

**THE TEAM CONSENSUS–PERFORMANCE RELATIONSHIP
AND THE MODERATING ROLE OF TEAM DIVERSITY**

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FUNDACIÓN DE LAS CAJAS DE AHORROS
DOCUMENTO DE TRABAJO
Nº 400/2008

De conformidad con la base quinta de la convocatoria del Programa de Estímulo a la Investigación, este trabajo ha sido sometido a evaluación externa anónima de especialistas cualificados a fin de contrastar su nivel técnico.

ISSN: 1988-8767

La serie **DOCUMENTOS DE TRABAJO** incluye avances y resultados de investigaciones dentro de los programas de la Fundación de las Cajas de Ahorros.
Las opiniones son responsabilidad de los autores.

The Team Consensus–Performance Relationship and the Moderating Role of Team Diversity

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ABSTRACT

This laboratory research contributes new evidence about the relationship between team consensus (an outcome of the teamwork process) and team performance. The main empirical results indicate that team consensus that results from working on long-term, complex tasks, such as decision making, relates positively and significantly to team performance, and more important, team diversity acts as a moderating factor that reinforces this relationship. The arguments in support of this positive influence rely on assumptions that diversity increases team discussions and the free sharing of information, which promotes a better decision by teams that reach consensus as a result of their work. This finding represents an important contribution to the research agenda pertaining to the team consensus–performance relationship and has practical implications, mainly for those looking for new management practices that improve teamwork.

Key Words: Team Work; Team Consensus; Team Performance; Team Diversity; Team Decision Making in Business Simulation

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1. INTRODUCTION

Two questions summarize the challenge facing the field of strategic management: Why do some organizations perform better than others, and how can a firm achieve and maintain a competitive advantage? Teece et al. (1997) suggest researchers use four paradigms to shed light on these two questions. The first paradigm is based on Porter's (1980) competitive forces and rooted in the "structure–conduct–performance" paradigm of industrial organizations. The second, the strategic conflict approach, focuses on explaining how firms differ on the basis of strategic decisions, such as investments, pricing strategies, signaling, and the control of information. The third paradigm, the resource-based perspective, emphasizes firm-specific capabilities and assets to explain different performance levels by firms. Finally, the dynamic capabilities paradigm may represent an evolution of the other paradigms (Teece et al. 1997), because it considers the combination of competencies and resources that a firm can develop and deploy.

A closer look at these paradigms reveals two key aspects, one related to the firm's management of its resources and capabilities, in an attempt to identify an "internal best practice" that might be used to achieve better internal efficiency, and the other related to external factors, such as competitors, external resources, and macroeconomic variables, that influence strategic decisions and the ultimate competitiveness of a firm. Bourgeois (1985, p. 548) synthesizes these two aspects by affirming that "the central tenet in strategic management is that a match between environmental conditions and organizational capabilities and resources is critical to performance and that a strategist's job is to find or create this match." Bourgeois also highlights the fundamental role of strategists (i.e., top executives), often referred to in the literature as top management teams (TMT). Through synthesis, a team searches for and analyzes information in a complex and dynamic environment, proposes alternatives, and chooses one. The result of this "team–process rally" influences the success of team outputs (i.e., strategic decisions) and thus the organization's performance.

The complexity and uncertainty of the economic environment makes decision making a challenge for any top manager. In turn, the need to work in teams may be justified by the theory of bounded rationality, which establishes limits that influence human ability to process information and make a decision, even when the decision makers have complete information (Douma and Schreuder, 2002). To reduce uncertainty and make more efficient decisions then, people should work in groups—or even better, in teams—because individually decision makers may offer new or renewed information, but in a group, they can appreciate and share this information among all other members (Schweiger et al., 1986).

Following this assumption, two correlated elements arise: team consensus and team diversity and their relation to firm performance.

Team consensus represents the level of shared perceptions (Dess and Keats, 1987) or coalition (Bourgeois, 1980) among members of a team after they engage in a discussion process pertaining to specific topics related to strategic decision making. We interpret consensus as an output of the team process, not a team process itself.¹ Recent academic studies state that teams working on decision-making processes often try to achieve consensus (Horwitz and Horwitz, 2007). Demonstrating its significance among practitioners as well, Priem (1990) cites a field research study in which only 8 of 98 executive respondents consider consensus “not at all” or “not very” important in strategic decision making. More recently, Simons and Peterson (2006, pp. 23–24) interview various CEOs and their respective TMTs and find that “group mistrust damaged the implementation only half as much when the decision was made by consensus than when it was imposed by the CEO or a subgroup”; therefore, they conclude that “teams whose members mistrust one another are less effective at implementing their strategic decisions.”

