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Team diversity and performance in management students: Towards an integrated model

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ABSTRACT

A special effort is being made in higher education to adapt to the dynamics required by business management. Teamwork is a priority in business environments so it should also be one among university students. Team diversity and its links to performance comprise one of the aspects most widely worked on, but outcomes are still inconsistent.

In this paper we advance the understanding of the relationship between team diversity and performance in two ways: first by blending the two main theoretical approaches (social categorization holding that diversity has a negative effect on team performance versus information/decision-making-based theories that hold the opposite), taking conflict as a mediator variable; and second by contextualizing the link through a contingency approach in which initial within-group cohesion, strength of leadership, and prior experience of group members in working as a group are taken as significant moderator variables. We base our work on an Input-Mediator-Outcome model framework and blend it with a Categorization-Elaboration Model.

The results show that only in the right context (group cohesion, strength of leadership, and prior experience of group members) can diversity produce improvements in the performance of working teams.

1. Introduction

There is consensus among both universities and employers as to the need to foster teamwork skills among students of business administration. Teamwork demands the ability to work effectively with others, including those from diverse groups and with opposing points of view. Interactions between members determine the productivity of a team, so forming the right teams is determinant for their ultimate performance. Team diversity is therefore a key issue (Martins et al., 2013).

There is a large body of literature concerning the link between team diversity and performance. However, reviews and meta-analyses show inconsistent results (Horwitz & Horwitz 2007; Joshi & Roh 2009; Zhou & Rosini 2015), to the point where the meta-analysis conducted by van Dijk et al. (2012) states that any dimension of diversity that has been investigated in more than a few studies has been associated with inconsistent results. Currently, “how a team’s diversity affects its performance remains an important research area” (Martins et al., 2013, p. 97), given that no conclusive results have yet been obtained.

In order to increase understanding of the link between team diversity and performance, researchers have proposed, among others,

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two lines of investigation:

First, two parallel theoretical approaches have been developed in the literature: social-categorization-based theories hold that diversity has a negative effect on team performance, while information/decision-making based theories hold that its effect is positive. The two viewpoints have been treated over time as separate lines but the nexus between the two hard-to-reconcile viewpoints could be the conflict variable. Diversity generates a conflict which has two aspects –task conflict, based on judgmental differences about how best to achieve common objectives, and relationship conflict, related to personal disputes– each of which acts in a different direction. We therefore propose using the conflict variable, in its two dimensions, as a way of bringing the two apparently divergent approaches together. Accordingly, conflict is considered as a mediator variable between diversity and performance. Separate analyses of the two dimensions of the conflict can help provide a better understanding of the link between diversity and performance.

Second, the link between diversity and performance needs to be contextualized via a contingency approach: Under different conditions the effect of diversity on performance will vary (van Veelen & Ufkes 2018). The levels of conflict attained also vary depending on how conflicts are managed (O'Neill, & McLarnon 2018). Group cohesion, effective leadership, and experience are proposed as moderators that could modify the effect of diversity on conflict, and thus of conflict on performance.

To achieve our ends we need construct a synthetic index of team diversity and performance, given that these are multi-faceted concepts. Analyzing factors in isolation may not lead to the same results as if they are assessed jointly (van Knippenberg & Schippers 2007). The diversity index used to analyze the different forms of diversity takes into account both surface-level and deep-level variables. The performance index also includes both the external and internal dimensions of learning.

This paper therefore sets out to draw up a moderated-mediation model of the link between team diversity and performance. The proposed model brings together the two hitherto predominant viewpoints through the mediation of the conflict variable in its two facets (task conflict and relationship conflict) and also addresses the potential effect of context (characterized by group cohesion, effective leadership, and experience) on the relationship between them. 82 groups of Business Management students (a total of 314 students) were monitored for this purpose.

This paper contributes in two different ways to the literature: First, it shows that the divergent empirical results published to date are all perfectly possible if conflict, in its two dimensions, is taken into consideration as a mediator. Second, contextualization of links is the key to understanding how work teams function. The right make-up of a working team can enable greater diversity to be turned into improved performance. Diversity could be a good thing, but this is not automatically so. If it is managed properly, it enables teams to benefit from the increased discussions can may arise (task conflict) and to minimize or eliminate the harmful effects of any personal conflicts (relationship conflict).

The paper is organized as follows. Section 2 discusses the need to look jointly and simultaneously at diversity and conflict variables. Section 3 sets out the hypotheses and establishes their theoretical grounding. Section 4 explains the method used in the empirical study conducted, defining the sample, the scales of measurement, and the procedures used. Section 5 presents and discusses our main findings. The paper ends with an outline of the main conclusions drawn and the bibliography used.

2. Questioning the relationship between diversity and performance

The concept of team diversity is defined in various ways (van Dijk et al., 2012; Williams & O'Reilly 1998), but in essence it refers to a number of different objective and subjective characteristics held by members of the same team that may lead them to perceive others as different from themselves.

Working in diverse groups has conventionally been seen as a double-edged sword (Srikanth et al., 2016): On the one hand the

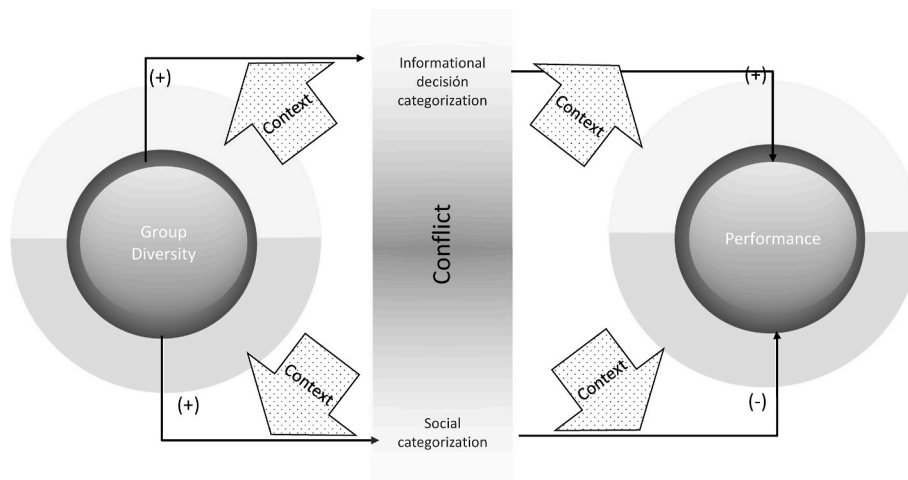


Fig. 1. Relationship between diversity and performance. Source: adapted from Srikanth et al. (2016).

