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Approach to the Relationship between Corporate Governance-Related Variables and R&D-Driven Economic Value

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ABSTRACT

Objective: Corporate innovation is a crucial strategy for companies seeking sustainable growth, competitiveness, and long-term value creation. However, its impact remains limited without the commitment of corporate governance decision-makers. The aim of this research is to analyze how the characteristics of boards of directors influence the ability to generate economic value through the organizations' commitment to innovation.

Methodology: This research uses a regression model on panel data related to the most innovative European companies from 2012 to 2022.

Results: Although the results highlight the important role of female directors in improving CEO effectiveness, they also reveal the persistent challenges related to the low representation of women in senior executive positions and the complexities of nationality diversity on corporate boards. The investigation also highlights slight differences between listed and unlisted companies.

Practical implications: By examining how decisions from corporate governance decision-makers translate innovation into economic value, this research contributes to a better understanding of how to design strategies aimed at creating and maintaining sustainable business value.

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Introduction

The transition toward more responsible, efficient, and sustainable business models is an undeniable reality (Chopra et al., 2024). However, addressing emerging global challenges requires a profound change in business practices (Miroshnychenko & De Massis, 2020). In this context, innovation emerges as a key driver for developing socially and environmentally responsible solutions to build sustainable and economically viable business models (Griffin et al., 2021; Hojnik et al., 2022). Innovation not only drives the development of more efficient and sustainable solutions, reducing environmental impact and improving social welfare, but also provides a competitive advantage that strengthens long-term profitability (Rodrigues et al., 2020). Previous research has extensively explored the influence of corporate innovation on financial and sustainability performance (Chen & Ma, 2021; Cheng et al., 2023). However, achieving all these benefits depends on a fundamental change in organizational culture and decision-making processes (Ahmad et al., 2023). Companies must move beyond traditional business models focused on short-term results and instead take a long-term view that integrates innovation as a driver to create value (Asad et al., 2023). Undoubtedly, corporate decision-making bodies, as the primary decision-makers responsible for setting corporate strategic direction, play a crucial role in promoting (or hindering) the adoption of innovation initiatives (Khushk et al., 2023; Makkonen, 2022). Therefore, understanding the role of corporate boards and top executives in driving innovation is essential to ensure its integration into corporate strategy decisions (Attia et al., 2021; Sierra-Moran et al., 2024).

The aim of this research is to analyze the characteristics of corporate boards and their members, as well as CEO attributes, that influence the companies' ability to create economic value through innovation. Therefore, this research focuses on the first critical step in the innovation process: the corporate decision-makers who decide to invest in innovation. Without this initial commitment, innovation cannot be effectively implemented or generate tangible solutions. Unlike previous studies that primarily examine how decision-makers influence innovation, this research goes further by examining how their characteristics influence the company's ability to create economic value through its commitment to innovation. Using a database spanning from 2012 to 2022 that consisted of the most innovative European companies and applying a generalized least squares (GLS) regression model, this paper examines the role of corporate boards (with particular attention to board nationality and the role of board chair), top executives (considering CEO gender and tenure) and the interaction between both through the presence of the CEO on the board. The results reveal the significant contribution of female directors and underscore the importance of collaboration between decision-makers—both corporate boards and top executives—to effectively translate innovation into economic value. The results also highlight persistent challenges, such as the underrepresentation of women in top executive positions and the difficulties in terms of nationality that companies face when it comes to creating diverse boards. In addition, slight differences are identified between listed and unlisted companies. This research contributes to a deeper understanding of the governance structures that influence decision-making processes related to innovation. By shedding light on the factors that promote (or hinder) the ability to create economic value through innovation, this research provides valuable guidance for companies seeking to optimize their corporate decision-making to bridge the gap between innovation strategies and financial performance.

Literature Review

Corporate Boards and R&D Decision-Making

Innovation is one of the most important strategies for companies aiming to achieve sustainable growth (Hernandez-Lara et al., 2021; Ilyas & Osiyevskyy, 2022). Corporate innovation acts as a catalyst to transform companies' commitment to sustainability into tangible solutions (Griffin et al., 2021). In this context, investments in research and development (R&D) are essential for companies to navigate the challenges of a competitive environment and adapt to an ever-changing business landscape (Muhammad et al., 2022). R&D spending drives technological advances and fosters the creation of new products, services, and solutions (Sanad & Musleh, 2023), facilitating market expansion and increasing financial performance (Miroshnychenko & De Massis, 2020). As a result, R&D initiatives enable the convergence of innovation and corporate performance, allowing companies to build a competitive advantage and generate intangible capital (Hojnik et al., 2022) that ultimately increases firm value (Sierra-Moran et al., 2023).

However, this strategic transformation is not without its challenges. R&D investments represent one of the most complex and risky strategies, characterized by a high level of uncertainty regarding the achievement of the desired results, which may be delayed or even unattainable (Chen et al., 2016). In addition, innovation strategies require substantial amounts of resources that must remain constant over time (Huang et al., 2022). Consequently, companies investing in innovation must take a long-term strategic view and demonstrate a strong commitment to significant expenditures, being fully aware that the results are neither immediate nor easily predictable in advance (Griffin et al., 2021). This long-term approach may conflict with the short-term interests of shareholders, who may perceive R&D investment as merely high costs that reduce the immediate economic benefits to firms (Ahmad et al., 2023). Therefore, companies must determine how to promote innovation without jeopardizing their financial performance (Almor et al., 2022). Corporate governance has emerged as a key factor in achieving this balance (Chen et al., 2021; Muhammad et al., 2022).

