

Boosting innovation through gender and ethnic diversity in management teams

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Abstract

Purpose – This study investigates the link between diversity in management and CEO positions and firm innovation. The purpose of this paper is to examine the effect that women and ethnic diversity in management and CEO positions have on the development of outstanding innovation in firms.

Design/methodology/approach – This paper conducts an empirical analysis to investigate these relationships over time using a large panel database of 1,345 publicly US traded firms.

Findings – Results revealed that gender and ethnic diversity at all levels of management exhibited a robust positive association with superior innovation competence. This finding remains robust when alternative proxies for innovation are employed. In contrast, the authors found that women and ethnic minorities at the CEO level had no significant influence.

Originality/value – Considering an output measure of innovation, the authors explore the effect of gender and ethnic minority groups in management positions as well as at the CEO level, rather than focusing only on top management teams or board of directors. The authors offer new practical insights regarding the manager selection process that are also useful to support public policy initiatives.

Keywords Diversity, Gender, Ethnicity, Innovation, Minority

Paper type Research paper

Introduction

In the current competitive environment and due to the pace of technological changes, innovation has become crucial for an organization's sustainable growth. Research has supported that innovation is an important predictor of firm performance (Bowen *et al.*, 2010; Mayfield *et al.*, 2020). Prior research suggests that managers' skills and characteristics are key factors that enhance innovation processes. Their demographic profile serves as a proxy for their perspectives, networks and affiliations (Richard, 2000).

We explore demographic diversity by focusing on gender and ethnicity. Figures show that the US workforce is becoming more diverse, and women are expected to continue to gain

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share, rising from 46.8% of the workforce in 2014 to 47.2% in 2024. Similarly, regarding ethnic diversity, by 2024, less than 60% of the labor force is likely to define itself as “white non-Hispanic” (Buckley and Bachman, 2017). Furthermore, over the past decades, executive and director levels are increasingly characterized by gender diversity (Vinnicombe *et al.*, 2008) and ethnic diversity (Zweigenhaft and Domhoff, 2011). However, both groups remain underrepresented in management positions and therefore, legislation and diversity initiatives have been adopted worldwide (Kurtulus, 2016; Miller and Triana, 2009). Hence, managing such diversity is a topic of great importance for firms.

At the management or board level, some studies explore how gender and/or ethnic diversity impacts several measures of performance and the empirical evidence is contradictory (e.g. Adams and Ferreira, 2009; Carter *et al.*, 2010; Kirsch, 2018). When it comes to examining the effect on innovation, the literature is scarce. A few studies analyze the relationship between diverse top management teams (TMT) and innovation performance (Li *et al.*, 2016; Van der Vegt and Janssen, 2003). These studies usually contemplate demographic attributes, focusing on diversity related to functional background or work experience. Focusing on TMT, Dezső and Ross (2012) find that female representation improves firm performance but only if a firm’s strategy is oriented toward innovation. This study contemplates the ratio of research and development (R&D) expense to assets as a proxy of innovation intensity. More recently, a study within the US healthcare industry concludes that when TMT size is considered, diverse TMTs (in terms of gender diversity and compensation equality) significantly influence the innovation of the firm (Bass, 2019). Similarly, studying board diversity, Miller and Triana (2009) find a positive relationship between female and ethnic representation and innovation. They also use an input measure of innovation.

Our research makes a threefold contribution. Firstly, we analyze diversity in management positions as well as at the CEO level, rather than focusing only on TMT or board of directors. In this study, management positions refer to all line positions with profit-and-loss responsibilities that have to make decisions and are responsible for achieving the firm’s main goals (Hogan and Huerta, 2019). Innovation encompasses changes and a complex coordination across multiple functional areas, reason why the management team may play a more important role than members of the board of directors. In turn, CEOs hold the most powerful position in most firms and significantly influence an environment that stimulates or hinders innovation (Makri and Scandura, 2010; van de Wal *et al.*, 2020). Previous studies investigating CEO characteristics found a positive effect on innovation (Arena *et al.*, 2018; Galasso and Simcoe, 2011). However, when it comes to the interaction between women and ethnic minority-status CEOs and innovation there is a lack of empirical evidence.

Secondly, we test the effect of gender and ethnic minority groups at all those levels of management. Such diversity lies in a greater range of task-relevant information and expertise. We posit that different backgrounds, leadership styles and cognitive resources foster the exposure of decision-makers to divergent perspectives that result in higher innovation (Bantel and Jackson, 1989; van Knippenberg *et al.*, 2004).

