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Systematic Review

A Systematic Literature Review about Team Diversity and Team Performance: Future Lines of Investigation

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Abstract: This study aims to identify the different research paths that help us understand the emerging aspects explaining how team diversity influences team performance. We also present future lines of investigation that could help us to understand this theme. The study is a systematic literature review (SLR) of articles collected from the Web of Science (WoS) database, within management or business categories, published between 1996 and 2020, considering knowledge diversity, team heterogeneity, team wisdom, cross-functional project teams, and team composition. This study enables the systematization of the existing literature. The framework presented is based on the reviewed articles and explains the articulation of the concepts of team diversity and team performance based on three literature clusters, namely: (1) Team Knowledge Diversity, (2) Diversity Effects and (3) Desirable Outcomes of Diversity. Therefore, this work enriches the systematization of the academic literature on this topic, providing an original framework and a future research agenda organized by literature cluster.

Keywords: systematic literature review; knowledge diversity; team diversity; team heterogeneity

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1. Introduction

Diversity in the workplace has received significant interest in organizations looking to attract and retain talented employees, create broader knowledge bases, and increase the multidisciplinary nature of research and development (R&D) teams to benefit innovation processes. Diversity in the workplace also allows scientific developments that bridge gaps and reduce the time-to-market (Martinez et al. 2017). However, prior research on team diversity revealed mixed results, with the effects of team diversity ranging between positive, neutral, and negative (Jackson and Joshi 2004). Thus, a systematic literature review (SLR) (Tshetshema and Chan 2020) that explores how demographic diversity affects innovation performance in terms of creativity and innovation at the team level is necessary.

Globalization is already here (Kim and McLean 2015), and the trend towards the globalization of markets will become increasingly important in the 21st century (Tan and Sousa 2013). The emerging global economy is characterized by knowledge-intensive firms requiring diverse, specialized knowledge workers with particular knowledge competencies collaborating to create new knowledge that enhances organizational performance (Tenkasi and Boland 1996). Teams are essential building blocks of contemporary organizations. In this context, the factors contributing to team performance are the subject of multiple studies that contribute to the comprehension of achieving team effectiveness and high performance in a constantly changing environment (Dreu 2002).

Studies have focused on different team typologies based on theoretical perspectives, such as the upper-echelons theory, similarity-attraction theory, and social categorization, or social-identity theory. Team types usually include project teams, virtual teams, top management teams, R&D teams, new product development teams, student/academic

teams, and others (Tshetshema and Chan 2020). In academic teams, which are generally involved in spin-offs and start-up projects, diversity is vital for commercialization and recognizing opportunities, organization in gestation, proof of viability and maturity and bringing different kinds of experience (Vanaelst et al. 2006). Due to the importance of team performance, organizations want to attract and retain talented employees to be better prepared for rapid changes (Martinez et al. 2017). Team performance is also affected by the diversity of employees' individual characteristics (Dahlin et al. 2005; Dufays and Huybrechts 2016; van Knippenberg and Mell 2016; Tenkasi and Boland 1996).

Previous research has associated teams with firm performance from the upper-echelon perspective, considering top management team (TMT) characteristics (Vanaelst et al. 2006). Usually, these studies focus on psychological and cognitive aspects and observable traits (e.g., age, team size, industrial experience, functional expertise) (Pitcher and Smith 2001).

The basic idea is that diversity should positively affect the quality of the strategic planning process and its outcomes, especially in situations of great complexity that need multiple perspectives that are not available in homogeneous teams. Knowledge-sharing and positive mood facilitate the positive link between value diversity and creativity, and without these facilitators, diversity has adverse effects on creativity (Tang and Naumann 2016). We need to approach cultural diversity, overcoming the tendency in the field to explore the negative effects more than the positive ones (Stahl et al. 2010).

Considering that the existing research is typically centered on the relationship between TMT diversity and organizational performance (Boone and Hendriks 2009), we intend to identify the general aspects of team diversity in team performance, irrespective of team typology. Recognizing the importance and interest of team diversity and its impacts on team performance and finding a gap in SLRs that approach the interrelationships of both concepts, this study addresses that gap. This SLR contributes to the mixed results of existing research, enhancing theoretical understanding of the diversity–performance relationship (Tshetshema and Chan 2020). This study systematizes existing studies on this topic by exploring the relationship between the concepts. It addresses the need for a systematic literature review on team diversity considering multiple team purposes (e.g., TMT, R&D Team, Design Team, Patenting Team). Taking into account the keywords used in the bibliographic research, this study intends to establish a concept relation and systematize existing studies to identify literature clusters, thereby identifying different approaches to the theme of team diversity influencing team performance. Since this study aims to identify literature clusters and present a future research agenda, we consider the following research questions:

Question 1: What are the different literature clusters that help us to understand, on an organizational level, the influence of team diversity on team performance?

Question 2: What future investigation lines per cluster could help us understand, on an organizational level, the influence of team diversity on team performance?

The 80 articles reviewed were obtained from a search of the Web of Science (WoS) database and used in a bibliographic coupling analysis via VOSviewer software. The software enabled the cluster formation of 51 of the 80 documents, considering only articles with five or more citations. A systematic approach was followed, based on a rigorous search protocol. The results reveal three clusters, namely: (1) Team knowledge Diversity, (2) Diversity Effects and (3) Desirable Outcomes of Diversity. The clusters' concepts were the basis for developing a framework to systematize the relationship between the clusters.

The article is structured in five sections. Section 2 describes the research method, Section 3 presents the results of VOSviewer software analysis, Section 4 discusses the results, and Section 5 presents the conclusions and limitations.

2. Methodology

This study carries out a systematic literature review on "Knowledge Diversity" and "Team Diversity". The development of a systematic literature review is characterized by using an objective and rigorous research protocol aiming to minimize researcher bias

(Tranfield et al. 2003). Since the purpose of this study is to identify literature clusters and present a future research agenda, we chose to apply the methodology described by Tranfield et al. (2003). Figure 1 shows the research protocol, giving the set of criteria that was built upon to answer the research questions.

Relevant articles for the topic analyzed were gathered from Web of Science (WoS) database. The WoS is a selective citation index of scientific and scholarly publishing; it is the world's oldest, most widely used and authoritative database of research (Birkle et al. 2020). A long and well established network provides a wide number of peer-reviewed publications and their respective bibliographic information (Ferreira et al. 2021). Furthermore, due to its content, structure and detail, the WoS database is often selected as the only source for gathering data to develop systematic literature reviews (e.g., Fernandes and Ferreira 2021; Marchiori and Franco 2020 or Figueiredo and Ferreira 2021). We used the following keywords: "Knowledge Diversity", "Team Heterogeneity", "Team Wisdom", "Team Diversity", "Cross-functional Project Team", "Team Composition", "Start-up" and "Spin-off". The research was refined by choosing articles by document type, in English, within the Business Economics research area, and in the Management or Business Web of Science categories. The search was carried out on 31 March 2020, resulting in 80 articles.

The 80 articles obtained from WoS were submitted to VOSviewer software. We first "create a map based on bibliographic data" and then "read data from bibliographic database files" based on an information file originating in the WoS database. Next, we selected "bibliographic coupling" as the type of analysis, "documents" as the unit of analysis, and "full-counting" as the method. In the next step, we included documents with five as the "minimum number of citations of a document".

Application of the software allowed automatic identification of three clusters, including only 51 articles, "the largest set of connected items". Cluster 1 had 24 items, Cluster 2 was formed of 17 items, and Cluster 3 featured 10 items. The research used version 1.6.13 of VOSviewer software to present bibliometric maps and identify bibliographic coupling of document references. Kessler (1963) introduced the bibliographic coupling method, according to which two documents are considered bibliographically coupled when they use the same item as a cited reference. This approach identifies the relations between authors according to cited references, allowing identification of the most proactive research and giving a dynamic perspective of the area covered (Zhao and Strotmann 2008).