Previously, the main stimulus for research in this area has been the general assumption that good levels of strategic consensus associate positively with coordination and cooperation during strategy implementation, which implies they are associated with good organizational performance (Kellermans et al., 2005). Yet beyond discussions of the nature of team consensus and its implementation, a question still remains: Is a high level of consensus among a TMT a guarantee of better strategic decisions and thus better firm performance?

Previous studies have tried to answer this question for years, from Bourgeois (1980) to more recent analyses such as Kellermans et al. (2005). Some find a positive relationship between consensus and performance, others indicate a negative relationship, and still others reveal equivocal results. In turn, several explanations for this controversy have emerged; we detail three of them.

The first relates to the more accurate measure of consensus achieved from a bivariate analysis of the consensus–performance relationship, known in recent consensus literature as consensus content. Bourgeois (1980) uncovers different results when he uses two different measures of consensus, namely, strategic aims (firm objectives) and strategic means (strategy). More recently, Kellermans et al. (2005) warn of the persistence of this problem and suggest using more accurate measures for the consensus portion of the consensus–performance

¹ For a detailed discussion of consensus and conflicting teamwork processes, see Schweiger et al. (1989).

relationship. In our research, we propose and test a new consensus measure based on budget allocation, which responds to the need for tangible and concrete measures (e.g., Wooldridge and Floyd, 1989).

The second problem pertains to variation in consensus over time, especially if a team works on long-term tasks. Dess and Origer (1987) concur that consensus about an issue could vary over time, but Kellermans et al. (2005, p. 729) note that in prior empirical studies, consensus was “measured at only one point in time during the ongoing process of decision making.” Thus, in static studies, the consensus–performance relationship might be corrupted by specific incidental circumstances. We conclude that consensus could be measured more effectively among teams working on long-term tasks with a longitudinal study, which would enable us to control for the stability of the consensus construct and avoid a dependence on possible contingencies.

Finally, the third source of problems in previous literature involves the lack of a third variable, which could extend the single consensus–performance model into a more complex, complete, and real model. We suggest team diversity, because existing literature posits that team diversity may be an antecedent of consensus. We instead propose team diversity moderates the consensus–performance relationship. To develop this proposition, we rely on team diversity literature that argues in favor of its use, such as the claim that “diversity enhances the breadth of perspective, cognitive resources, and overall problem-solving capacity of the group” (Hambrick et al., 1996, pp. 662–663). In turn, we attempt to analyze whether team diversity moderates the team consensus–performance relationship

In summary, this research aims to advance the relationship between team consensus and performance for theoretical and practical use by proposing (1) a more tangible and objective measure of consensus based on budget allocation, (2) a measure based on a longitudinal experiment, and (3) team diversity as a moderator in the relationship. The team decision-making result (team output process) represents the unit of analysis.

2. THE TEAM CONSENSUS–PERFORMANCE RELATIONSHIP

Researchers who contribute to team consensus literature tend to use strategic management studies as a background for their work (Kellermans et al., 2005). Many empirical studies result from examining a single relationship between consensus (outcome) and performance, with the general hypothesis that once a team achieves consensus during a teamwork process, it supports improved team performance. The results, however, offer only partial or no support for such

hypotheses. As Markóczy (2001, p. 1014) states, “inconsistent findings ... which ranged from a positive relationship or even to no relationship at all, called attention to a potential problem in our conceptualization of consensus and to a lack of clear understanding of the consensus formation process in organizations.”

The problems of ambiguity in prior research studies also have a theoretical and methodological basis. Kellermans et al. (2005), in a key and extensive paper, categorize the problems into three issues: (1) differences in construct definition, (2) differences in methodology, and (3) differences in model specification.

2.1 Considerations for the Team Consensus Construct

Among the key problems involved in the consensus construct, we draw attention to consensus content, which refers to the content about which decision makers agree (Wooldridge and Floyd, 1989). One of the first studies to address consensus content (Bourgeois, 1980) measures the consensus reached during strategic decisions according to goals and means. Goals represent firm strategic objectives (i.e., what the firm must achieve in the future), whereas means are the firm's strategies (i.e., how it organizes its resources to achieve the objectives). The results of Bourgeois's experiment point to differential relationship strength between each measure of firm performance, such that the means measure offers a better result than the goals measure. He also attempts to explain this result according to the tangibility of the team discussion subject. That is, a measure of consensus based on strategic issues that are more tangible, concrete, and visible is more appropriate than a measure based on issues that are intangible, fuzzy, or difficult to see and understand, because the former can better capture the actual level of shared perceptions among managers.

