236,209	343,773	-0,174	-2,260	0,003	-2240,527	-43,481

a. Predictors: (Constant), TMTage heterogeneity and international condition of firm

b. Dependent Variable: Variation sales

4) Finally, we stand out also like, in opposition to we it were presupposing, a major heterogeneity in the age of the members of the top management teams minor significant changes bear in the performance of the company as consequence of variations in yours average volume of sales (B (-2142,324) and B standardized (-0,130)). A negative effect on this average variation in the sales of these companies that, of equal form, it appreciates in the effect that on this variable the variable of control exercises international character of the company. By virtue of the latter, the companies or foreign subsidiaries have experienced a minor growth in your performance by this major heterogeneity in the age of its top managers (B (-1236,209) and B standardized (-0,174)) (see table 4).

As final summary of the contrast of our theoretical model, we will say that except for the heterogeneity in one of the demographic variables treated (heterogeneity in the international experience) all the relations in it withdrawals are fulfilled.

We coincide with it, though from a global perspective, with the obtained results, for other different samples and temporary different periods, for Hambrick and Mason (1984); Murray (1989), Finlkestein (1990), Pettiglew (1992), Rajagopalan and Datta (1996), Lawrence (1997), Pitcher and Smith (2001) and Carpenter (2002).

DISCUSSION AND IMPLICATIONS

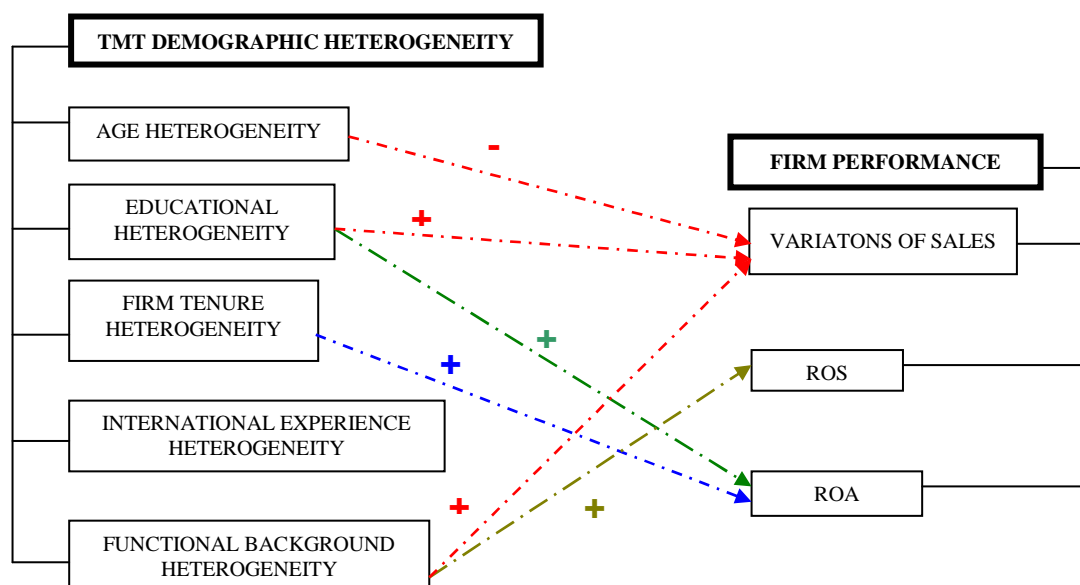
All firms have specific resource endowments (Barney, 1991), but often need new further resources to be competitive (Hitt et al, 199b). We think that the diversity of demographic characteristics of top managers will be the new resources than the firms need. Different

experiences and backgrounds help the firm to unlearn previous behaviours no longer functional and attempt different approaches to facilitate the firm's adaptation to new conditions (Uhlenbruck et al, 2003, p. 273). Thus, heterogeneous management teams are better able to handle these new demands because they can absorb more information, consider problems and solutions from multiple perspectives (Finkelstein and Hambrick, 1996) and it will bring changes in strategy attempting to adapt the firm to new environment (Lee and Hitt, 2001), and generally, to increase firm performance.

At this research will try to analyze the direct relation that the Upper Echelon Theory establishes between the diversity of the demographic characteristics of the top management teams and the performance. As Hambrick and Mason (1984), we consider that: "the organizational results owe to the demographic characteristics of it top management team" (p. 193). Premise that we will try to test in this research across the empirical contrast of five hypotheses and a theoretical model.

The results of our research reveal us how of five raised hypotheses, three are fulfilled in its entirety, one was fulfilling partially to the being the sense of the existing relation the inverse one to the raised one, and one is not fulfilled. That is to say, a major heterogeneity in the education, in the functional experience and in the tenure firm of the top managers they drive to major levels of firm performance. A few major levels of firm performance that, in opposition to what we initially were presupposing, seem to be promoted also for a minor heterogeneity in the age of the members of this top management teams, and indifferent opposite to the heterogeneity of the international experience of its top managers (see figure 2).

Figure 2: TMTs demographic effects on firm performance



The lack of an absolute "conformity" with the results reached in our study your justification finds in ours increasingly firm belief, on the one hand, of that there exist, besides the demographic variables, other magnitudes that influence also the relation that we try to test; and on the other hand, in the fact that we think that it is necessary to penetrate into the existing relations between the proper demographic variables, since in the analysis of correlations they appreciate significant relations between variables linked with the performance that, nevertheless, in the analysis of regression that we carry out turn out to be not significant. A few questions that, as others already commented, we have decided to research in a not very far away future.

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