Next, the papers were read to identify the most significant teams emerging in each cluster formed in VOSviewer. This also resulted in a table in which we identified the objective of each article present in each cluster and determined the name given to each cluster.

Finally, according to Paul and Criado (2020), we can classify our study as a Bibliometric Review. Bibliometric reviews are characterized by analyzing an extensive amount of research using statistical tools to reveal trends. A bibliometric review can be developed using Viewer software programs, such as VoS (Visualization of Similarities), which is widely used to carry out this type of bibliometric review. Many bibliometric analyses are valuable when, given the number of existing articles, relatively few represent a major part of the total citations in the analysis (Paul and Criado 2020).

The present study followed the search protocol presented in Figure 1.

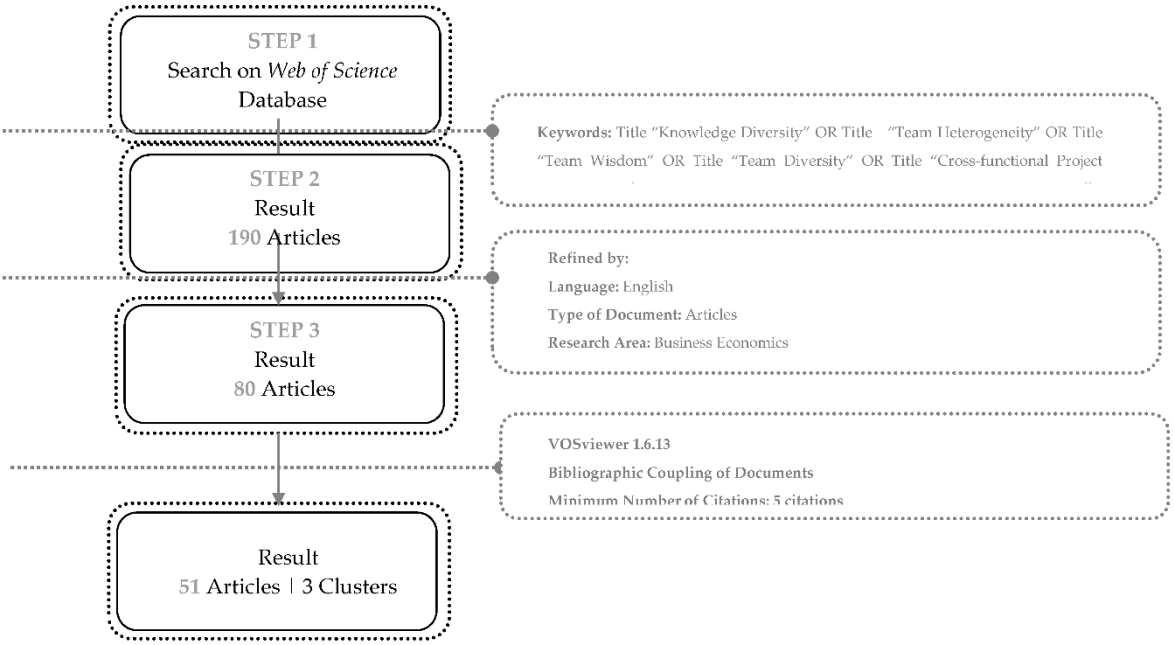

Figure 1. Search Protocol.

The research protocol is complemented by Table 1, which presents the inclusion and exclusion criteria.

Table 1. Criteria for inclusion and exclusion of publications in the SLR.

Inclusion Criteria	Exclusion Criteria
Published in the period up until 31 March 2020 Presence on Web of Science database Included in Business Economics areas Peer-reviewed scientific articles published in English Referring explicitly to "Knowledge Diversity", "Team Heterogeneity", "Team Wisdom", "Team Diversity", "Cross-functional Project Team", "Team Composition", "Start-up" and "Spin-off" in the title, abstract or keywords	In the search of the Web of Science database, proceedings papers, editorial material, book reviews, early access, meeting abstracts, reviews, letters and notes, notes, and erratum were excluded. Bibliographic oupling with full counting of document analysis was performed using VOSviewer software, with a minimum number of five citations of a document.

3. Results

Figure 2 shows the evolution in the number of publications and citations per year, considering the 80 articles from 1996 to 2020. The first article was published in 1996, and since then, the number of articles has increased, reaching a maximum of 12 in 2019. Citations reached a maximum of 607 in 2019. Based on the evolution of the number of citations and publications, increasing interest has been demonstrated, particularly since 2010, when the relationship between diversity and performance began to receive more attention.

Of the 80 articles researched, 43 (53.75%) have more than 10 citations, and only 8 (10%) do not have any.

Table 2 presents the top ten most-cited articles included in this study, which make up a total of 2884 citations. Despite not being a new research trend, the debate on team diversity's impact on firm performance reveals a strong tendency to focus only on TMT diversity. Recognizing the paramount importance of the impact of diversity on performance, since 2012, research has started to explore diversity in its related subfields and to consider diversity outside of TMT.

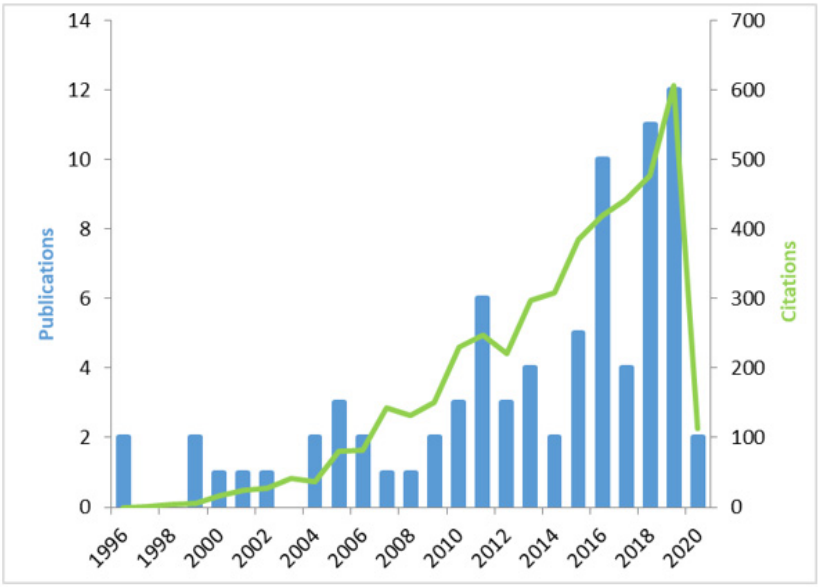

Figure 2. Total publications and citations by year.

Table 2. Top ten most-cited articles.

Article	Authors and Year	Journal	Citations	Methodology
The influence of top management team heterogeneity on firms' competitive moves.	Hambrick et al. (1996)	*Administrative Science Quarterly*	826	Quantitative
Top management team diversity, group process, and strategic consensus.	Knight et al. (1999)	*Strategic Management Journal*	385	Quantitative
The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance.	Carpenter (2002)	*Strategic Management Journal*	287	Quantitative
Team diversity and information use.	Dahlin et al. (2005)	*Academy of Management Journal*	284	Quantitative
Top management-team diversity and firm performance: Examining the role of cognitions.	Kilduff et al. (2000)	*Organization Science*	247	Quantitative
Cognitive team diversity and individual team member creativity: A cross-level interaction.	Shin et al. (2012)	*Academy of Management Journal*	204	Quantitative
Inherent limitations of demographic proxies in top management team heterogeneity research.	Priem et al. (1999)	*Journal of Management*	184	Qualitative
Top management T team heterogeneity: Personality, power, and proxies.	Pitcher and Smith (2001)	*Organization Science*	164	Mixed
Does top management team diversity promote or hamper foreign expansion?	Barkema and Shvyrkov (2007)	*Strategic Management Journal*	162	Quantitative
Entrepreneurial team development in academic spin-outs: An examination of team heterogeneity.	Vanaelst et al. (2006)	*Entrepreneurship: Theory and Practice*	141	Qualitative

Bibliographic coupling of documents: Main themes.