Finally, we consider an output measure of innovation, which shows the result of the whole process of innovation instead of an input measure. For instance, the use of R&D expenses, a widespread measure of innovation, has several shortcomings as they do not comprise all aspects of innovation, and thus may underestimate a firm’s innovative efforts (Hashi and Stojčić, 2013).

The remainder of the paper proceeds as follows. We begin by describing the theoretical framework and hypotheses. Following this, measures, empirical analysis, and results are presented. Finally, we discuss the contributions, limitations and conclusions of our study.

Theoretical framework

Theoretical perspectives on the diversity-innovation relationship

Diversity refers to differences between individuals on any attribute that may lead to the perception that another person is different from oneself (van Knippenberg *et al.*, 2004; Williams and O'Reilly, 1998). The effects of diversity can be perceived negatively ("diversity-as-process-loss") or positively ("value-in-diversity"). According to the social categorization theory and research on similarity/attraction (Williams and O'Reilly, 1998), group-level diversity may lead to lower trust and poor communication because of language barriers, misunderstandings or discriminatory attitudes. Work group members may be more positively inclined toward their group, giving rise to problematic inter-subgroup relations. This situation could limit cooperation and lead to fewer and lower solutions (Alesina and La Ferrara, 2005; Nathan, 2015). Complementary, the social impact theory predicts that individuals who have majority status may exercise a disproportionate influence in group decisions (Carter *et al.*, 2010).

From the information/decision-making perspective, on the other hand, diverse groups outperform homogeneous groups. Individuals may benefit from group-level cognitive diversity if this brings a richer mix of ideas and perspectives (Nathan, 2015). In general, more heterogeneous groups have different perspectives and knowledge, distinct and non-redundant skills and abilities. This allows a more comprehensive set of solutions to be considered and to debate one another's points of view more dynamically which can lead to higher quality decisions (van Knippenberg *et al.*, 2004).

In our work, in line with the information/decision-making perspective, we support the idea that diversity yields positive organizational outcomes. The exposure to diverging perspectives may lead to more creative and innovative solutions (Bantel and Jackson, 1989). Although based on demographic differences such as gender and ethnicity, group-level diversity may produce net positive effects on group performance to the extent that performance requires information processing, creative and innovative idea generation (van Knippenberg *et al.*, 2004). That is, diversity benefits group performance when complex and non-routine information processing are necessary. This is the case of TMT where tasks have a high information-processing component (Dezsö and Ross, 2012), especially if the tasks are related to innovation. Innovation is an interactive process and diversity among those who interact affects the way knowledge is generated (Østergaard *et al.*, 2011). Homogeneous groups may actually hamper innovation because high levels of cohesion produce an inclination toward conformity (Miller and Triana, 2009).

We also posit that promoting diversity at all management levels improves communication and reduces language barriers. A comprehensive vertical management of diversity may create an inclusive culture that also influences the workforce, guaranteeing a positive impact on the strategy and all the stages of the innovation process. Diversity at the top of corporate hierarchy indicates that the culture of the firm is committed to the advancement of diversity at all levels (Dezsö and Ross, 2012), enhancing the organizational commitment in lower-level managerial positions. Such inclusive culture may produce net positive effects regarding the generation of novel solutions (Angle, 1989).

Furthermore, firms may increase the number of women and other minorities to better match the demographic characteristics of their customers. Demographic diversity allows firms to succeed by giving them the skills needed to create or adapt goods and services to market needs (Richard, 2000). Such diversity has also been linked with differences in social capital and network resources. When firms have diverse and non-redundant ties, they are better able to innovate (Burt, 1997). Rodan and Galunic (2004), found that heterogeneous managerial knowledge from network structures positively impacts innovation performance.

Additionally, a supportive organization culture based on a diverse environment helps attract high-quality jobs applicants generating higher creativity (Catanzato *et al.*, 2010),

and hence improving innovation capabilities. In this respect, [Mayer et al. \(2018\)](#) find that the presence of corporate policies supporting diversity increases innovative efficiency.