information/decision-making approach (Williams & O'Reilly 1998) holds that groups which are diverse have complementary knowledge, skills, abilities, and perspectives that help to generate different ideas and new approaches, improve the quality of decision making, and ultimately improve team performance (Horwitz & Horwitz 2007). On the other hand social-categorization and similarity attraction approach suggests that the more homogenous a group is the better it performs (Carter & Phillips 2017; Trinh 2017). Diversity can be a separator variable when differences between team members result in inefficiencies in understanding and interaction between them.

These different approaches lead us to wonder whether these approaches in terms of the effects of diversity on performance could be reconciled and integrated, and if so how. We propose two ways of doing this (see Fig. 1): The first way is based on the mediation of the conflict variable in its two dimensions could help to integrate the two approaches. Conflict is one of the main issues in understanding the dynamics and functioning of teamwork (van Knippenberg & Schippers 2007; Martins et al., 2013; Dimas & Lourenço 2015). Greater group diversity is usually associated with higher levels of conflict. However, the nature of conflict may differ: The members of a group make social contributions as well as contributions to the tasks to be performed, so conflict in teams is concerned with both relationship issues (relationship conflict) (De Dreu & Van Vianen 2001) and task issues (task conflict) (Jehn, 1997). Amason (1986), who uses the terms "affective conflict" and "cognitive conflict", defines the former as when an individual "tends to be emotional and focused on personal incompatibilities or disputes" (p. 129) and the latter as "task oriented and focused on judgmental differences about how best to achieve common objectives" (p. 127).

Factoring in conflict as a mediator variable may enable different theoretical positions to coexist without ever being mutually exclusive, but there is a need to distinguish between the two forms of conflict, because the sign of the relationship between conflict and performance is different.

The second way is through the contextualization of both the diversity-conflict relationship and the conflict-performance relationship, which affect the size and even the sign of relationships (De Wit et al., 2012; Dimas & Lourenço 2015; Zhou & Rosini 2015). There is some research into such moderators: Team type/occupational demography (Joshi & Roh 2009), team size (Horwitz & Horwitz 2007), perspective taking (Hoever et al., 2012), task complexity (Van Dijk et al., 2012), team psychological safety, and relationship conflict (Martins et al., 2013), team identification (van Veelen & Ufkes 2018, pp. 1–34), etc. Nevertheless, it is necessary to continue investigating along this line for two main reasons: Firstly many of the contextual factors found by previous literature cannot be manipulated; that is why Hoever et al. (2012) urge that variables under the team's control be studied. In the moderating variables proposed in this research, that control could be exercised by the professor when it is conforming one group or by the members of the group via internal self-management. Secondly major theoretical reviews of teams converge in specifying three types of important contextual variables to team functioning: motivational states, behavioral process, and cognitive emergent states (Kozlowski & Ilgen 2006; Mathieu et al., 2008). Motivational states are the affective attributes of the team so "initial internal cohesion" is taken as a proxy. Behaviors are the skills and procedures needed for teamwork, which are conditioned by the presence of a "strong leader" who can establish them, so this is the second moderator. Finally, cognitions are the elements of knowledge needed for effective teamwork so the "prior experience" of the team is the last moderator considered. Prior experience with teamwork enhances students' problem defining and planning skills (Colbeck et al., 2000, p. 69).

With a view to proposing a new conceptual model of the relationship between team diversity and performance we adopt the IMO (Input-Mediator-Outcome) perspective as a basis and blend it with the Categorization Elaboration Model (CEM) developed by van Knippenberg et al. (2004). With a view to proposing a new conceptual model of the relationship between team diversity and performance we adopt the IMO (Input-Mediator-Outcome) perspective as a basis and blend it with the Categorization Elaboration Model (CEM) developed by van Knippenberg et al. (2004). The CEM model has been built up as a reference framework that moves away from the study of direct effects to focus on contingent factors (van Veelen & Ufkes 2018, pp. 1–34). Knippenberg et al. (2004) point out three main aspects that have led us to take the CEM model as a basic reference for our own model: 1. They observe that research about

Table 1
Structure of goals and hypotheses.

| Purpose | | Hypothesis | Approach | Model |
|--|--|---|--|-------|
| To explain some inconsistencies in the previous literature by integrating two divergent approaches | To blend the theoretical approaches of social-categorization and information/decision-making | H₁ <i>H_{1.1}</i> | Conflict mediation Information decision making | IMO |
| | To contextualize the link through a contingency approach | <i>H_{1.2}</i> H₂ <i>H_{2.1}</i> | Social categorization Motivational states Information decision making | CEM |
| | <i>H_{2.2}</i> H₃ <i>H_{3.1}</i> | Social categorization Behavioral process Information decision making | | |
| | <i>H_{3.2}</i> H₄ | Social categorization Cognitive emergent states | | |
| | <i>H_{4.1}</i> | Information decision making | | |
| | <i>H_{4.2}</i> | Social categorization | | |

diversity has traditionally been based on an oversimplified conceptualization of social categorization processes and that important mediators and moderators between team diversity and performance have been ignored, but the CEM model has been built up as a reference framework that moves away from the study of direct effects to focus on contingent factors (van Veelen & Ufkes 2018, pp. 1–34). 2. Diversity research has typically studied information/decision-making processes and social categorization processes in isolation, whereas the CEM model suggests that information/decision making and social categorization processes interact; 3. There has been a general assumption that information/decision-making and social categorization processes are each associated with particular dimensions of diversity, but Knippenberg et al. (2004) propose that each dimension of diversity may elicit both information/decision-making and social categorization processes. These three aspects are considered in our model and presented as an IMO model: “diversity” is the team input, “team performance” is the outcome, “conflict” is the mediator, and contextual factors are considered as moderator variables, as proposed in the CEM. The conceptual model proposed is therefore a moderated-mediation model.