To identify the tendencies in previous research on team diversity and team performance, a bibliographic coupling of document references with a minimum of five citations

was carried out, resulting in the definition of three clusters, involving fifty-one articles. Table 3 presents the clusters.

Table 3. Cluster assembly.

Cluster 1: 24 Items	Cluster 2: 17 Items	Cluster 3: 10 Items
Anthony et al. (2014)	Auh and Menguc (2005)	Boone and Hendriks (2009)
Chen and Liu (2012)	Barkema and Shvyrkov (2007)	García-Granero et al. (2018)
Chen and Liang (2016)	Boone et al. (2004)	Heyden et al. (2013)
Choudhury and Haas (2018)	Carpenter (2002)	Homberg and Bui (2013)
Dahlin et al. (2005)	Drach-Zahavy (2011)	Li (2013)
Dell'Era and Verganti (2010)	Der Foo et al. (2005)	Li (2014)
Dufays and Huybrechts (2016)	Hambrick et al. (1996)	Li et al. (2016)
Frey et al. (2011)	Jackson and Joshi (2004)	Talke et al. (2010)
Martinez et al. (2017)	Kilduff et al. (2000)	Talke et al. (2011)
Hoisl et al. (2017)	Knight et al. (1999)	Wu et al. (2011)
Kavadias and Sommer (2009)	Lee and Park (2006)	
Kristinsson et al. (2016)	Naranjo-Gil et al. (2008)	
Liang et al. (2015)	Pitcher and Smith (2001)	
Lin (2011)	Priem et al. (1999)	
Mayo et al. (2016)	Sahaym et al. (2016)	
Men et al. (2019)	Vanaelst et al. (2006)	
Shin et al. (2012)	Zhou and Rosini (2015)	
Stahl et al. (2010)		
Tang and Naumann (2016)		
Tenkasi and Boland (1996)		
Tortoriello et al. (2015)		
Trischler et al. (2017)		
van Knippenberg and Mell (2016)		
Zoogah et al. (2011)		

The clusters were analyzed and named: (1) Team Knowledge Diversity, (2) Diversity Effects and (3) Desirable Outcomes of Diversity. Figure 3 shows the cluster network.

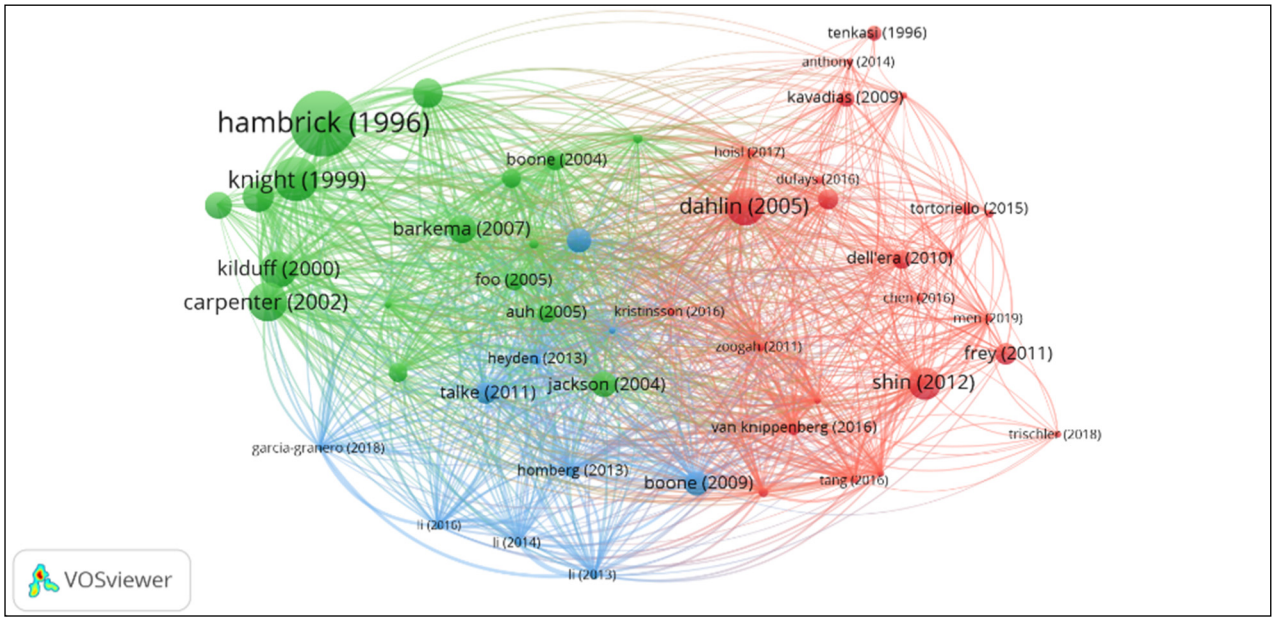

Figure 3. Cluster network. Cluster 1: Team Knowledge Diversity Cluster 2: Diversity Effects Cluster 3: Desirable Outcomes of Diversity.

Cluster 1 is composed of 24 items addressing Team Knowledge Diversity and how this is influenced by organizational context and employees' individual characteristics. Table 4 lists the articles of Cluster 1 and presents the studies' objectives, methodology, and citations. Cluster 1 includes 18 (75%) articles based on a quantitative approach, 5 (21%) based on a qualitative approach, and 1 (4%) on mixed methodology.

In Cluster 1, several main themes were identified. First, there is the need to approach team diversity based on the evolution of organizational work structures (van Knippenberg and Mell 2016). Secondly, there are challenges that emerge from team diversity (Hoisl et al. 2017; Martinez et al. 2017; van Knippenberg and Mell 2016) and how it is possible to explore diversity in order to pursue synergistic benefits (Kavadias and Sommer 2009; Kristinsson et al. 2016; van Knippenberg and Mell 2016). It is also important to analyze the importance of cognitive team diversity in team creativity (Men et al. 2019; Shin et al. 2012; Tang and Naumann 2016) and its effects on team performance (Lin 2011; Trischler et al. 2017). Diversity should also be approached based on diversity integration (Tenkasi and Boland 1996) and diversity coordination (Zoogah et al. 2011).

Over the last five decades, changes have been identified in the workforce, in employee mobility, and in greater levels of specialization, allied to the increasing tendency to organize work in team-based structures, creating increasing numbers of heterogeneous organizations (van Knippenberg and Mell 2016).

The focus of the global economy has changed from capital- and labor-intensive firms to knowledge-intensive firms; there is now a significant demand for high knowledge competence, in which collaboration is crucial to improve organizational performance. Simultaneously, the development of information technologies is an integral part of knowledge-intensive firms. This allows mutual learning but fails to consider the necessary dialog among highly differentiated fields of expertise as a basis for integration (Tenkasi and Boland 1996). Existing research focuses on the moderators of team diversity's effects, but it is also important to make a more integrative effort (van Knippenberg and Mell 2016).