Some research highlights this problem by stating that previous studies do not employ the most appropriate measure of consensus content (Bowman and Ambrosini, 1997; Kellermans et al., 2005; Marcóczy, 2001; Wooldridge and Floyd, 1989). Yet some authors defend a more efficient measure, based on strategic priorities, rather than goals and means. Wooldridge and Floyd (1989, p. 300) explain the efficiency of such a content measure, noting that “priorities define what is important to decision-makers and can be observed by focusing on how managers ‘pay attention to, weigh, and actually use certain types of information’ when making a decision.” For example, they measure priorities by “asking managers to allocate a limited resource among several competing considerations.”

Extrapolating these conclusions, we argue that a more objective, direct, and tangible measure of consensus content based on budget allocation decisions

should lead to a more efficient measure of consensus than the ends and means measures.

2.2 Considerations of Methodological Approaches to Consensus Measurement

The methodological problems listed by Kellermans et al. (2005, p. 728) relate to “distinct approaches to the construction of surveys,” as well as a lack of previous studies that consider the stability of the consensus construct over time. In this sense, Dess and Origer (1987) warn of the problem of measuring consensus in a cross-sectional manner; they affirm that consensus in period t_0 cannot be observed in period t_1 . Several other authors also highlight the importance of longitudinal experiments.

In accordance with these arguments, we suggest that measuring consensus and performance at different times in a longitudinal experiment may reduce dependence on the specific circumstances of a particular moment, which prevents biasing the consensus–performance relationship with specific contextual circumstances.

2.3 Considerations of Model Specification

Using antecedent, intervening, and moderator variables in empirical studies provides a means to comprehend why and in what conditions variables may be understood and correlated (Ginsberg and Venkatraman, 1985). Homburg et al. (1999, p. 344) justify their research of moderators in the consensus–performance relationship by claiming that “in many fields of organizational strategy research, ambiguous results concerning the relationship between two constructs have been better explained by looking at contingency or moderator effects.”

Some empirical studies already consider additional variables, but their main focus remains on external environmental conditions (e.g., munificence, complexity, dynamism). Despite the contributions of these studies, “research should continue to explore the relevance of organizational-level moderators” (Kellermans et al., 2005, p. 731). In other words, the promise of organizational variables to explain the fit between team consensus and performance remains a rather unexplored topic.

In response to these findings, we review consensus literature and propose and test a third variable based on organization level that may moderate the consensus–performance relationship.

3. RESEARCH MODEL AND HYPOTHESES

According to existing considerations about construct definition and methodology, we believe that if consensus were measured with a more objective and tangible item (i.e., budget allocation), immediately after the debate, and measured over different teams as well as different instances in a longitudinal experiment, we may identify a positive and significant relationship between team consensus and performance. With these empirical settings, we maintain the general assumptions underlying the consensus–performance relationship and propose the following hypothesis:

H1: Team consensus relates positively to team performance

Two key theoretical papers suggest team factors (e.g., diversity, homogeneity) as possible variables that may moderate this relationship. Priem (1990) suggests that group factors such as team homogeneity, structure, and process influence team performance, such that consensus represents an intervening factor in the nonlinear consensus–performance relationship. Dess and Priem (1995) focus extensively on the idea of a possible third variable and suggest several consensus–performance models. One of these models follows Priem’s (1990) work and proposes team diversity as an influential factor that could be an antecedent. However, team diversity might act not only as an antecedent but also as a moderator of the team consensus–performance relationship.

For example, Hambrick and Mason (1984) exploit the so-called “upper echelons” perspective by stating that an organization reflects its CEO, in the sense that the executive’s characteristics and functioning can predict organizational outcomes. According to this perspective, team diversity provides a framework for understanding the relationship between team characteristics and team performance. Thus, team diversity can be a “double-edged sword” (Horwitz and Horwitz, 2007) that might relate positively or negatively to team performance, depending on the situation.

Hambrick et al. (1996, p. 663) identify the negative effect of team diversity, namely, that “it may also create gulfs or schisms that make the exchange of information difficult.” Hambrick and Mason (1984) and Dess and Origer (1987) also state that diversity could lead to a lack of communication and increased conflict, and thus to poor firm performance.

On the positive side, Hambrick et al. (1996) also acknowledge that diversity enhances each team member’s perspective, cognitive resources, and overall capacity to solve group problems. Likewise, Cox and Blake (1991) argue that diversity can stimulate nonobvious alternatives. Thus, the positive impact of

team diversity functions because it provides extra communication stimuli among team members and provokes more effective debate.

Some empirical studies point to a negative diversity–performance relationship, but others reveal a positive relationship; for our analysis, the latter are more appropriate for justifying the moderating role of team diversity. For example, Simons et al. (1999) find that diversity in educational level and company tenure positively influence the quality of debate and affect the team performance. A more recent and broader study, using meta-analysis procedures, suggests a positive impact of task-related diversity (i.e., acquired rather than innate individual attributes, such as functional expertise, education, and organizational tenure) on team performance (Horwitz and Horwitz, 2007).