3. Hypotheses and grounding in theory

The hypotheses put forward are grounded in the idea of integrating two approaches (the information/decision-making approach and the social-categorization approach), and the main goal is formulated in those terms, as shown in Table 1.

The first purpose is blending the approaches of social-categorization and information/decision-making, by using conflict as a mediator variable. However, as stated above, conflict may have different natures –relationship conflict and task conflict–.

From the information/decision-making perspective, task conflict mediates the positive relationship between diversity and group performance (Jehn et al., 1999). Diversity is considered to be capable of causing task conflict through the interactions that arise from different viewpoints, ideas, and opinions. The more complex the task, the more important it is to discuss and debate different perspectives and approaches in order to make the right diagnosis of the situation and identify best task strategies to be carried out. Task conflict leads to greater consideration of the task at hand and thus improves performance and satisfaction (Lovelace et al., 2001; van Knippenberg & Schippers 2007).

Nevertheless, based on a social-categorization approach, diversity can also lead to disagreements and disputes due to members finding it difficult to interact with each other, which brings us to relationship conflict. Diversity can hamper interpersonal relationships within a work group (Martins et al., 2013; Mello & Delise 2015). When relationship conflict is high it is difficult for team members to effectively express, discuss, and integrate the different points of view. Disagreements about personal issues enhance members’ anxiety and can easily lead to ego threats which, in turn, heighten hostility among group members and make conflict more difficult to manage (De Wit et al., 2012).

In view of the foregoing, this first hypothesis is put forward (Fig. 2):

H₁: Conflict mediates the relationship between diversity and performance

H_{1.1}: Task conflict positively mediates the relationship between diversity and performance

H_{1.2}: Relationship conflict negatively mediates the relationship between diversity and performance

The following hypotheses concern the second objective set in this study, i.e. to check for variables that moderate the parallel mediation model proposed. In most cases it is not conflict *per se* that conditions team performance but how teams respond to it and how it is managed (Correia 2019). The link between diversity and performance must take the form of a contingent model that identifies the

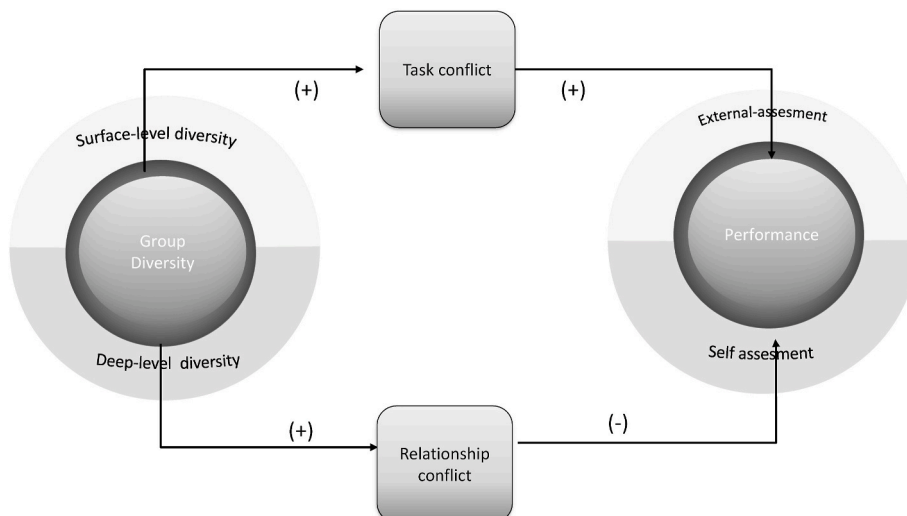


Fig. 2. Model 1. Conflict as mediator between diversity and performance.

variables that moderate the effects of diversity (Horwitz & Horwitz 2007; van Knippenberg et al., 2004).

“Initial internal cohesion” can be defined simply as “the force that unites the team” (Mello & Delise 2015, p. 208). From the information/decision-making approach, teams could benefit from some level of task conflict when they have a cohesive environment since there is a strong positive relationship between trust and knowledge sharing. Trust amongst team members results in enhanced cooperation and discussion (Calhoun et al., 2013). From the social-categorization approach, the forming of groups with similar social behavior can limit the appearance of personal conflicts, but only if those conflicts are minor. With higher levels of conflict, similarity actually increases personal conflict (Hobman et al., 2003). In working groups that previously maintained strong emotional links, patterns of operation and the way in which members understand each other and interact are imposed by that “emotional glue”; indeed, emotional behavior patterns may predominate over professional patterns, resulting in a relationship conflict that is “too hot to handle” (Fiore et al., 2015).

We therefore express our second hypothesis as follows.

H₂: Team initial cohesion moderates the relationship between diversity and conflict

H_{2,1}: Team initial cohesion positively moderates the relationship between diversity and task conflict

H_{2,2}: Team initial cohesion positively moderates the relationship between diversity and relationship conflict

As far as the second moderator is concerned, a “strong leader” monitors and actively develops targeted attitudes, behaviors, and cognitions (Salas et al., 2009). There is abundant literature about the role of the leader in a team: coordination, adjusting strategy, maintaining performance, facilitating feedback, etc. have all been broadly discussed. Under the information/decision-making approach, integrating the different perspectives of team members requires effective interaction and cooperation between group members (Lovelace et al., 2001), for which the role of the leader is essential. From the social-categorization approach, an effective leader fosters an appropriate social context in which differences are managed in a win-win manner (Zhang et al., 2011). Strong leadership helps to set internal group rules that make relationship conflict less problematic. Effective leadership should improve group communication, mediate in any disputes, facilitate feedback between members, etc.