The concept of hybrid organizations is based on the heterogeneity (e.g., education, family, professional experience) of entrepreneurial teams and its enhancement of entrepreneurial processes (Dufays and Huybrechts 2016). However, diversity could also present some challenges associated with team traits and team composition (Hoisl et al. 2017; Martinez et al. 2017; van Knippenberg and Mell 2016). For example, the exposure of innovation projects through internet broadcasting could affect individuals' extrinsic (e.g., desire for monetary rewards) and intrinsic (e.g., enjoyment) motivations and knowledge diversity with repercussions for the performance of open-innovation projects (Frey et al. 2011). This is because innovation requires a broad knowledge base, and organizations count on team diversity to create a multidisciplinary solution to identify scientific developments and gain greater cognitive ability. However, diversity will present distinct effects, depending on the novelty of innovation and industry (Martinez et al. 2017). We should also acknowledge that diversity and excessive heterogeneity could also harm R&D team performance and, acknowledging this diversity, organizations should consider the ideal mix of capacities to maximize the benefit of creativity in diverse R&D teams, avoiding the conflict and distrust normally associated with diversity (Martinez et al. 2017). Another negative aspect related to R&D team diversity is hyper-competition, arising from the constant challenge to improve competitiveness, an aspect that can differ according to the organization's size or age (Hoisl et al. 2017).

Diversity should be explored in order to pursue synergistic benefits through access to a wider range of resources that allow better decision-making, problem-solving, flexibility, creativity, and innovation (van Knippenberg and Mell 2016), generating group solutions (Kavadias and Sommer 2009), and creating better entrepreneurial decision-making processes (Kristinsson et al. 2016). It is possible to observe social structural conditions in which the role of innovation catalysts emerges: individuals that support, facilitate and promote their colleagues' innovativeness (Tortoriello et al. 2015).

It is also possible to explore diversity benefits according to team typology. For instance, Choudhury and Haas (2018) analyzed the importance of patenting teams' composition and their outcomes (the scope of their patent applications and the speed of their patent approvals) based on team members' diversity and on team leader experience. Furthermore, in design-intensive industries, where customers are extremely watchful of product design, collaboration teams are a critical issue. Managing collaborations is also critical, forcing firms to develop a proper collaborative strategy focused not only on a collaborator's individual characteristics but also working to build a balanced portfolio of collaborators (Dell'Era and Verganti 2010). In co-design teams, team background diversity and motivation should be considered in selection to enable the team's collaborative efforts to transform relevant knowledge into innovative outcomes (Trischler et al. 2017).

In firms with greater knowledge diversity, it is possible to make more effective strategic alliances and acquisitions, and firms with low knowledge diversity make more effective R&D investments; therefore, a knowledge portfolio is crucial to measure the effectiveness of knowledge-sourcing and the success of inter-firm partnership strategies (Lin 2011). A further topic addressed in research is whether and when team diversity is positively related to individual creativity; the research is based on four personal characteristics, namely, openness to experience, creative self-efficacy, preference for divergence, and individual creativity (Shin et al. 2012). Individual differences and situational factors are essential to enable individual contributions to maximize team diversity and contribute to team creativity, an aspect that could be enhanced in the presence of high levels of transformational leadership (Shin et al. 2012). Tang and Naumann (2016) researched the team diversity–team creativity relationship and identified knowledge-sharing as a moderator in the positive impact of team diversity interaction as well as the effect of positive mood on team creativity outcomes.

According to social identity theory and through educational background, team diversity could have a positive influence on information use or a negative influence through nationality (Dahlin et al. 2005). Diversity is a potential driver of new ventures' business success, and new teams' international diversity and approach (a greater or lesser degree of causation logic) could impact the entrepreneurial decision process (Kristinsson et al. 2016). It is also possible to analyze the level of diversity (surface-level and deep-level) in teams' helping behavior, namely cohesion and cooperation, using them as mediators of the impact of demographic characteristics and trait diversity (Liang et al. 2015).

Considering the convergence of several crucial diversity features, it is important to understand strategic alliance team coordination as strengthening the positive relation between functional background diversity and team effectiveness (Zoogah et al. 2011). It is also important to rely on higher information technology capacities to provide greater knowledge, strength, and diversity, allowing better stability in firms' performance (Chen and Liang 2016). Lower levels of conflict are found to have a positive impact on project efficiency, and the early definition of project goals is positively associated with better-quality coordination (Anthony et al. 2014).

In Cluster 1, the challenges faced by researchers are still quite evident in terms of clearly defining which aspects of diversity teams should focus on in order to structure their decision-making process so that they can benefit from the synergies arising from the diversity in their teams. Through access to a much wider range of resources originated by diversity, teams can form more and better decisions.

In future research regarding Cluster 1 (Team Knowledge Diversity) and considering the existing research, it is important to compare the strength of relationships between team member creativity and cognitive diversity—both perceived and actual (Shin et al. 2012). By recognizing the existence and possible ramifications of the existing trade-offs in organizing patenting activity in order to maximize scope versus speed, are promising directions for further research will be opened (Choudhury and Haas 2018).

Cluster 2: Diversity Effects

Cluster 2 is composed of 17 items referring to diversity's effects on team performance and team coordination, and the influence of diversity on the approach to complexity in internationalization processes and strategic decisions. Table 5 lists the articles in Cluster 2 and presents the studies' objectives, methodology, and citations. Cluster 2 includes 13 articles (76%) based on a quantitative approach and 4 (24%) based on a qualitative approach.

Cluster 2 focuses on diversity's effects on team performance (Carpenter 2002; Jackson and Joshi 2004; Kilduff et al. 2000; Priem et al. 1999; Zhou and Rosini 2015). Team diversity concepts consist of several fundamental, interrelated facets that can shape firm performance, where diversity is identified as a strategic facilitator of change (Naranjo-Gil et al. 2008), with implications for the innovation process (Auh and Menguc 2005), helping to establish strategic innovation (Barkema and Shvyrkov 2007) and influencing the use of corporate venture capital (Sahaym et al. 2016). Furthermore, team diversity is also associated with the challenges of consensus achievement (Knight et al. 1999), making diversity a valuable asset through which to obtain a competitive advantage (Jackson and Joshi 2004), with positive impacts on competitive actions and responses (Hambrick et al. 1996).

As described by Carpenter (2002), the effects of team diversity on performance will depend upon the team's strategic and social context. Based on three aspects of the social context, namely the combination of diversity dimensions, the team manager's demographic characteristics, and the work unit's demography, Jackson and Joshi (2004) conclude that the demographic and social context moderates the interaction between team diversity and team performance.

Research also examines how team diversity affects the external evaluation of a team's business ideas, arguing that, from an information perspective, the task-related diversity of member characteristics enhances team effectiveness, and non-task diversity harms team effectiveness, distracting team members from their tasks (Der Foo et al. 2005).

Considering the importance of a team's strategic and social context and given the complexity of human decision processes in ambiguous, high-stake situations involving team processes, attitudes, and judgments, we need to determine which variables should be measured to understand strategic choices (Priem et al. 1999). We also need to consider the existence of a cycle of "homosocial reproduction" potentiated by executive team power, which is interrupted in the presence of environmental pressure and increased complexity (Boone et al. 2004). In a complex scenario, there is a positive effect of team education, work experience, and tenure on performance, an effect that is highly sensitive to complexity but that could represent a stronger relationship in short-tenured teams (Carpenter 2002).

According to Pitcher and Smith (2001), personality and power play a critical role in diversity proxies (e.g., of age, team tenure, industry experience, and functional background diversity) for cognitive diversity, supporting the notion that some forms of diversity are more relevant for strategic outcomes, such as innovation and performance. Increased functional coordination also creates a positive impact of TMT diversity on innovation (Auh and Menguc 2005). This extends prior research assumptions that TMT diversity increases strategic innovation, enriching this argument with a new possible approach based on exploring new geographical areas, considering that diversity may lead to the formation of TMT sub-groups, jeopardizing the communication process and the propensity to advance to new locations (Barkema and Shvyrkov 2007). International alliances could also be influenced by the relationship between TMT international exposure diversity and firm internationalization (Lee and Park 2006).

Table 4. Authors in Team knowledge Diversity cluster.