We therefore propose team diversity as a moderator because when a team with significant diversity arrives at consensus, this consensus results from a fusion of disparate points of view provided by a team environment that favors structured discussions and free sharing of information (e.g., without negative criticism from other participants). Such an atmosphere should lead to greater cognitive conflict (i.e., different levels of knowledge among members that stimulate debate) but less affective conflict (i.e., different levels of personality and behavior that erode the debate). These assumptions follow empirical studies by Simons et al. (1999), Mohammed and Ringseis (2001), and Horwitz and Horwitz (2007), who find a positive relationship between team task-related diversity and team performance. Thus, we propose our second hypothesis:

H2: Team diversity positively and significantly moderates the relationship between team consensus and team performance.

To depict these propositions, we present a model (Figure 1) that we use to test a single, bivariate relationship between consensus and team performance (H1), and then introduce the team diversity factor to test whether it moderates the team consensus–performance relationship (H2).

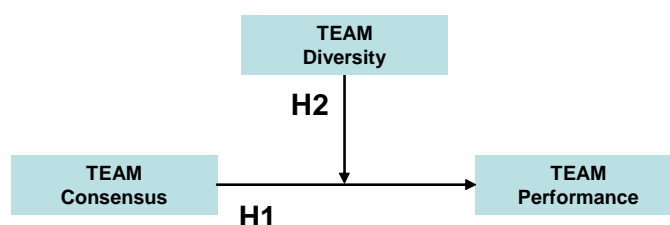


Figure 1: Model of Team Consensus, Team Diversity Moderation, and Team Performance

4. DATABASE FROM EXPERIMENTAL LABORATORY STUDY

4.1 Business Game Simulation

We employ a laboratory study that involves a business simulation game. Laboratory studies appear extensively in research pertaining to decision making, strategy, and consensus issues (e.g., Whitney and Smith, 1983; Tjosvold and Field, 1983; Cosier and Rechner, 1985; Murnighan, 1985, Schweiger et al., 1986, 1989; Kilduff et al., 2000; Miller, 2003; Ellis, 2006; Mathieu and Schulze, 2006).

The business game simulation offers several advantages (Gentry et al., 1984; Dickinson et al., 2004). First, it avoids possible problems related to implementing the strategy process, such that the influence of consensus scope and locus or problems related to employee commitment become irrelevant. In a computer simulation, the strategies implemented by the simulated firms are equal; that is, the efficacy and efficiency of the operational areas remain the same across the firms, and performance variation occurs only at the strategic decision level. Second, the simulation experiment provides free, timeless access to rich material that results from the decision-making tasks undertaken by the subjects. Furthermore, the method facilitates results based on computer reports and guarantees homogeneity in the measures of the firm's outcomes. Third, the simulation enables us to collect larger samples and answers from decision makers immediately after the decision-making process. In a real-life setting, it is difficult and sometimes impossible to access information directly from actual TMTs. Fourth, we can control the economic elasticity that affects the demand variables (e.g., price, marketing expenditures, R&D, quality), avoiding a possible imbalance in the variables that would favor one competitive strategy over other (i.e., differentiation versus low cost). Fifth, we can easily replicate the experiment with any kind of business game simulation available.

The simulation we use is called IMIS,² or International Multidivisional Industry Simulation, developed by the Department of Business Administration, University of Salamanca (Spain), and the Department of Management, The Catholic University of Brasília (Brazil), specifically for this study. It also provides a pedagogical instrument for incrementing the learning process about decision making among a group of undergraduate students. The software development reflects the first author's experience with algorithms and computer models for simulation, the use of simulations in regular courses for undergraduates and MBA students in Brazil, and a review of the vast amount of literature available about business simulation³ (Gentry, 1990).

² Further information about the simulation may be obtained by contacting the authors.

³ See the ABSEL (Association for Business Simulation and Experiential Learning) Web site at www.absel.org.

Furthermore, our software offers another advantage that complements those for any business simulation; namely, we take special care to adjust the complexity of the game (task-related complexity) to subjects' manipulation capacity (Bonner et al., 2002). As Cosier and Rechner (1985, p. 92) note, MBA students and undergraduates indicate different perceptions of the complexity of a simulation, such that "the complexity of the simulation game and the associated manipulations seemed to cause some subjects to decline participation or make 'outlier' decisions."

The IMIS simulation software provides a limited representation⁴ of real international competition among multinational firms. It simulates a market of 10 manufacturers and large consumers of memory chips, which compete to achieve the best financial performance. Each team manages up to three single business units (manufacturing plants) from a central office of a multidivisional firm.