H₃: Strong leadership moderates the relationship between diversity and conflict

H_{3,1}: Strong leadership positively moderates the relationship between diversity and task conflict

H_{3,2}: Strong leadership negatively moderates the relationship between diversity and relationship conflict

The way in which teams interact regarding their differences is as important as the conflict states themselves, and maybe even more so in determining ultimate performance. This leads us to the last moderator variable: the experience of group members in working as a team and solving problems is a determinant factor in the relationship conflict-performance (Kiernan et al., 2019). From the information/decision-making approach, experience working together increases willingness to share knowledge and information (Moreland et al., 1996). Experienced groups are capable of seeing the benefits of task conflict, and may even actively encourage it to improve the ultimate performance of the team. From the social-categorization approach, experience in training and working together teaches how to trust each other (Reagans et al., 2005). When relationship conflicts do arise, experienced groups tend to manage them more effectively. However, groups that lack sufficient conflict management skills how to manage relationship conflict when it arises (Curşeu & Pluut 2013).

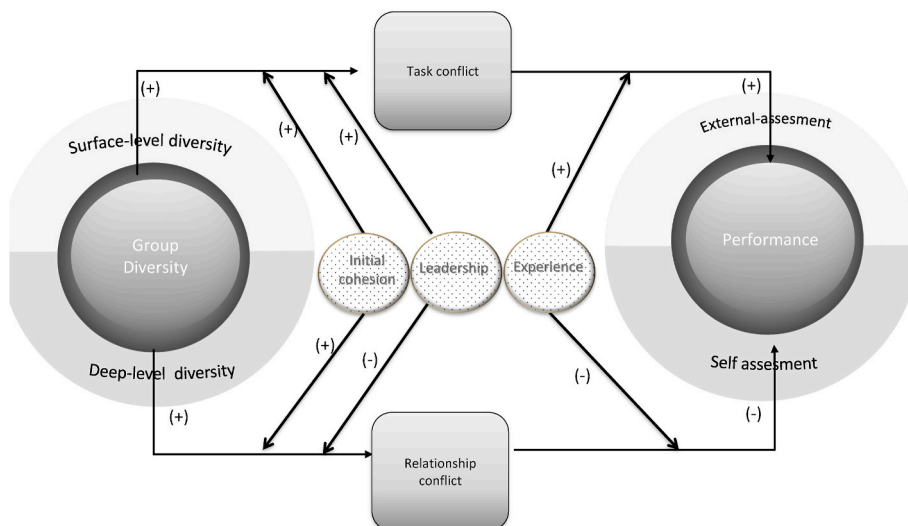


Fig. 3. Model 2. A moderated mediation model between diversity and performance.

H₄: Prior experience moderates the relationship between conflict and performance

H_{4.1}: Prior experience positively moderates the relationship between task conflict and performance

H_{4.2}: Prior experience negatively moderates the relationship between relationship conflict and performance

Fig. 3 shows the full model once the moderator relationships have been added and Table 2 shows the concepts involved in the model (Table 3).

4. Method: sample, measures, and statistical analysis

4.1. Sample

The analysis conducted involves 82 groups of students (3–4 members) enrolled in the Business Studies program at a mid-sized Spanish University, giving a total sample of 314 students (156 women and 158 men), all in year three of the Degree in Business Administration. The students worked together in groups for one semester. The groups were configured using a combination of a random configuration by the lecturer and a free configuration by students. Each group was required to solve a real business problem. A news item published in the press and selected by the lecturer provided the starting point for a problem to which they were asked to respond. To do this, they needed to locate, analyze and structure additional information. Each group was responsible for planning, organizing and controlling all the tasks required for the project, though tutoring was available at any time on request. The activity was part of the regular curriculum of a subject in the Finance specialty, so all students received the same teaching in regard to how to tackle the problem. The sample used comprises all students who took the subject. To obtain information about the functioning of groups in regard to leadership, experience, students' performance, and team diversity, a questionnaire was deployed just before the end of the academic year. Participation in the study was voluntary for students but their level of commitment was very high; indeed the response rate was 100%.

4.2. Measures

In line with the instrumental goal set at the outset of this study, separate composite indicators are drawn up for the Performance and Diversity variables. The main reason for constructing composite indicators is to compress a complex data set into just one indicator. A single indicator is easier to interpret than many separate variables and enables groups to be directly compared one with another. The indicators suggested are based on the methodology proposed by the OECD (2008) for composite indicators. Accordingly, the first step was to define the variables that make up the indicator. These variables were normalized and then aggregated.

The table below shows the measures and the methodology used to construct them (Table 3).

4.2.1. Dependent variable: performance

Student performance is a multidimensional concept that includes several diverse aspects. In this paper we use a composite indicator (LEASO-Team) construct as per the method proposed by Fernández et al. (2016).

Two basic approaches are used to assess learning: Direct and indirect. They are not mutually redundant because they are usually only weakly correlated (Kamphorst et al., 2013), and both measurements of learning outcomes are necessary to determine success (Smith et al., 2011). *Direct measurement* (Faculty view) is based on the demonstration by students of their knowledge or skills (Martell 2007). We use the grades awarded in tasks undertaken in the working team throughout the semester. Regarding *Indirect measurement* (Student view) students are asked to provide their opinions regarding their learning (via a questionnaire with a 1–5 Likert scale). Some authors conclude that “measures such as perceived performance are equally or more important than objective indicators” (Zhou & Rosini 2015, p. 10). We distinguish between two sub-categories, based on the approach used by Lizzio et al. (2002):

- (1) Development of teamwork skills. There is widespread agreement that working in a team requires a number of social skills such as the ability to negotiate with others and to make decisions as a team, communication skills, and conflict management (Thomas 2014), so these are the items considered in assessing the outcome.