Authors	Article	Objective	Methodology	Citations
Anthony et al. (2014)	Crossing functions above the cross-functional project team: The value of lateral coordination among functional department heads.	Approach the impact of quality of coordination of cross-functional project teams with different levels of boundary conflict.	Quantitative Sample: 60 cross-functional project teams.	9
Chen and Liu (2012)	Impact of network position and knowledge diversity on knowledge creation: The empirical setting of research communities.	Analyze the role of network position and knowledge diversity in the process of new knowledge creation.	Quantitative Sample: Network of 239 academics from business administration departments at four universities based on their 1827 publications, involving 1541 co-authors between 1986 and 2008.	16
Chen and Liang (2016)	Knowledge diversity and firm performance: An ecological view.	Develop a theoretical model based on the applicability of the diversity–stability principle in ecology to approach knowledge management and the impact of knowledge diversity on firm performance.	Qualitative Sample: A total of 58 valid responses from experts of 20 enterprises.	6
Choudhury and Haas (2018)	Scope versus speed: Team diversity, leader experience, and patenting outcomes for firms.	Analyze how the composition of patenting teams relates to both the scope of patent applications and the speed of patent approvals.	Quantitative Sample: A sample of 121 teams that filed patents	6
Dahlin et al. (2005)	Team diversity and information use.	Analyze the impact of educational and national diversity on information use by work teams.	Quantitative Sample: A total of 45 case analyses completed by 100 participants in 19 teams.	284
Dell'Era and Verganti (2010)	Collaborative strategies in design-intensive industries: Knowledge diversity and innovation.	Addresses how a company may develop a collaborative strategy by identifying an effective portfolio of designers.	Quantitative Sample: A total of 121 teams that filed patents.	67
Dufays and Huybrechts (2016)	Where do hybrids come from? Entrepreneurial team heterogeneity as an avenue for the emergence of hybrid organizations.	Explore the emergence of hybrid organizations.	Qualitative Theoretical approach.	15

Table 4. *Cont.*

Authors	Article	Objective	Methodology	Citations
Frey et al. (2011)	Whom should firms attract to open innovation platforms? The role of knowledge diversity and motivation.	Explore how individuals' motivation and knowledge diversity affect their contribution performance in open innovation projects.	Quantitative Sample: A total of 105 responses to a web questionnaire.	92
Martinez et al. (2017)	Diversity is strategy: The effect of R&D team diversity on innovative performance.	Analyze the performance effects of R&D team composition.	Quantitative Sample: Panel data for more than 12.000 Spanish firms.	9
Hoisl et al. (2017)	R&D team diversity and performance in hypercompetitive environments.	Explore the effects of R&D team composition on their performance outcomes in hypercompetition.	Quantitative Sample: Electronic and paper-based sources about composition and classifications of 88 Formula 1 R&D teams.	10
Kavadias and Sommer (2009)	The effects of problem structure and team diversity on brainstorming effectiveness	Explore the use of brainstorming methods and nominal group sessions in idea generation and problem-solving in organizations, approaching team structure and team diversity impacts on group solutions.	Mixed Sample: Based on normative models in the new product development research, explore how brainstorming and nominal group sessions search for solutions to problems.	49
Kristinsson et al. (2016)	The relationship between founder team diversity and innovation performance: The Moderating role of causation logic.	Explore diversity and logic in new ventures and analyze the impact on entrepreneurial decision-making.	Quantitative Sample: A total of 157 new technology-based ventures in a Northern European country.	10
Liang et al. (2015)	Team diversity and team helping behavior: The mediating roles of team cooperation and team cohesion.	Approach team-helping behavior as a collective phenomenon and as a mediator of the effects of team members' demographic diversity.	Quantitative Sample: Data from 558 employees in 133 work teams in Taiwanese firms.	17
Lin (2011)	Knowledge diversity as a moderator: Inter-firm relationships, R&D investment and absorptive capacity.	Analyze how knowledge diversity impacts firm performance in R&D investment, strategic alliances, and acquisitions.	Quantitative Sample: A total of 2404 firm-year data from United States technology firms.	15

Table 4. *Cont.*

Authors	Article	Objective	Methodology	Citations
Mayo et al. (2016)	Team diversity and categorization salience: Capturing diversity-blind, intergroup-biased, and multicultural perceptions.	Propose a technique to analyze salience of different social categorizations inside according to the given importance of the salience of these categories.	Quantitative Sample: A total of 38 manufacturing teams comprising 239 members.	8
Men et al. (2019)	When and how knowledge sharing benefits team creativity: The importance of cognitive team diversity.	Explore the impact of knowledge sharing on team creativity through the lens of absorptive capacity and knowledge integration.	Quantitative Sample: A sample of 86 knowledge worker teams involving 381 employees and employers in Chinese companies.	6
Shin et al. (2012)	Cognitive team diversity and individual team member creativity: A cross-level interaction.	Explore the conditions under which cognitive team diversity affects individual team member creativity.	Quantitative Sample: Quantitative 316 employees in 68 teams in Chinese companies.	204
Stahl et al. (2010)	A look at the bright side of multicultural team diversity.	Approach cultural diversity according to the lens of Positive Organizational Scholarship to identify if diversity is an asset rather than a liability.	Qualitative Theoretical approach.	77
Tang and Naumann (2016)	Team diversity, mood, and team creativity: The role of team knowledge sharing in Chinese R&D teams.	Examine team knowledge-sharing impact on the interaction of team diversity and positive mood on team creativity outcomes.	Quantitative Sample: Survey participants included 458 employees working in 47 R&D teams from 17 research institutes in China	10
Tenkasi and Boland (1996)	Exploring knowledge diversity in knowledge intensive firms: a new role for information systems.	Approach the role of information systems integration as a way to benefit firm knowledge diversity in knowledge-intensive firms.	Qualitative Theoretical approach.	46
Tortoriello et al. (2015)	Being a catalyst of innovation: The role of knowledge diversity and network closure.	Approach the social structural conditions analyzing how individuals support, facilitate and promote their colleagues' innovativeness, working as catalysts of innovation.	Quantitative Sample: A total of 276 researchers involved in research and development division of a large multinational high-tech company.	29

Table 4. *Cont.*

Authors	Article	Objective	Methodology	Citations
Trischler et al. (2017)	Team diversity and its management in a co-design team.	Explore the conditions under which a diverse co-design team generates innovative service design concepts.	Quantitative Sample: "Professional", 20 professionals (Study 1) and 25 professionals (Study 2); "user", 46 users registered for Study 1 and 60 users registered for Study 2.	6
van Knippenberg and Mell (2016)	Past, present, and potential future of team diversity research: From compositional diversity to emergent diversity.	Review of the existing research on team diversity to present the current state of the field, the past and the potential way forward to an integrative theory in diversity research.	Qualitative Theoretical approach.	36
Zoogah et al. (2011)	Strategic alliance team diversity, coordination, and effectiveness.	Based on strategic alliance, team, and diversity research, the authors suggest that strategic alliance team coordination moderates the relationship between strategic alliance team diversity (nationality and gender characteristics) and effectiveness.	Quantitative Sample: A total of 109 team members, 44 team leaders and 34 alliance executives involved with 44 strategic alliance teams in 15 firms.	20

Table 5. Authors in Diversity Effects cluster.