Gender and ethnic minorities in management and innovation

A “minority group” is “any group of people who because of their physical or cultural characteristics, are singled out from the others in the society in which they live for differential and unequal treatment” ([Wirth, 1945](#)). Minority can be considered a proxy for cultural background, and minority diversity may broaden the viewpoints in the firm ([Richard, 2000](#)). Considering the purpose of our research, women and ethnic minorities in management and CEO positions can be considered occupational minorities ([Cook and Glass, 2014](#)).

Regarding women, they present an interactive leadership style that emphasizes inclusion, fosters participation ([Kark, 2004](#)) and shares power by keeping open communication channels with their subordinates ([Dezsö and Ross, 2012](#)). Empowering and participatory leadership styles are key drivers of motivation and creativity ([Zhang and Bartol, 2010](#)). Stakeholder theory and gender socialization theory offer additional reasons for the assumption that gender diversity will positively affect innovation. Stakeholder theory asserts that a firm’s responsibilities extend beyond shareholders since it has relationships with multiple stakeholders ([Freeman, 1994](#)). Gender socialization theory proposes that women are typically socialized into communal traits (i.e., caring and understanding) whereas men are socialized into agentic traits (competitive, determined). As a result, women are more socially oriented and empathetic than men ([Eagly, 1987](#)). Subsequently, a greater female presence at management level leads to more sensitivity toward different opinions and to the making of decisions that consider the interest of a broader range of stakeholders. Research analyzing how board gender composition affects organizational outcomes, provides empirical evidence of this statement ([Galbreath, 2018](#)).

Regarding ethnicity, there is some evidence to support a positive relationship between ethnic diversity and innovation. A study by [McLeod et al. \(1996\)](#) showed that ideas produced by ethnically diverse groups were judged to be of higher quality than those produced by homogeneous groups. Several works support that ethnic diversity predicts innovation and patenting ([Nathan, 2015](#); [Østergaard et al., 2011](#)).

In sum, gender and ethnic diversity may improve innovation capability. Different backgrounds, cognitive resources and life experiences can help to reach the acquisition of common goals, which in turn increase the probability of obtaining innovative outcomes ([Smith-Doerr, 2004](#)). Therefore, we pose the following hypothesis:

- H1. Women and ethnic minorities in management positions positively influence innovation.

Regarding CEO leadership and innovation, strategic leadership theory ([Hambrick and Mason, 1984](#)) argues that companies are a reflection of their TMT and in particular, CEOs that have the ultimate responsibility of setting the strategic direction of a firm. CEOs significantly influence the creation of an environment that encourages or hampers innovation ([Makri and Scandura, 2010](#); [Wong et al., 2017](#)). R&D spending is one of the most fundamental investment decisions made by top managers ([Barker and Mueller, 2002](#)). Thus, characteristics of a CEO matter greatly in determining a firm’s effort to conduct innovation activity.

We posit that women and ethnic minorities at the CEO level may facilitate the innovation processes due to their specific professional and educational background ([van de Wal et al., 2020](#)). For instance, [Zweigenhaft and Domhoff \(2011\)](#) study of women and ethnic minorities CEOs in Fortune 500 concluded that they tend to reach the corporate power with consistently better qualifications than white men.

Empirical research supported that the educational and professional backgrounds of CEOs has proven to be important in their receptivity to innovative activities. More qualified executives tend to have greater cognitive complexity to absorb new ideas, which therefore increases the probability of accepting innovations (Dalziel *et al.*, 2011). Moreover, in corporate R&D decisions, a CEO's career experience in various functions is important. Lin *et al.* (2011) showed that CEOs professional and educational backgrounds are positively associated with corporate innovation.

A few empirical studies explore the relationship between CEO diversity and innovation outcomes. Kisfalvi and Pitcher (2003), argued that diverse TMT may not be enough to influence performance outcomes and provided evidence that a CEO's character has a critical impact on organizational processes that affect innovation. Accordingly, we formulate the following hypothesis:

H2. Women and ethnic minorities at the CEO level positively influence innovation.

Methodology

Sample and data collection

The research setting was a data set of US publicly traded firms. This represents a suitable venue in which to study the outcomes of women and ethnic minorities in management positions. The Equal Employment Opportunity law in the US led to the normative acceptance of diversity (Zhang, 2020) and influenced firms' willingness to hire underrepresented groups, such as women or ethnic minorities, in management positions. For instance, regarding women, the last decade has seen an increasing number of female executive officers and directors serving in US public corporations (Liu, 2018). Long-term trends also show that ethnic minority shares of employment and corporate boards in large US firms have been rising in the last decades (Abebe and Dadanlar, 2021; Kurtulus, 2016).