Table 2

Dimensions of the variables included in the model.

| | Name | | Concept | Type of variable |
|-----------------------------|-------------------|--|--|--------------------|
| Dependent variable: | Teams Performance | | Technical Knowledge Skills and abilities Students' satisfaction | Continuum variable |
| Independent variable | Group Diversity | Gender | Similarity of gender or not | Discrete variable |
| | | Expertise Expertness Allocation of roles | Cognitive abilities members Task-related abilities Specialization of each member | Continuum variable |
| Moderators | Leadership | | One person plays the role of the leader | Continuum variable |
| | Initial Cohesion | | Previous informal relationships between members | Dummy variable |
| | Prior experience | | Previous development of teamwork skills | Continuum variable |

Table 3
Measuring scales for indicators.

| | Theoretical approach | | Variables | | Construction methodology | Aggregation method |
|---|----------------------|--|---|--------------------------------|---|----------------------|
| Dependent variable Performance | Holistic approach | Direct (faculty view) Indirect (student view) | Demonstration of the knowledge or skills Development of skills Satisfaction | Grades awarded Likert scale | PCA | Arithmetical average |
| Independent variable: Group Diversity | Surface-level | Demographic variables Cognitive variables | Gender Expertise | Male/female Previous grades | Entropy coefficient Coefficient of variation | Geometrical average |
| | Deep-level | | Expertness Allocation of roles | Likert scale Likert scale | | |

(2) Satisfaction. Although there are other determinant factors in student satisfaction apart from the quality of teaching, most studies consider that teaching quality and student satisfaction are closely related (Gibson 2010).

To construct the index, a Principal Components Analysis (PCA) is first conducted on “Development of teamwork skills” and “Satisfaction” questions, followed by a confirmatory analysis to check the reliability and validity of the scales of measurement used. In a second step the composite indicator is calculated via the weighting of the various constructs (obtained via a Principal Components Analysis):

$$\text{Student view}_i = k_1 \overline{\text{Development of teamwork skills}_i} + k_2 \overline{\text{Satisfaction}_i}$$

where k_1 , and k_2 are calculated in terms of the proportion of variance explained by each factor.

Finally, both types of measurement are considered and weighted equally, as proposed by Fernández et al. (2016). The dependent variable is thus determined by the following expression:

$$\text{LEASO} - \text{Team}_i = 0.5 \times \text{Direct measurement}_i + 0.5 \times \text{Indirect measurement}_i$$

4.2.2. Independent variable: diversity

As the dependent variable, diversity is also a multidimensional concept, since it can come from different sources. Diversity may be due to features of group members which are easily observed and measured (e.g. demographic variables related to the social-categorization approach) or less readily apparent features based on cognitive aspects with which team members start out (e.g. a priori differences in attitudes, opinions, information, personality, and related values) (Harrison et al., 2002). Following the terminology of Phillips and Lloyd (2006) we refer to this as surface-level diversity and deep-level diversity. They are all a priori elements that exist before the team begins to operate.

In the *surface level* previous research has considered age, race/ethnicity, gender, etc. (Van der Vegt & Bunderson 2005). Given that the subjects of study here are university students, gender is the predominant type of diversity and indeed the only one considered here. Gender diversity was calculated using Teachman’s entropy coefficient. This index is appropriate for showing variety when the variables are categorical (Solanas et al., 2012).

Regarding *deep-level*, it refers to differences in knowledge, skills, and capabilities between team members as a result of education, experience, and natural ability (Martins et al., 2013; Mello & Rentsch 2015). A distinction is usually drawn between expertise and expertness (Martins et al., 2013). Expertise refers to more general cognitive abilities while expertness is task-related. But diversity cannot be effective if individuals are not allocated to different tasks, enabling people who occupy different roles. Team members who differ in their expertise and expertness may each fulfill a different role in the team, coordinating efficiently and paying due attention to one another’s inputs (Stewart & Stasser 1995). The index most widely used to capture these differences is the coefficient of variation (Solanas et al., 2012). The degree of diversity within a class is calculated using the quotient between the coefficient of variation of the group and the coefficient of variation of the full class.

Expertise was calculated on the basis of previous grades in similar subjects. *Expertness* was determined by questioning the members of each group about what type of contribution they and their fellow group members had made. Types of contribution were classified with the classic method used in McGrath (1984), which distinguishes between the generation of ideas and plans, the selection of alternatives, negotiation or the search for agreement, and implementation. To gather information on the *degree of allocation of roles*, students were asked to give their opinions on this issue.

For purposes of aggregation, we calculated the geometrical average of these four dimensions. The reason for choosing the weighted geometric mean is that it addresses in a satisfactory manner the issue of non-perfect substitutability between variables within a dimension and/or between dimensions (Amidžić et al., 2014). This means that it is suitable when the intention is to avoid compensability between the different dimensions (Munda & Nardo 2005).

Group diversity indexes were therefore constructed on the basis of the following expression:

$$\text{Diversity}_i = \text{Gender Diversity} \times \text{Expertise} \times \text{Expertness Diversity} \times \text{Allocation of roles}_i$$

To measure the Mediators and Moderators variables a questionnaire was drawn up. Each item was rated on a 5-point Likert scale.

4.2.3. Mediators

Task conflict: This variable is based on the opinions of students on the degree of discussion and debate that took place in the course of working as a team (De Dreu et al., 1999).

Relationship-conflict: Given that there are various signs that personal conflict may exist, the construct drawn up uses the proposal by Friedman et al. (2000), based on the response of the team members to a number of questions related to various manifestations of this type of conflict.

4.2.4. Moderators

Leadership: Following Carson et al. (2007), we consider this variable as a continuum with two extremes: strong leadership focused on a single person and shared leadership. Accordingly, each individual was questioned concerning his/her leadership capabilities. The strength of leadership within the group was determined as quotient of the coefficient of variation of the opinion of each team member about his/her leadership and the average of the coefficient of variation of the teams in the class.