Authors	Article	Objective	Methodology	Citations
Auh and Menguc (2005)	Top management team diversity and innovativeness: The moderating role of interfunctional coordination.	Present a contingent model to analyze how top management team diversity, acting in human capital formation, impacts the innovation process.	Quantitative Sample: A Total of 242 usable questionnaires applied to CEOs or senior executives operating in manufacturing industries.	74
Barkema and Shvyrkov (2007)	Does top management team diversity promote or hamper foreign expansion?	Approach the impact of TMT diversity on strategic innovation and the propensity to advance to new geographical areas.	Quantitative Sample: Data on 2159 expansions of 25 companies over a period of more than three decades.	162
Boone et al. (2004)	The genesis of top management team diversity.	Literature review based on the statement that executive team power strengthens a cycle of "homosocial reproduction", in the form of social capital, which is interrupted only when teams face compelling needs for diversity	Qualitative Theoretical approach.	83
Carpenter (2002)	The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance.	Analyze the link between top management team (TMT) heterogeneity (education, work experience and tenure) and firm performance.	Quantitative Sample: A total of 247 companies, and generated 472 company-years.	287
Drach-Zahavy (2011)	Interorganizational teams as boundary spanners: The role of team diversity, boundedness, and extra-team links.	Present an integrated model based on three structural variables.	Quantitative Sample: A total of 49 health promotion teams.	:21
Der Foo et al. (2005)	Do others think you have a viable business idea? Team diversity and judges' evaluation of ideas in a business plan competition.	Analyze how team diversity affects the external evaluation of teams' business ideas.	Quantitative Sample: A total of 154 teams, each of which submitted a business plan.	67
Hambrick et al. (1996)	The influence of top management team heterogeneity on firms' competitive moves.	Explore how TMT heterogeneity affects competitive actions and responses.	Quantitative Sample: Actions and responses of 32 United States airlines.	826
Jackson and Joshi (2004)	Diversity in social context: a multi-attribute, multilevel analysis of team diversity and sales performance.	Explore how the relationship between team diversity and team performance could be better understood considering social dynamics.	Quantitative Sample: A total of 365 sales teams distributed across 42 sales districts in a United States company.	135
Kilduff et al. (2000)	Top management-team diversity and firm performance: Examining the role of cognitions.	Explore the relationship between demographic and cognitive team diversity and the reciprocal effects of diversity and firm performance.	Quantitative Sample: Data from 35 simulated firms involving a total of 159 managers.	247

Table 5. *Cont.*

Authors	Article	Objective	Methodology	Citations
Knight et al. (1999)	Top management team diversity, group process, and strategic consensus.	Analyze concepts from upper echelons, group process, and social cognition theories to explore how demographic diversity and group processes influence strategic consensus in TMT.	Quantitative Sample: Data from 76 high-technology firms from the United States and Ireland.	385
Lee and Park (2006)	Top team diversity, internationalization and the mediating effect of international alliances.	Explore the mediating effect of international alliances in the relationship between TMT job-related diversity and firm internationalization.	Quantitative Sample: A total of 226 United States firms.	70
Naranjo-Gil et al. (2008)	Top management team heterogeneity, strategic change and operational performance.	Analyze the role of TMT diversity as a facilitator of strategic change.	Quantitative Sample: A total of 92 full TMTs from Spanish hospitals.	67
Pitcher and Smith (2001)	Top Management team heterogeneity: Personality, power, and proxies.	Investigate TMT cognitive diversity considering proxies of age, team tenure, industry experience, and functional background heterogeneity, comparing operationalization with cognitive diversity.	Qualitative Theoretical approach.	164
Priem et al. (1999)	Inherent limitations of demographic proxies in top management team heterogeneity research.	Analyze TMT diversity impact on firm performance based on the influence of demographic indicators that contribute to strategic management.	Qualitative Theoretical approach.	184
Sahaym et al. (2016)	Mixed blessings: How top management team heterogeneity and governance structure influence the use of corporate venture capital by post-IPO firms.	Analyze the role of TMT and governance structures in the use of corporate venture capital, particularly in firms that have recently undergone an initial public offering.	Quantitative Sample: A total of 172 Initial Public Offering firms.	9
Vanaelst et al. (2006)	Entrepreneurial team development in academic spin-outs: An examination of team heterogeneity.	Approach the dynamics of entrepreneurial teams and the changes they go through in the different stages of a spin-out process.	Quantitative Sample: Team members in 10 spin-out cases.	141
Zhou and Rosini (2015)	Entrepreneurial team diversity and performance: Toward an integrated model.	Evaluate existing research on the relationship between entrepreneurial team diversity and performance.	Qualitative Theoretical approach.	17

Considering the importance of communication and consensus, Knight et al. (1999) analyzed the implications of demographic diversity. If analyzed in isolation, this reveals negative effects on strategic consensus. However, when associated with interpersonal conflict and agreement-seeking, it has a greatly improved relationship with strategic consensus. The TMT lifecycle undergoes an evolution from preserving multiple interpretations at the beginning of the team's lifecycle towards a more heedful interrelation near its end,

revealing that these changes in team performance affect and are affected by cognitive diversity (Kilduff et al. 2000).

Other aspects of diversity must be considered and, due to the rapid emergence of inter-organizational teams and their importance in improving organizations' responsiveness, it was necessary to analyze structural variables (e.g., team informational diversity, team boundedness, and extra team links), which raised the importance of including structural considerations in inter-organizational team management (Drach-Zahavy 2011). Diverse TMTs are more prepared to deal with refocusing organizations strategically and keeping up operational performance, particularly when the relationship is moderated by job-related TMT heterogeneity (Naranjo-Gil et al. 2008). If we consider entrepreneurial teams, team composition is normally considered a crucial factor of start-ups' performance, particularly in highly competitive markets, and it is fundamental to observe demographic, personality, and informational diversity and its influence on entrepreneurial team performance (Zhou and Rosini 2015). Entrepreneurial team performance dynamics evolve through the different stages of the spin-out process (research commercialization and opportunity recognition; organization in gestation; proof of viability and maturity) with implications for team composition, where new team members bring in different kinds of experience without interfering in the alignment of the initial team members. In the early stages of spin-off formation, the composition of the founding team tends to undergo drastic changes and, while these changes might be expected to embody team diversity, surprisingly, they do not (Vanaelst et al. 2006).

The existing research field is vast and uses a multitude of concepts that need to be explained in order to be used clearly and objectively. Determining the impact of teams' diversity on their performance and, consequently, on organizational performance involves establishing a solid theoretical basis that allows decision-making processes to be founded when constituting a team. This helps to achieve the best results and knowledge to avoid any negative effects that may arise from the team's diversity.

In Cluster 2, Diversity Effects, considering the critical importance of both personality and power for cognitive diversity, it was necessary to assess their individual impact on the strategy to make it more useful for managers (Pitcher and Smith 2001). With the evidence of a partial mediation effect, we need to explore how TMT international exposure diversity can influence firm internationalization (Lee and Park 2006).

Cluster 3: Desirable Outcomes of Diversity

Cluster 3 is composed of 10 items from among the desirable outcomes of diversity. Highlighted in this cluster are some key aspects, namely the accomplishment of organizational ambidexterity, as well as diversity as a decision process support and as a catalyst of innovation. Table 6 lists the articles in Cluster 3, presenting the studies' objectives, methodology and citations. Cluster 3 includes nine articles (90%) based on a quantitative approach and one (10%) based on a qualitative approach.

Research is normally centered on the relationship between TMT diversity and organizational performance and neglects the interaction of the nature of the team process with TMT diversity (Boone and Hendriks 2009). According to the authors, there is a need to focus on team mechanisms (e.g., collaborative behavior, accurate information exchange, and decentralization of decision-making) to clearly analyze them as moderators of the impact of TMT diversity (e.g., functional background and locus-of-control) on financial performance. Research also identifies other neglected aspects, such as the corporate governance's influence on strategic options and its innovation management outcomes (Talke et al. 2010). Considering that, based on upper echelons theory, strategic choices are made by TMT, giving corporate governance major importance in strategic choices and the results of innovation processes (Talke et al. 2010, 2011), it is also important to analyze the antecedents of a firm's strategic orientation, especially the influence of TMT diversity and its characteristics (e.g., educational, functional, industrial and organizational background), as well as how this impacts on innovation outcomes and firm performance (Talke et al. 2011).