We collected information regarding innovation, women and ethnic minorities in management and at the CEO level, and control variables related to corporate social responsibility (CSR) from MSCI ESG KLD STATS. The validity and reliability of this database have been established by various researchers (e.g., Hart and Sharfman, 2015; Ozdemir *et al.*, 2022; Semenova and Hassel, 2015). This data set uses a proprietary system to evaluate corporations' ESG performance. MSCI ESG research employs a global team of over 140 experienced research analysts to assess how well companies manage their environmental, social and governance (ESG) performance indicators. Each indicator is scored by a binary rating. If the company meets the assessment criteria established for an indicator, then it is signified with a 1.

In addition, we obtained data regarding some control variables (R&D intensity, firm size and high-technology firms) from Compustat.

In MSCI ESG KLD STATS, information regarding innovation is available between 1991 and 2009. Therefore, this is the period considered in our longitudinal study. Our final sample, after considering the one-year lag in our independent and control variables, is an unbalanced panel of 1,345 unique US firms during the period 1991–2009 (total number of observations 6,455).

Measures

Dependent variable. Our dependent variable "innovation" is measured by the reported indicator that scores 1 if the company is a leader in its industry for R&D, especially by bringing notably innovative products to the market. Therefore, we use an output measure of

innovation. Cook and Glass (2015) carried out a validation analysis of this item, and their random check of the product innovation measure affirmed its veracity.

Independent variable. The measures of the independent variables are collected from the MSCI ESG KLD STATS data set where women and ethnic minorities are integrated into single indicators.

“Women and ethnic minorities in management positions” is measured through the dichotomous indicator called “representation” offered by the mentioned data set. This is reported as 1 if the company has made notable progress in the promotion of women and ethnic minorities, particularly to line positions with profit-and-loss responsibilities in the corporation. This definition implies that all levels of management are considered, and that there has been an outstanding improvement in the representation of women and ethnic minorities in such levels.

The second independent variable, “women and ethnic minorities at the CEO level”, is a dummy variable that takes value 1 if the company’s chief executive officer is a woman or a member of an ethnic minority group.

We assume that the accumulated variety of knowledge and experiences from the demographic diversity of managers influences the subsequent capacity for achieving innovation. Thus, the independent variables are lagged for one year.

Control variables. We include several control variables that can be considered determinants of innovation performance: R&D intensity, firm size, high-technology companies and two composite measures related to CSR.

The intensity of research effort is used as a proxy for the level of innovation (e.g., Baumann and Kritikos, 2016). We estimate “R&D intensity” through the ratio of annual R&D expenses over annual revenues. We use the number of employees to control for “firm size”, which is usually associated to innovation outcomes (Vaona and Pianta, 2008). The logs of these two variables were taken to account for their skewed distributions. Following the same reasoning for the independent variables, these two control variables are lagged for one year. We also include the dummy variable “high-technology firm” to control whether or not a company belongs to a high-technology sector characterized by rapid and continuous changes in products, markets and competitive environments (Makri and Scandura, 2010). The high-technology sectors identified are derived from the definition given by the OECD (2011).

Additionally, companies highly committed to CSR maintain better relationships with stakeholders that give them more opportunities to innovate (González-Ramos *et al.*, 2014). We construct two control variables regarding CSR: CSR strengths and CSR concerns, since they are considered two theoretically separate constructs that should be treated this way empirically. Based on previous literature, we develop this variable as a composite CSR score by assigning equal importance, and thus equal weights, to different areas of the MSCI ESG KLD STATS database (Ioannou and Serafeim, 2015). “CSR strengths” is the equally weighted sum of the positive screens, categorized as strengths for firm i in year t adjusted by the mean of strengths average across all firms in the sample on year t . “CSR concerns” is measured following the same method but using the negative screens. These control variables are lagged for one year, which reduces concerns related to reverse causality.

Finally, a dummy variable for each year was included to control factors that are the same for all cross-sectional units but vary over time (e.g., economic magnitudes).

Results

Regarding our dependent variable (Table 1), 322 out of 1,324 companies (24.32%) show an outstanding innovation performance since such a variable takes the value 1 at least once in the period considered. The mean number of employees is 21,445. In our sample, there are 570 high technology companies, 125 of which have outstanding innovative behavior.