Initial cohesion: To measure the initial internal cohesion a dummy variable was created. As proposed by Strong & Anderson (1990), it is postulated that if the group is randomly created by the professor then it is not initially drawn together. However if it is formed by students themselves then it is likely to be more cohesive (Jehn et al., 1999).

Prior experience: This variable is included as a construct that seeks to reflect on the one hand expectations about teamwork based on prior experiences (Prichard et al., 2011). A Principal Component Analysis is used to obtain the indicator for this variable.

4.2.5. Control variable

The main variable that determines the ability of a group, and therefore its performance, is the abilities of its members as individuals. The average ability level of the individual members needs to be controlled for (Zambrano et al., 2019). Their prior abilities can be calculated via the arithmetic mean of their grades in three previous subjects related to the current one.

4.3. Statistical analysis

The first hypothesis posits the Model 1: a parallel mediation model with two different mediator variables (task conflict and relationship conflict) causally located between diversity (X) and performance (Y). The mediator variables are conceptualized as the mechanism through which diversity influences team performance, i.e. variation in diversity causes variation in the two mediators (task conflict and relationship conflict), which in turn causes variation in team performance.

$$\begin{aligned} \text{Leaso } T_i &= \alpha + \beta_1 \times \text{Diversity}_i + \beta_2 \times \text{Relationship Conflict}_i + \beta_3 \times \text{Task Conflict}_i + \beta_4 \times \text{Individual Capacity}_i + u_i \quad i = 1, \dots, 82 \quad u_i \\ &\sim N(0, \sigma^2) \end{aligned} \quad (1)$$

The second, third and fourth hypotheses lead to the Model 2: a moderated mediation model. In this case the objective is to determine whether a third variable conditions the effect of X on Y; in other words, it seeks to find conditional effects.

Conditional processes blend the analysis of mediation and moderation in order to estimate and interpret the conditional nature (the moderation component) of the indirect and/or direct effects (the mediation component) of X on Y in a causal system (Hayes 2013). Moderated mediation analysis is based on two separate multiple regression models. This means that the effect of diversity on performance is expected to be mediated by conflict, but this effect is conditional, i.e. dependent on initial cohesion, leadership and/or experience (moderation).

$$\begin{aligned} \text{Task Conflict}_i &= \alpha_T + \beta_{1T} \times \text{Diversity}_i + \beta_{2T} \times \text{Initial Cohesion}_i + \beta_{3T} \times \text{Initial Cohesion}_i * \text{Diversity}_i + u_i \quad i = 1, \dots, 82 \quad u_i \\ &\sim N(0, \sigma^2) \end{aligned} \quad (2a)$$

$$\begin{aligned} \text{Task Conflict}_i &= \alpha_T + \beta_{1T} \times \text{Diversity}_i + \beta_{2T} \times \text{Leadership}_i + \beta_{3T} \times \text{Leadership}_i * \text{Diversity}_i + u_i \quad i = 1, \dots, 82 \quad u_i \sim N(0, \sigma^2) \end{aligned} \quad (2b)$$

$$\begin{aligned} \text{Leaso } T_i &= \alpha_L + \beta_1 \times \text{Diversity}_i + \beta_2 \times \text{Relationship Conflict}_i + \beta_3 \times \text{Task Conflict}_i + \beta_4 \times \text{Individual Capacity}_i + \beta_5 \\ &\times \text{Experience}_i * \text{Task Conflict}_i + u_i \quad i \\ &= 1, \dots, 82 \quad u_i \sim N(0, \sigma^2) \end{aligned} \quad (2c)$$

$$\begin{aligned} \text{Relationship Conflict}_i &= \alpha_T + \beta_{1R} \times \text{Diversity}_i + \beta_{2R} \times \text{Initial Cohesion}_i + \beta_{3RT} \times \text{Initial Cohesion}_i * \text{Diversity}_i + u_i \quad i = 1, \dots, 82 \quad u_i \\ &\sim N(0, \sigma^2) \end{aligned} \quad (2d)$$

$$\begin{aligned} \text{Relationship Conflict}_i &= \alpha_T + \beta_{1R} \times \text{Diversity}_i + \beta_{2R} \times \text{Leadership}_i + \beta_{3R} \times \text{Leadership}_i * \text{Diversity}_i + u_i \quad i = 1, \dots, 82 \quad u_i \\ &\sim N(0, \sigma^2) \end{aligned} \tag{2e}$$

$$\begin{aligned} \text{Leaso } T_i &= \alpha_L + \beta_1 \times \text{Diversity}_i + \beta_2 \times \text{Relationship Conflict}_i + \beta_3 \times \text{Task Conflict}_i + \beta_4 \times \text{Individual Capacity}_i + \beta_5 \\ &\times \text{Experience}_i * \text{Relationship Conflict}_i + u_i \quad i = 1, \dots, 82 \quad u_i \sim N(0, \sigma^2) \end{aligned} \tag{2f}$$

5. Results and discussion

Our results are set out and discussed in the order in which the hypotheses were presented.

Hypothesis 1 is only partially supported: Diversity is indeed found to have a direct, positive effect on the relationship conflict (Table 4). Teams which are more diverse in terms of both gender (surface-level diversity) and cognitive abilities (deep-level diversity) are significantly more prone to relationship conflict. In turn, relationship conflicts significantly worsen group performance. However, we find no significant link between diversity and task conflict, or between task conflict and performance.

This raises the question of why “negative conflict” (relationship conflict) should significantly worsen team performance but “positive conflict” (task conflict) should fail to improve it. The answer may lie in the way in which conflicts are managed. The effect of conflicts on team performance may be determined by how it is managed. Under certain conditioning factors and in certain contexts performance may improve (in the case of task conflict) or at least not worsen (in that of relationship conflict), as shown in Table 5. However, if those conditions are not met the outcome of greater diversity may not be positive (see Table 6).

Task conflict needs to be actively managed for it to be productive and produce positive outcomes. The same goes for relationship conflict, to contain it and ensure that it has no negative outcomes or that any such outcomes are as minor as possible. If there is no specific conflict management then differences lead to confrontations, and this leads members to consciously or unconsciously reduce their contribution to the team.