Table 6. Authors in Desirable Outcomes of Diversity.

Authors	Article	Objective	Methodology	Citations
Boone and Hendriks (2009)	Top management team diversity and firm performance: Moderators of functional-background and locus-of-control diversity.	Analysis of team mechanisms as moderators of the impact of TMT diversity on financial performance.	Quantitative Sample: A total of 33 information technology firms.	117
García-Granero et al. (2018)	Top management team diversity and ambidexterity: The contingent role of shared responsibility and CEO cognitive trust.	Analysis the top management team's functional and age diversity and its effects on organizational ambidexterity.	Quantitative Sample: A total of 133 Spanish firms from the primary and secondary sectors and high-tech firms.	16
Heyden et al. (2013)	Perceived environmental dynamism, relative competitive performance, and top management team heterogeneity: Examining correlates of upper echelons' advice-seeking.	Relate perceived environmental dynamism and firm performance with top management team heterogeneity and CEO internal and external advice-seeking.	Quantitative Sample: Random sample of Dutch firms	25
Homberg and Bui (2013)	Top management team diversity: A systematic review.	Systematic literature review (from 2000 to 2010) on TMT diversity impact on executives' decisions.	Qualitative Theoretical approach.	29
Li (2013)	How top management team diversity fosters organizational ambidexterity: The role of social capital among top executives.	Determine how the composition of TMT affects organizational ambidexterity.	Quantitative Sample: A total of 113 Chinese firms.	20
Li (2014)	Top management team diversity in fostering organizational ambidexterity: Examining TMT integration mechanisms.	Based on the upper echelons theory and the intra-group conflict point of view, the authors approach team diversity dual nature that could facilitate or difficult organizational ambidexterity.	Quantitative Sample: A total of 196 Chinese firms.	12
Li et al. (2016)	Top management team diversity, ambidextrous innovation and the mediating effect of top team decision-making processes.	Analyze how TMT composition influences ambidextrous innovation.	Quantitative Sample: A total of 179 TMT from high-tech Chinese firms.	5
Talke et al. (2010)	How top management team diversity affects innovativeness and performance via the strategic choice to focus on innovation fields.	Based on upper echelons theory, determine how diversity could enhance team performance by facilitating an innovation strategy.	Quantitative Sample: A total of 122 responses from 10 manufacturing industries.	114

Table 6. *Cont.*

Authors	Article	Objective	Methodology	Citations
Talke et al. (2011)	Top management team diversity and strategic innovation orientation: The relationship and consequences for innovativeness and performance.	Approach strategic innovation behavior and firm performance through the idiosyncrasies of top managers.	Quantitative Sample: A total of 122 responses from 10 manufacturing industries.	89
Wu et al. (2011)	Top management team diversity and strategic change: The moderating effects of pay imparity and Liang organization slack.	Explore, through a theoretical model, the implications of team pay disparity and resource slack for TMT diversity in strategic change and if the moderating effects of resource slack differ according to pay disparity levels.	Quantitative Sample: A total of 391 Chinese firms.	11

Furthermore, Wu et al. (2011) analyzed the effects of pay disparity and resource slack as moderators of TMT diversity, concluding that pay imparity has a negative effect on TMT diversity and that resource slack differs according to the level of team pay imparity.

TMT diversity is an ambiguous concept that allows the emergence of new mental models and cognitive frames, but also, on the other hand, the difficult exchange of information and integration of differential knowledge (Li 2013). In this integration process, we also need to approach the CEO advice-seeking process in order to obtain strategic directions for future decisions, as well as analyzing the existing patterns of advice-seeking and how they could be influenced by environmental dynamism, competitive firm performance or team heterogeneity (Heyden et al. 2013).

Homberg and Bui (2013) found that empirical research on TMT diversity in the decision-making process is inconclusive. There are conflicting points of view in the existing research, in which TMT diversity is described as a source of explorative activities, such as strategic change, and as a way to hinder integration, exerting negative effects on strategic change (Wu et al. 2011). In a diversity scenario, it is necessary to create collaborative behavior and information exchange for the synergic use of the diverse functional backgrounds to enhance the quality and effectiveness of organizational decisions without affecting locus-of-control diversity (Boone and Hendriks 2009).

The belief that diversity is a condition for the achievement of organizational ambidexterity is not consensual (García-Granero et al. 2018). García-Granero et al. (2018) approach TMT diversity (e.g., functional and age diversity) as a way to achieve a wider range of exploration and exploitation possibilities, but this could lead to disagreements and potential conflicts originating between different types of diversity; ambidexterity could be moderated by CEOs' cognitive trust and shared responsibility. The dilemma is over how to find a mechanism to manage the dual impact of team diversity to achieve organizational ambidexterity (Li 2013, 2014). Despite the existence of multiple challenges, Li (2014) claims that TMT diversity positively influences organizational ambidexterity, developing strategic planning processes but also representing difficulties through emerging conflicts. Organizational ambidexterity allows the construction of social capital through TMTs and benefits information-sharing and knowledge integration in senior teams (Li 2013). The debates, comprehensiveness (Li et al. 2016), connectedness, trust and shared vision (Li 2013) involved in strategic decisions could mediate TMT diversity and ambidexterity innovation to enable an effective focus on ambidextrous innovation strategy.

This cluster contains research focusing on TMT diversity and organizational performance, where the interaction of the nature of the team process with TMT diversity is

neglected (Boone and Hendriks 2009). There is a lack of clarity regarding the team mechanisms that could effectively work as positive moderators of the impact of TMT diversity on team performance (Boone and Hendriks 2009), creating ambiguity in the TMT diversity concept (Li 2013).

In Cluster 3, Desirable Impacts of Diversity, further investigation could explore the influence of TMT diversity on innovation strategy in different contexts and at different levels of complexity, where information diversity and heterogeneity in knowledge bases might become more important (Talke et al. 2011). Further research should also approach the distinct dimensions of TMT that could contribute to achieving organizational ambidexterity (Li 2013).

4. Discussion of Results

The reviewed articles enabled the development of a hypothesized framework to determine the impact of team diversity on team performance (Figure 4).