The team's mission is to manage the business units by analyzing the environment, defining goals, choosing the most appropriate competitive strategy, and defining priorities in terms of the budget allocation and price policy (the budget allocation is the decision entered into the computer). The strategic decisions that subjects can manipulate are (1) the site (location) of production, among three options (manufacturing plants) in regions with different degrees of risk and production costs; (2) the price of the memory chip; (3) the budget for expanding (or the value of reducing) plant capacity; (4) the marketing budget (e.g., media, advertising, sales force); (5) the manufacturing budget; (6) financial resources to expend on quality assurance programs; and (7) the R&D budget.

After all teams make their decisions, the computer simulation processes the data and summarizes the results in two reports. The first, the *Management Report*, indicates the firm's individual performance by area (financial, production + quality + R&D and marketing), whereas the second collective report, the *Economic Sector Report*, presents data about the macroeconomic conditions, competitors, consumers, and costs by region, as well as information about the market and trends in the social, economic, and political situation of each region. Each decision is equivalent to an entire year, and subjects receive four years of historical data about the firm and may make decisions about it for eight more years. In addition to the two reports, the business game includes a *User Manual* that gives users all the information necessary to understand the simulation and make decisions.

⁴ As all business simulations are.

In groups, the students prepare a strategic decision using a sheet model organized into three parts: (1) a blank space available to indicate the strategic objectives and aims to be achieved, (2) a space to indicate the chosen competitive strategy, and (3) a table with room to write down the decisions made about budget allocations.

4.2 Experimentation Procedure and Database Generation

The method for this experiment provides for 142 simulated decisions distributed in four periods and 35 groups of 138 students in total (simulated firms with 4 group members each on average). The subjects are students registered in the regular final year of management studies at the undergraduate level in two universities, one located in the northwest and the other in central-western Brazil. Both are traditional universities and register more than 18,000 students in at least 31 regular undergraduate programs, along with masters (MBAs and masters by thesis) and a few Ph.D. programs. The distribution of subjects and groups is approximately 50% from each university. Of the 142 decisions made, we do not use 4, so 138 decisions represent the useful data. We reject 2 decisions by groups that consist of only one member and 2 because the groups formed after the simulation game had started (i.e., during the second decision).

We also take a special precaution for this research: We choose students in their final year of study to ensure that all participants have taken a minimum of 40 class hours pertaining to strategic management issues. To stimulate participation, we make the association between effective individual participation (individual score) and the results of the teamwork (collective score) a component of students' final grades in the courses. Thus, students receive encouragement to participate in the experiment with a sufficient effort.

To collect the database, we organize subjects into teams of four on average (though some groups contain three or five members) with a random distribution, and each group is responsible for managing one firm in one of six simulations (three for each course/university). These simulations include up to 10 firms/teams each, and the total number of firms simulated is 35. The experiment took place over six class periods (once per week), distributed as follows: (1) a briefing class to distribute the material, inform the subjects about the simulation, and distribute and collect an initial questionnaire with personal data; (2) four classes, each lasting one and a half hours, dedicated to group decision making; and (3) a debriefing class to reveal the final results and provide participants with feedback about their team performance.

At the start of the experiment, each subject received the *User Manual*, a two-year (equivalent) historical report (*Management Reports* and *Economic Sector*

Inform), and a simplified decision sheet (containing only the elements about which they would be required to decide). We also told participants that all the information they would need to make a decision was available in the distributed pack. In contrast with some simulation research (Kilduff et al, 2000), the teams started the simulation identically, with the same data and indicators for all areas (i.e., production, financial, and market statements), which facilitates our evaluation of the teams. Subjects had not been informed that they were to work in groups, but they were told to study the distributed material well and submit copies of the decision sheets, individually, in the next class.

During the second class meeting, after students submitted their decision sheets, we indicated that they would start to work in teams (Schweiger et al., 1989) and that the final performance of the firm/team would be considered, jointly with individual evaluation, in the final score determination. The teams had approximately 1.5 hours to discuss and make a decision, in private and uninterrupted sessions, and then hand in another decision sheet. After this process, we entered the group decisions into a simulation, then printed and distributed the software reports (i.e., *Management Report* and *Economic Sector Report*) to subjects. The next three classes followed the same procedure. Each student's decision was entered into the simulation at least two days after the group decision, and the compiled data (for each individual and group performance) according to market share, production, sales, and period earnings appeared in an e-mail sent to the participants; they also could access a printed sheet in the next class.

To ensure reliable measures (across individual and group decision measures), we provide rewards⁵ for the best individual final performance and to the members of the winning group during the last class. Thus, we help avoid possible free riding and attempt to guarantee each student's commitment to the group task.