Concerning the representation of women and ethnic minorities, 844 companies (63.74%) have made notable progress in the promotion of such groups to all levels of management. However, a lower percentage of firms (23.71%) have a female or an ethnic minority-status CEO, which is consistent with the underrepresentation of these groups at such a level in most sectors.

Given the binary character of the dependent variable, a probit model is specified. To address concerns of unobserved heterogeneity, we employ a random-effects panel probit model instead of a fixed-effects model since our sample is drawn from a large population. In this case it is appropriate to model the individual specific constant terms as randomly distributed across cross-sectional units (Greene, 2002).

We use a hierarchical regression analysis (Table 2). We enter the control variables in the first step (model 1). In the second step, women and ethnic minorities in management and CEO positions are added (model 2). Thus, model 2 tests H1 and H2. Considering the Wald test, models 1 and 2 are significant at the 1% level.

We tested our data for multicollinearity. Individual VIF values greater than 10, combined with average VIF values greater than 6, indicate a multicollinearity problem (Cohen et al., 2003). In models 1 and 2, the highest individual VIF score was 7.10; the mean of VIF was 3.18 and 3.03 in models 1 and 2, respectively. All these values are within acceptable parameters.

H1 is supported. Promoting gender and ethnic diversity at all levels of management is found to be a positive and significant determinant of the innovation capacity ($b = 0.316, p < 0.05$). Nevertheless, H2 is not supported. Such representation at the CEO level does not have a significant influence on fostering innovation performance ($b = 0.259, p > 0.05$). The lack of significance may be due to the relatively low number of CEOs that are women or members of an ethnic minority group in our sample.

Regarding control variables, the main finding is the significance of R&D intensity and both variables regarding CSR (Table 2). R&D intensity was found to have a positive and significant influence on innovation. Socially responsible behavior has a positive and significant effect on innovation competence. The adoption of CSR practices to respond to changes in customer needs and environmental and social challenges contributes to innovative outcomes (Porter and Kramer, 2006). Interestingly, a firm's CSR concerns

	Innovation	
	Model 1	Model 2
<i>Independent variables</i>		
Women and ethnic minorities in management positions ($t-1$)		0.316* (0.156)
Women and ethnic minorities at the CEO level ($t-1$)		0.259 (0.306)
<i>Control variables</i>		
R&D intensity (log) ($t-1$)	0.448*** (0.122)	0.445*** (0.120)
Firm size (log) ($t-1$)	0.099 (0.077)	0.110 (0.077)
High-technology firm	0.319 (0.262)	0.311 (0.260)
CSR strengths ($t-1$)	0.305*** (0.046)	0.287*** (0.047)
CSR concerns ($t-1$)	-0.213** (0.071)	-0.197** (0.071)
Year dummies	Included	Included
Constant	-4.114*** (0.375)	-4.194*** (0.377)
Observations	6,455	6,455
Rho	0.863	0.863
Wald test of the full model (Chi-square)	89.19***	94.41***

Note(s): Standard errors are in parentheses
*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 2.
Results of probit
regression analysis
predicting innovation

represent value-destructing activities (Ioannou and Serafeim, 2015) that reduce the ability to hold a leadership position in innovation.

Robustness test

We modified the models considering R&D intensity with and without the logarithmic transformation as a dependent variable. R&D intensity has been used as a proxy of innovation in some works, as such measure reflects decisions made by managers to allocate resources to innovation (Dezsö and Ross, 2012; Miller and Triana, 2009). Since both measures regarding R&D intensity are continuous, the method used for this analysis was ordinary least squares (OLS) regression.

Results are consistent with our main findings (Table 3). In both models, female and ethnic minority managers positively influence innovation although such representation at the CEO level is found nonsignificant. Regarding control variables, the integration of CSR into a firm’s strategies benefits innovation competence, and socially irresponsible actions have a negative effect. Firm size and belonging to a high-technology sector are also factors that significantly explain innovation intensity.

Discussion and conclusion

In this article, we explore the effect that women and ethnic minorities in management and at the CEO level have on the ability to develop outstanding innovation performance. By studying a panel data of publicly traded US companies, we confirmed that gender and ethnic diversity in management positions produce net positive effects on innovation. This finding is coherent with the information/decision-making perspective (Dezsö and Ross, 2012; van Knippenberg et al., 2004). The study is also consistent with the assumption that by better utilizing the knowledge, competences of women and ethnic minorities at different management levels, firms can become more innovative (Cook and Glass, 2015; Dezsö and Ross, 2012).