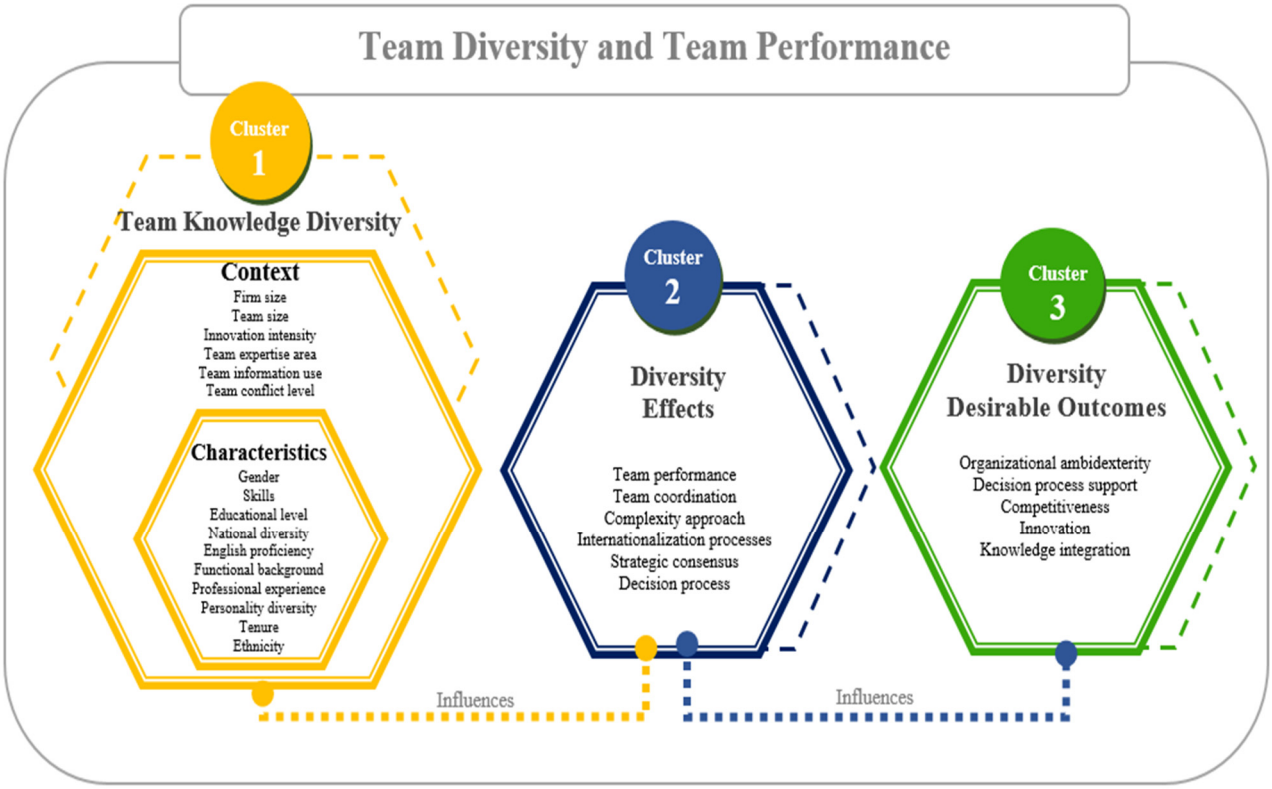

Figure 4. Hypothesized framework for Team Diversity analyses.

The framework presented was based on the reviewed articles and explains the articulation of the concepts of Team Diversity and Team Performance based on three research clusters: (1) Team Knowledge Diversity, (2) Diversity Effects and (3) Desirable Outcomes of Diversity.

Organizations want to attract and retain talented employees, creating a broader knowledge base and increasing teams' multidisciplinary nature (Martinez et al. 2017), with specialized knowledge workers with unique knowledge competencies that enhance the organization's performance (Tenkasi and Boland 1996). This diversity is affected by contextual aspects, such as firm size (Chen and Liang 2016) and team size (Hoisl et al. 2017), innovation intensity (Martinez et al. 2017), team expertise area (Chen and Liang 2016), team information use (Dahlin et al. 2005) and team conflict (Anthony et al. 2014). It can also be affected by employees' individual characteristics, such as gender, educational diversity, national diversity, proficiency in English, tenure, ethnicity (Dahlin et al. 2005), professional

experience (Dufays and Huybrechts 2016) and personality diversity (van Knippenberg and Mell 2016).

Diversity affects several team aspects, such as performance (Jackson and Joshi 2004), team coordination (Auh and Menguc 2005), the approach to complexity (Boone et al. 2004; Priem et al. 1999), team performance in internationalization processes (Carpenter 2002; Lee and Park 2006), the achievement of strategic consensus (Knight et al. 1999) and the ways in which teams take part in decision processes (Priem et al. 1999).

Team diversity should aim to accomplish organizational ambidexterity (García-Granero et al. 2018; Li 2014; Li et al. 2016), use diversity to support decision processes (Homberg and Bui 2013; Li et al. 2016), support competitiveness (Heyden et al. 2013), create innovation (Talke et al. 2011) and allow knowledge integration (Wu et al. 2011).

The review of the articles identified several research gaps. Table 7 summarizes the aspects to consider in future research about knowledge diversity.

Table 7. Summary of suggestions for future research.

Cluster and Area	Suggestions for Future Research
(1) Team Knowledge Diversity	Compare the strength of relationships between team member creativity and cognitive diversity, perceived and actual. Approach how formal and informal patent team member diversity affects patent approval speed and how it relates to team leaders' general and specific experience.
(2) Diversity Effects	Explore the components (e.g., personality and power) of cognitive diversity and their individual impact on strategic outcomes, such a innovation and performance. Analyze how TMT international exposure diversity can influence firm internationalization.
(3) Desirable Outcomes of Diversity	Explore the influence of TMT diversity on innovation strategy at different levels of complexity. Explore the distinct dimensions of TMT diversity and their influence on achieving organizational ambidexterity.

5. Conclusions and Implications

Diversity presents distinct effects, depending on the level of innovation and the industry (Martinez et al. 2017), while excessive diversity can also affect team performance negatively. Diversity should be understood as an ideal mix of capacities (Martinez et al. 2017). Other negative aspects of diversity are related to hyper-competition, originating in the constant challenge to improve competitiveness, an asset that could be moderated by organizations' size or age (Hoisl et al. 2017).

One of the major perspectives on diversity is based on upper echelons theory, since strategic choices are made by TMTs, emphasizing the role of corporate governance in strategic choices and innovation outcomes (Talke et al. 2010, 2011). Results will always be influenced by TMT diversity and its characteristics (e.g., educational, functional, industrial, and organizational background), with repercussions for innovation outcomes and firm performance (Talke et al. 2011). Another perspective is based on Absorptive Capacity theory, which allows the analysis of knowledge diversity's influence on strategic alliances and acquisition processes (Lin 2011), and better knowledge-sharing influences on team creativity (Men et al. 2019).

We posed two research questions: (i) What are the different research clusters that help us to understand team diversity's influence on team performance? (ii) What are the future lines per cluster of investigation that could help us to better understand team diversity's influence on team performance? Aiming to answer the research questions, we carried out

an SLR, following a rigorous research protocol. The results revealed three clusters: (1) Team Knowledge Diversity, (2) Diversity Effects and (3) Desirable Outcomes of Diversity.

The theoretical implications of this article are the development of a framework that systematizes the relation between the different streams of research, clarifying the relations between concepts by presenting a visual contribution to the concept's articulation. The elaboration of the framework aims to illustrate a reality that, despite being complex, can be read and understood more easily. In this way, the concepts underlying the identified clusters can be read in a systematic way, reinforcing the possibility of thinking about this issue critically. They also present a future research agenda per cluster that could contribute to the elaboration of new studies to create a better understanding of team diversity's influence on team performance. Our framework identifies research gaps and proposes an integrated model to direct future research. Considering that in the last five decades, research on team diversity's relation with team performance has shown inconsistent results (van Veelen and Ufkes 2019), it is important to address the proposed research lines for a better understanding of the role played by team diversity in team performance. The practical implications can be operationalized by organizational managers in order to achieve a harmony of individual diversities, creating synergies that could benefit teams and organizational performance. The strategy could be supported by the concepts identified and their inter-relations.

Despite the existence of multiple studies analyzing team diversity and its impact on team performance, this research revealed several aspects that limit the comprehension of previously identified diversity traits in order to promote a dialog that allows the integration of the existing research to achieve effective team diversity synergies, based on greater levels of communication and coordination. The current range of team diversity research works as a barrier that places potentially positive results on hold. Considering environmental pressure and increased complexity, and given the importance of Team Diversity in innovation processes and innovation strategy, it is necessary to address the ambiguity of the Team Diversity concept, creating a clear definition of the relevant diversity traits and their implications according to team typology. On this basis, it will be possible to establish a Team Diversity concept to support a desirable impact on innovation outcomes and firm performance, with clear benefits to the improvement of decision-making processes. Diversity should also be used as a knowledge integrator and to support competitiveness, particularly in more complex environments.

The major limitation of this study is related to the fact that the search for articles with the keywords Start-up and Spin-Off, when articulated with Knowledge Diversity, Team Heterogeneity, Team Wisdom, Team Diversity, Cross-functional Project Team, and Team Composition, did not return relevant articles for analysis.

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