In line with existing simulation gaming (Fritzsche and Cotter, 1990), we did not reveal when the simulation would end and thereby help avoid bad decisions, such as dismantling the company by selling assets to boost cash flow and performance. Schweiger et al. (1989) also suggest teams should not receive feedback during the decision classes; therefore, we do not offer any feedback about the decision results during the four decision sections but save that information for the final, debriefing class. In addition, subjects remained in the same groups throughout the experiment, so we can evaluate the measure of teamwork effectively.

⁵ A textbook related to strategy and production management.

5. ANALYSIS AND RESULTS

5.1. Measures

To build the team consensus construct, we measure the level of agreement among members about budget allocation decisions, consistent with Kellermans et al. (2005), Bourgeois (1980), and Wooldridge and Floyd (1989). Each subject completed and handed in a six-item questionnaire (see Appendix 1) immediately after each decision-making class. The question items relate to the subject's personal level of agreement with each decision made by the group, measured on a seven-point Likert scale (1 = total lack of agreement to 7 = full agreement). We calculate the final consensus measure for each team by adding the average of the individual responses to each question. When nonresponses occur, we replace the individual nonresponse with a fictitious measure based on the person's existing response average. The measure thus includes only those students who attended classes and effectively participated in each decision-making process.

To measure team diversity, we borrow from Hambrick et al.'s (1996, p. 663) study, which relies on demographic conceptions of team diversity. Existing research uses several measures to assess team diversity, including age, education, firm tenure (length of time with the firm and in the current position), socioeconomic background, and experience. We adopt a measure based on formal university education that assesses the student's general academic record⁶ on a 0–10 scale. This measure provides an adequate representation of the level of formal knowledge acquired during the student's undergraduate studies and of team diversity. That is, we take the standard deviation of each group member's academic records as a measure of the level of diversity. This measure includes only those who participated in the decision making during the equivalent period; if some team members were absent, we take that difference into account.

For the team/firm performance measure, we refer to Kellermans et al. (2005, p. 725), who state that though “most studies agree on the relevant outcome (organization performance), there is very little consistency in how organizational performance is conceptualized and measured in the literature.” Some research uses objective, financial performance indicators (e.g., return on assets), whereas subjective measures generally compare the organization with its competitors on the basis of a firm executive's evaluation. Because of the ease with which we can generate firm results on the computer, we opt to measure net profits, ROA (return on assets), and ROS (return on sales) in each simulated period.

⁶ This measure equals the average of all grades (final score evaluation) obtained in each course completed, calculated by the grade in each course multiplied by the number of credits, divided by the sum of the credits.

Finally, we include three control variables to isolate possible interrelationships among the variables: (1) period of decision, coded from 1 (first period) to 4 (fourth period), to control for the influence of experience; (2) location, coded as a dummy variable that distinguishes the two universities, to control for contextual interferences; and (3) group size, measured as the number of members in each group, which controls for the influence of differences on internal group complexity.

5.2 Analysis

We estimate four linear least squares regression models to test the hypotheses for each measure of team performance (net profit, ROA, and ROS) as the dependent variable. The first model includes only the three control variables as independent variables, whereas the second model also adds the consensus measure to test H1. This model is taken into account as a reference that allows us to check whether the amount of variance of the dependent variable explained by our constructs is different from that explained by the control variables. Finally, in the third model, we incorporate team diversity, and in the fourth model, we include the interaction term between team consensus and team diversity to test H2. This analytic procedure follows that suggested by Sharma et al. (1981), Baron and Kenny (1986), and Venkatraman (1989) to analyze moderation.

5.3 Descriptive Results

The general results of the simulation indicate that the teams make good decisions in general. Of the 138 usable decisions, 98, or 71%, lead to a positive result, according to the net profits in the period (year). The average net profit is \$2.96 million, with a standard deviation of 11.9. For the ROA measure, the average is 0.13% (standard deviation 0.33), and for the ROS measure, it is 0.12% (standard deviation 1.59). These three measures of team performance also reveal high correlations, though the regression results demonstrate some differences. The use of three different measures ensures the results are robust. In addition, the control variables yield some important information.

5.4 Hypothesis Results

We present the regression model results for the performance measures in Tables 1, 2, and 3. According to the model 2 results, a positive and significant relationship exists between consensus and performance, in support of H1. Specifically, all three measures of performance support the consensus–performance relation. We acknowledge the low R^2 but suggest it results from the

few variables in the model to estimate general firm performance. It remains very difficult, if not impossible, to represent a complete model, mainly because of the complexity of the firm environment (Capon et al., 1990).