Identifying the moderator variables between diversity and (task and relationship) conflict and between conflict and performance enables contexts to be provided in which conflict is effective. The moderator variables studied here are, at least to some extent, subject to management by the professor who supervises the work of the students.

The three hypotheses referring to moderator variables are accepted in part (H2.1 accepted/H2.2 accepted, H3.1 accepted/H3.2 rejected, H4.1 accepted/H4.2 accepted) (see Table 6).

First of all, initial cohesion moderates the link between diversity and task conflict and between diversity and relationship conflict (hypothesis 2). As far as the link between initial cohesion and task conflict is concerned, cohesive teams are observed to be capable of generating more debate, suggesting different perspectives, and sharing ideas on the tasks to be performed. When there is an informal organization system already in place (initial cohesion) there is no need to earmark resources for building one. This enables tasks to be distributed within the group, because the structure already exists. Initial cohesion helps teams become productive quickly as it enables them to directly share ideas, conduct debates, etc. However, groups with low levels of initial cohesion need time to adjust and establish links, i.e. to produce the emotional glue needed for them to function as a single unit.

That said, initial cohesion also has its downside: results show that the relationship between diversity and relationship conflict is significantly increasing (Fig. 4), i.e. in highly cohesive teams the more diversity there is, the more relationship conflict there is. However the slope is not statistically significant for low cohesion. Highly cohesive groups are associated with very good personal relationships. Personal trust and a relaxation of formal procedures and issues hinder the implementation of work tasks and lead to an increase in relationship conflicts. By contrast, in groups with less initial cohesion personal relationships are shallower and the criteria by which work is governed are more clearly technical. Greater diversity does not therefore result in a relationship conflict. The legendary quote from Rockefeller “a friendship founded on business is better than a business founded on friendship” reflects this result perfectly.

As regards the second moderator relationship proposed (hypothesis 3), teams with strong leadership show a significant positive link between diversity and task conflict (Fig. 5). In the changeover from “Low Diversity” to “High Diversity” the broken line (strong

Table 4
Outcomes for model 1.

| Antecedent | LEASO Team | Task Conflict | Relationship Conflict |
|---------------------------------|--------------------|--------------------|-----------------------|
| Constant | 3.874*** (1.31) | 2.787*** (0,15) | 2.768*** (0,20) |
| Diversity | -0.094 (0.10) | 0.129 (0,08) | 0.204* (0,11) |
| Relationship Conflict | -0.210** (0.10) | | |
| Task Conflict | 0.090 (0.13) | | |
| Individual Capability (control) | 0,399** (0.16) | | |
| R ² | 0.1978 | 0.0325 | 0.0418 |

Table 5
Diversity, management and performance.

| Diversity | | Effect of task conflict on performance | Effect of relationship conflict on performance | Overall impact |
|-------------|---|--|--|----------------|
| Managed | → | (+) | (0) | (+) |
| Not managed | → | (0) | (-) | (-) |

Table 6
Outcomes for model 2.

| Antecedent | Task Conflict (model 2a) | Task Conflict (model 2b) | LEASO-Team (model 2c) | Relationship Conflict (model 2d) | Relationship Conflict (model 2e) | LEASO-Team (model 2f) |
|---------------------------------|-----------------------------|-----------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Constant | 2.741*** (0.16) | 3.088*** (0.24) | 3.854*** (3.10) | 2.990*** (0.22) | 2.864*** (0.31) | 3.788*** (1.24) |
| Diversity | 0,124 (0,09) | -0.128 (0.17) | -0.054 (0.06) | 0.063 (0.11) | 0,021 (0.18) | -0.054 (0.09) |
| Relationship Conflict | | | -0.115 (0.23) | | | -0.593*** (0.15) |
| Task Conflict | | | -0.509** (-2.25) | | | -0.031 (0.13) |
| Capability (control) | | | 0.410*** (2.66) | | | 0.420*** (0.15) |
| Initial Cohesion (moderator) | 0.301* (0,18) | | | 1.325*** (0.34) | | |
| Leadership (moderator) | | 0.202* (0.12) | | | 0,119 (0.13) | |
| Experience (moderator) | | | 0.075*** (3,14) | | | 0.077*** (0.02) |
| R ² | 0.0638 | 0.0675 | 0.2921 | 0.1999 | 0.0576 | 0.2907 |

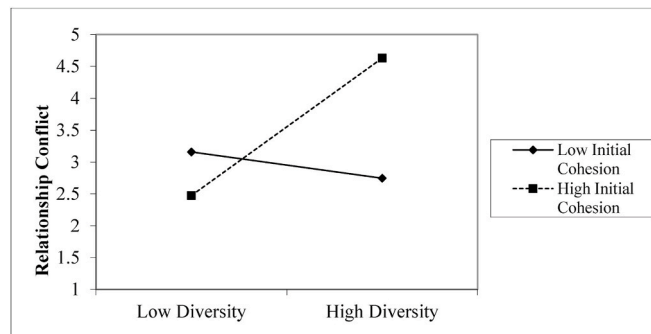


Fig. 4. Link between diversity and relationship conflict at different levels of initial cohesion.

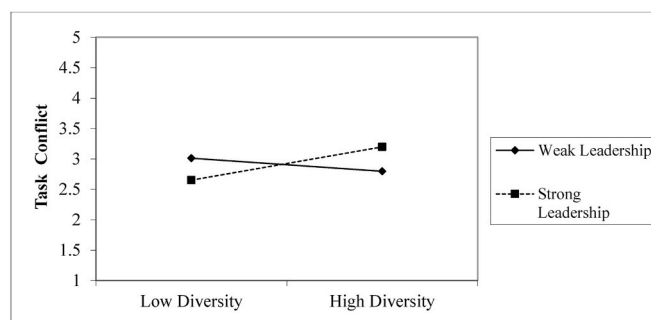


Fig. 5. Link between diversity and task conflict with different levels of leadership.

leadership) is observed to show a positive slope in relation to Task Conflict. However without strong leadership the link is non-effective (the slope is not positive).