However, we did not find a significant relationship between women and ethnic minority-status CEOs and innovation. Our findings extend the work done by Lin et al. (2011) in manufacturing firms in China. This counterintuitive result is consistent with the literature on tokenism that provides evidence that ethnic minority and women in high-power positions are

	R&D intensity (log)	R&D intensity
<i>Independent variables</i>		
Women and ethnic minorities in management positions (<i>t</i> –1)	0.036* (0.014)	0.005** (0.002)
Women and ethnic minorities at the CEO level (<i>t</i> –1)	–0.007 (0.805)	–0.004 (0.040)
<i>Control variables</i>		
Firm size (log) (<i>t</i> –1)	–0.111*** (0.011)	–0.014*** (0.001)
High-technology firm	1.182*** (0.070)	0.079*** (0.006)
CSR strengths (<i>t</i> –1)	0.014** (0.005)	0.001** (0.000)
CSR concerns (<i>t</i> –1)	–0.038*** (0.005)	–0.001 [†] (0.000)
Year dummies	Included	Included
Constant	–3.375*** (0.047)	
Observations	6,451	6,455
Rho	0.941	0.882
Wald test of the full model (Chi-square)	559.11***	335.61***

Table 3.
OLS regression results
on R&D intensity

Note(s): Standard errors are in parentheses
****p* < 0.001; ***p* < 0.01; **p* < 0.05; [†]*p* < 0.10

discouraged from engaging in diversity-valuing behavior in order to avoid negative stereotypes and impede the advancement of their fellow colleagues (Hekman *et al.*, 2017).

Results also show that a high commitment to CSR benefits innovation. CSR is an opportunity to reconfigure the competitive landscape as well as to develop distinctive resources and competences (Husted and Allen, 2007). Socially responsible practices might provide opportunities for innovation using economic, social and environmental drivers to create new products and new market space among other forms of innovation. Complementary, controversial practices are found detrimental to innovation competence. Most of the prior work on the influence of CSR on innovation has focused only on the effects of a socially responsible behavior (Hull and Rothenberg, 2008; Husted and Allen, 2007). This study contributes to this literature by considering the effects of negative business practices and by treating CSR strengths and concerns separately in the analysis of their influence on innovation. Future research might deepen the analysis into the relationships between gender and ethnic diversity, CSR and innovation.

From a theoretical viewpoint, our findings are consistent with arguments linked to the value-in-diversity perspective that makes the business case for diversity. Consequently, we extend the existing literature that tested the value-in-diversity related to business success in terms of several measures of financial performance such as return on assets, Tobin's *Q* or relative profits (Carter *et al.*, 2010; Herring, 2009). Our study also offers practical implications. Regarding the manager selection process, arguments in favor of increased diversity traditionally stem from concerns about discrimination and moral justice. We provide evidence to support that the decision to appoint women and ethnic minorities to managerial positions should also be based on economic criteria, particularly innovation outcomes, one of the keys to the long-term viability of organizations. We provide new insights to support public policy initiatives for positive discrimination of women and ethnic minorities on leadership positions. Institutional pressures lead to the appointment of female directors on the board. Several countries, such as Norway, Spain and France, have adopted legislative initiatives (Rao and Tilt, 2016). However, management teams may play a more important role in influencing innovation processes. Hence, we offer evidence to help direct public efforts in promoting gender and ethnic diversity in all management levels, and not just board of directors.

Finally, we are aware of the limitations of this study. Our sample includes different size companies belonging to different sectors. Further research could extend this study to other countries and include private companies to obtain generalizable conclusions. Additionally, the paper relies on secondary data. Our measures of diversity gathered from the employed database include the presence of women and/or ethnic minorities in management and at the CEO level, but we cannot disentangle the individual effect of each demographic group on innovation. Moreover, we cannot examine if a female CEO belonging to a minority ethnicity has a doubled effect or just a higher effect. Future analyses using qualitative research and primary sources could explore the independent effect of each demographic group, the added effect derived from being a CEO with that double attribute and examine additional information about managers and CEOs regarding human capital variables. Further research could also examine the impact of the promotion of gender and ethnic diversity in both management and employees.

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