According to the results from models 3 and 4 in Tables 1, 2, and 3, the antecedent variable team diversity moderates the team consensus–performance relationship significantly and positively, in support of H2. The procedure to verify this moderation is based on our analysis of the sign and significance of the interaction term in model 4. The positive sign of the product indicates a positive moderation of team diversity, such that greater team diversity leads to a stronger relationship between team consensus and performance. The coefficient of team diversity is not significant in model 3, which implies that team diversity is a pure moderator that affects the team consensus–performance relationship without directly influencing performance (Sharma et al., 1981).

Table 1: Multiple Regression Analysis with Net Profit as Dependable Variable
(n=138)

Net Profit †	Model 1	Model 2	Model 3	Model 4
Constant	9.144	18.200	17.600	31.300
Period	-1.414	-1.586*	-1.584*	-1.149*
Location	1.489	2.539	2.338	3.059
Group size	-1.141	-1.389	1.293	-1.468
Consensus	-	4.094***	4.186***	-3.707
Diversity	-	-	-2.150	102.0**
Consensus X Diversity	-	-	-	15.8**
R ²	0.027	0.075	0.078	0.118
F	1.26	2.7**	2.22*	2.92***

† Values in millions. *** $p \leq 0,01$ ** $p \leq 0,05$ * $p \leq 0,1$

Table 2: Multiple Regression Analysis with ROA as Dependable Variable
(n=138)

ROA	Model 1	Model 2	Model 3	Model 4
Constant	0.240	-0.485	-0.456	1.243*
Period	-0.030	-0.034	-0.034	-0.030
Location	0.030	0.058	0.047	0.072
Group Size	-0.025	-0.023	-0.018	-0.024
Consensus	-	0.109***	0.113**	-0.160
Diversity	-	-	-0.114	-3.595***
Consensus X Diversity	-	-	-	0.549***
R ²	0.014	0.056	0.065	0.126

F	0.62	1.98*	1.82	3.15***
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*** $p \leq 0,01$ ** $p \leq 0,05$ * $p \leq 0,1$

Table 3: Multiple Regression Analysis with ROS as Dependable Variable
(n=138)

ROS	Model 1	Model 2	Model 3	Model 4
Constant	0.315	-3.321**	-3.178**	3.983
Period	-0.063	-0.086	-0.086	-0.072
Location	-0.130	0.010	-0.043	0.063
Group Size	0.047	0.056	0.081	0.056
Consensus	-	0.545***	0.569***	-0.587
Diversity	-	-	-0.561	-15.24***
Consensus X Diversity	-	-	-	2.314***
R ²	0.004	0.051	0.060	0.108
F	0.17	1.78	1.68	2.65**

*** $p \leq 0,01$ ** $p \leq 0,05$ * $p \leq 0,1$

6. DISCUSSION

The results confirm the positive and significant consensus–performance relationship in a bivariate analysis related to consensus about the strategic priority of budget allocations. This result is consistent with the empirical findings of Bourgeois (1980), who defends the idea that objective measures are more efficient for consensus variables, as well as with the current trend of referring to strategic priorities, rather than other forms of strategy content, when defining and measuring consensus (e.g., Wooldridge and Floyd, 1989; Markóczy, 2001; Kellermans et al., 2005). Our experiment also adopts a long-term component, such that teams work together for a certain period of time. As Dess and Origer (1987) state, the consensus–performance relationship might vary over time, so we adopt a longitudinal approach and thereby attempt to reduce our dependence on the specific circumstances of the particular moment and increase the reliability of our cross-sectional studies.

A second important finding pertains to the positive and significant moderating effect of team diversity on the consensus–performance relationship, in support of H2. Team diversity appears to play an important role in increasing or intensifying the consensus–performance relationship. In both theoretical (Dess and Priem, 1995; Kellermans et. al, 2005) and empirical (Knight et al., 1999) studies of team consensus and performance, team diversity consistently appears as an antecedent, but according to the strong evidence from our study, it also moderates their relationship.

Despite the possible influence of team diversity on team consensus, diversity also affects the strength of the consensus–performance relationship. Diversity in teams that achieve consensus facilitates information sharing among team members, so new or renewed ideas are welcome. Team processes that facilitate information sharing could fuse individual “mental models” that represent divergent points of view into a common view. Thus, an atmosphere with low affective conflict (i.e., personal negative behaviors) should motivate new and creative considerations of new or renewed variables in team discussions, which in turn should enhance the team outputs, as Hambrick et al. (1996) and Amason (1996) indicate.