A good leader can orient different informational resources and viewpoints towards debate, discussion, the contribution of new ideas, etc. This makes diversity a positive factor and increases task conflict, which does not occur in the opposite case. In work teams without an effective leader, the enrichment provided by diversity is not managed properly and does not translate into greater task conflict. Without effective leadership, noise interference in the discussion can shift the group away from its goal, so greater diversity does not result in increased task conflict.

Finally (hypothesis 4), prior experience of teamwork positively moderates the links between task conflict and performance and between relationship conflict and performance. Learning produced by having worked previously in groups means that tools and guidelines for work have already been developed that enable ideas arising from debate (task conflict) to be transferred to specific actions that help improve outcomes. In the absence of such learning discussions can be fruitless and disorganized, and may fail to focus on the group goal, i.e. the obtaining of an outcome.

However, as shown in Fig. 6, experience reduces the negative effects of relationship conflict on performance. Groups with notable experience in team working show no significant variations in performance when there is an increase in relationship conflicts, but in teams with low levels of experience performance decreases significantly. If team members have broad experience the outcome for the team is not negatively affected by such conflicts. Students with more experience are capable of resolving conflicts by arguing their positions objectively, which prevents the onset of a negative emotional atmosphere that could affect team performance.

In short, diversity has a positive effect on performance if the context is right, i.e. in contexts in which the links between diversity and conflict and between conflict and performance are moderated favorably. Such contexts are obtained in initially cohesive groups, in which one individual takes on the role of leader, and whose members are experienced in learning collaboratively. If these conditioning factors are absent it is preferable to seek to reduce diversity on setting up groups.

6. Conclusions

The ability to work effectively in teams is an increasingly common requirement in the business world and it is vital to identify the determinants that enable successful teams to be configured and managed. We have thus looked at what variables that the lecturer can influence may improve the performance of teams.

When the time comes to implement collaborative working strategies, the question that arises is whether diversity should be actively pursued in working groups to enhance their performance. Diversity is one of the most widely debated features referring to effective teamwork, and also one of the most disputed because of the disparity of results obtained in the many empirical studies carried out in recent years. That disparity stems from the one hand from the complex, multi-faceted nature of the concepts of diversity and performance themselves, and on the other hand from the apparently divergent approaches (social-categorization versus information/decision-making) taken as the theoretical bases for their analysis. The concepts need to be analyzed from an overall perspective, so here we analyze the relationship between the overall concept of diversity and a multidimensional concept of performance. Our work on the theoretical framework is based on an Input-Mediator-Outcome models framework blended with a Categorization-Elaboration Model to form our own conceptualization of the relationship between team diversity and performance.

This study makes two main contributions: First we have managed to integrate the two main theoretical frameworks, which seemed initially to be opposed (social-categorization vs. information/decision-making). This was made possible by the mediation of the conflict variable in its two facets (task conflict and relationship conflict). As a result we are able to explain a large proportion of the inconsistencies in the findings of previous literature on the relationship between diversity and performance. Diversity has positive effects, as it enables different points of view to be heard, i.e. it generates task conflict. But it also has negative effects, in that it can be detrimental to personal relationships and thus to group performance (relationship conflict). Proper management of a working team entails fostering high levels of task conflict and channeling that conflict into enhancing performance, but it also entails circumventing relationship conflict and minimizing its potential (negative) influence on performance. This requires a suitable context, and that is where the second contribution of this study comes in: We identify three variables (cohesion, leadership and experience) that moderate the links between diversity and conflict and between conflict and performance, and thus foster such a context.

A cohesive group with pre-existing personal relationships is desirable, because it generates a significantly greater task-conflict effect. However, such groups tend to have higher levels of personal conflict, which is an aspect that must be monitored carefully. Such situations must therefore be combined with rules set to enable personal relationships to be distinguished from those linked to the task at hand. If strong leadership is factored into the equation the task conflict generated will be even greater. A “good leader” can orient different informational resources and viewpoints towards debate, discussion, the contribution of new ideas, etc. The third performance-enhancing variable that we have identified is experience, which is necessary if a team is to hold a productive, structured, results-oriented debate. Experience is also essential in avoiding personal conflicts, as experienced group members are capable of maintaining their positions through argument and counter-argument and stating those positions objectively, thus preventing differences of opinion from degenerating into personal conflicts.

Efforts by universities to foster teamwork are highly useful not just for current learning on the part of students but also for giving them the capabilities needed for them to be integrated into working teams in such a way that diversity and potential relationship conflicts do not harm team performance.

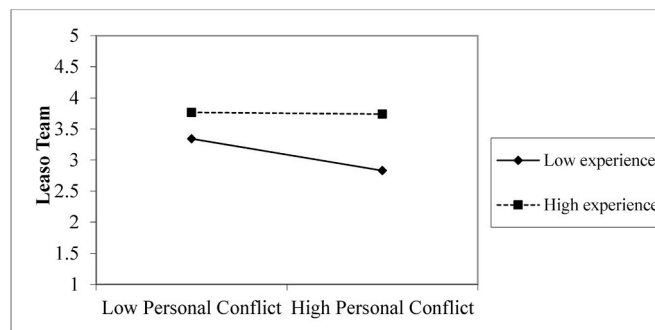


Fig. 6. Link between relationship conflict and performance with different levels of experience in teamwork.

Author Statement

Sara Urionabarrenetxea: Conceptualization, Methodology, Writing – original draft, Ana Fernández-Sainz: Conceptualization, Methodology, Writing – original draft, Jose-Domingo García-Merino: Conceptualization, Methodology, Writing – original draft, The paper has been carried out in a fully collaborative way

Description of the research data

This file comprises data about 82 groups of students enrolled in the Business Studies program at the University. The variables used in the research are based on these data. To know the specific variables and their scales of measurement see the manuscript.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijme.2021.100478>.

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