Despite these strong results, we suggest precautions before generalizing these findings or extrapolating them to real firm situations. We conduct our experiment in a controlled laboratory environment, the business game simulation represents only a simplified representation of a firm environment, and the student subjects have limited management capacity. Although we try to control for these factors, students often display a lack of commitment and free-riding behaviors, which may influence the results despite the safeguards. Furthermore, our diversity measure is based on the students’ formal academic records. Different correlations exist among the various diversity measures available and consensus (Knight et al., 1999; Horwitz and Horwitz, 2007). Team diversity based on formal education could be a limited measure, because the different universities do not necessarily evaluate and classify students in the same way. Other measures, such as professional experience and employment tenure, therefore should be taken into account.

Despite the possible limitations of simulations, Schweiger et al. (1989) highlight the importance of laboratory studies as a means to promote future field studies. Furthermore, various studies rely on a business game simulation environment to test groups in management situations (Dickinson et al., 2004; Mathieu and Schulze, 2006), which could be a tacit indication that laboratory research facilitates findings and insights that are very difficult or even impossible to measure on a day-by-day basis in a real firm environment. Our business simulation provides a controlled environment in which the teams begin their tasks on an even basis (i.e., same information and financial and operational indicators) and an adequate level of decision-making complexity. We thus believe that laboratory experiments that use business simulations, with a perfectly simulated, controlled environment without external interference, can be an interesting and efficient way to answer questions about strategic decision making.

6.1 Concluding Remarks

Consensus among a TMT appears fundamental for efficient firm performance, and this study offers some important evidence with regard to this issue. First, a positive relationship between consensus and performance emerges more clearly when the consensus measure is based on tangible, concrete aspects, such as budget allocation, and when data are longitudinal to reduce dependence on the specific circumstances of a single moment. This approach responds to Kellermans et al.'s (2005) claim that many inconsistencies in previous empirical research might be due to methodological differences.

Second, this research identifies a moderator that influences the consensus–performance relationship. Team diversity, measured according to the educational level of the group members working on a sequential decision, seems to enforce the positive effect of team consensus on performance. Although team diversity often appears as an antecedent of consensus, our research suggests it also acts as a moderator. Team diversity therefore should join the list of variables, such as firm environmental conditions (Kellermans et al., 2005), that traditionally serve as potential moderators. Prior theoretical arguments and empirical results from two research lines used as the foundation for this study reaffirm our results.

Third, team consensus and team diversity remain an empirical challenge. Hambrick and Mason (1984) view top managers and their strategic decisions as fundamental determinants of firm success or failure. Assembling and developing a capable TMT with the proper blend of backgrounds, experience, values, and personalities will help a firm formulate and implement an effective strategy (West and Schwenk, 1996). But what is this proper blend that leads to outstanding performance? Our research offers some contributions in this arena, but much more research is required to understand this question fully.

ACKNOWLEDGEMENTS

We thank Professors Duílio Rocha, Romulo Sousa, and Marina Dutra, who contributed their time and classes for this study, and graduate students Leonardo Entringer, Herbert Tanigushi, and Cynthia Ferreira for running the business game simulation.

We also thank the Brazilian Ministry of Science and Technology for the financial grant that partially supported this project.

This study was carried out within the framework of research project SEJ2007-63879/ECON, financed by the Dirección General de Investigación del Ministerio de Educación y Ciencia (State Office for Research of the Spanish Ministry of Education and Science) and by FEDER funds.

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Appendix

Questionnaire Consensus Measure (complete and hand in to the professor at the end of each group decision)

Name: _____ Date: ____/____/ 2007

Decision: (1) (2) (3) (4) (5) (6) (7) (8)

Universidad xxxxxxxx – Course xxxxxxxx – Responsible for the class xxxxxxxx

What is your level of agreement with the strategic decisions taken by your group today, considering the issues below?

Decisions Taken	Level of Agreement
Strategic Priorities for the Firm	
1. Manufacturing Budget	(1) (2) (3) (4) (5) (6) (7) ^ ^ ^ I disagree totally more or less in agreement I agree totally
2. Budget to expand or reduce the plant capacity	(1) (2) (3) (4) (5) (6) (7) ^ ^ ^ I disagree totally more or less in agreement I agree totally
3. Budget for Research and Development (R&D)	(1) (2) (3) (4) (5) (6) (7) ^ ^ ^ I disagree totally more or less in agreement I agree totally
4. Budget for Quality Programs	(1) (2) (3) (4) (5) (6) (7) ^ ^ ^ I disagree totally more or less in agreement I agree totally
5. Budget for Marketing investments	(1) (2) (3) (4) (5) (6) (7) ^ ^ ^ I disagree totally more or less in agreement I agree totally
6. Pricing policy	(1) (2) (3) (4) (5) (6) (7) ^ ^ ^ I disagree totally more or less in agreement I agree totally

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