On the one hand, corporate boards, responsible for allocating resources and deciding on investments, play a crucial role in business decision-making (Miroshnychenko & De Massis, 2020; Muhammad et al., 2022). Therefore, the composition of these corporate boards can significantly influence how decisions are made, particularly those related to R&D investments (An et al., 2021; Sierra-Moran et al., 2024). A diverse board brings a range of skills, experiences, and knowledge that can improve the quality of advice on strategic innovation decisions by fostering new ideas and innovative solutions to address the complexities of R&D investments (AlHares, 2020). In addition, diverse perspectives can enhance the supervision function of boards, which is especially relevant for innovation strategies given the significant resource demands of R&D projects (Asad et al., 2023).

On the other hand, the CEO, as the chief operating decision-maker guiding corporate strategy to maximize firm value, plays a crucial role in R&D investment decision-making (Agnihotri & Bhattacharya, 2024; Koo, 2019). The CEO's values and leadership style influence the company's vision for innovation and its ability to adapt to new challenges (Yan et al., 2024). By creating (or not creating) a corporate culture that embraces creativity and new ideas, the CEO directly promotes (or hinders) the company's innovation activities (Pham et al., 2024). In addition, the CEO's ability to navigate complexity and manage risks is often critical to the success of innovation strategies (Kruse et al., 2023). Their authority and long-standing position within the company may allow them to independently steer decision-making processes, sometimes preventing corporate boards from implementing (or rejecting) innovation-focused strategies (Pucheta-Martinez & Gallego-Alvarez, 2024).

In conclusion, the roles of corporate boards and CEOs are crucial in shaping decision-making processes that drive corporate innovation. Their strategic vision and governance decisions are indispensable for transforming innovation from a strategic decision into economic value. The specific characteristics of corporate boards and their members, as well as CEO attributes, will be investigated to understand their contributions to innovation and value creation.

Corporate Boards Driving Innovation: Nationality of Board Members

Diversity of nationalities among board members can influence R&D investment. When there is a variety of cultural perspectives, board discussions are enriched, and more creative and innovative decisions can be made, leading to increased R&D investments (Luo et al., 2021; Makkonen et al., 2018). This diversity also promotes interactions among individuals with diverse experiences, knowledge, backgrounds, and skills, which is particularly valuable when dealing with the complexities of innovation strategies (Makkonen, 2022). In addition, non-national directors bring critical insight into international markets, which helps companies identify new R&D opportunities (Boone et al., 2019). Their presence enables companies to better understand the interests of a wider range of stakeholders and the needs of foreign consumers, which can drive greater R&D investments focused on developing products and services tailored to those demands (Attia et al., 2021; Usman et al., 2020). Foreign board members can also provide access to international networks and connections, facilitating more informed innovation decision-making (Estelyi & Nisar, 2016). Their positive influence on innovation decision-making may also inspire national board members to increase their creativity and commitment to long-term strategies, ultimately promoting the company's R&D efforts (Sierra-Moran et al., 2024).

However, the contributions of foreign board members to driving innovation may be significantly hindered by their lower attendance rate at board meetings (Masulis et al., 2012). This diminished participation limits their ability to fully understand the company's innovation needs and effectively control R&D projects (Khan et al., 2021). In addition, the corporate board may face difficulties in making decisions on innovation strategies due to coordination and communication challenges resulting from the diversity of nationalities (Belkacemi et al., 2021). Other research has indicated that nationality diversity may not be a decisive factor in driving innovation (An et al., 2021; Asad et al., 2023; Griffin et al., 2021). Instead, greater diversity in educational and professional backgrounds may be more beneficial for R&D investments, rather than focusing solely on nationality diversity (Makkonen, 2022).

Given the mixed findings in the previous literature, further research is needed to better understand how nationality diversity can provide valuable insights to enhance innovation and value creation. Since innovation requires a deep understanding of complex, global market dynamics and emerging opportunities, having a corporate board with diverse nationalities can provide the knowledge and perspectives necessary for effective decision-making. In this regard, the following hypotheses are proposed:

Hypothesis 1. A greater number of different nationalities on corporate boards positively influences a company's ability to create economic value through innovation.

Hypothesis 2. National board members negatively influence a company's ability to create economic value through innovation.

Corporate Boards Driving Innovation: The Chair of the Board

Board chairs play a crucial role in guiding board activities and act as the primary link between the board and the CEO. Their influence on corporate innovation may vary by gender, although this effect remains understudied due to the low presence of women in board chair positions (Torchia et al., 2018). Their underrepresentation has led some previous research to conclude that female chairpersons have minimal or no influence on corporate innovation (Liao et al., 2019; Shukla & Teraiya, 2022). However, increasing the presence of women as board chairs could lead to more dynamic and participative board discussions, enriching the decision-making process and promoting the identification and support of innovative projects (Jiang et al., 2020; Wang et al., 2022). Women's greater sensitivity to stakeholder needs and societal concerns may also enable them to better identify emerging opportunities that, combined with their authority as board chair, can shift the traditional focus on short-term financial strategies to a more socially responsible and long-term approach that emphasizes the sustainable value of R&D investments (Attah-Boakye et al., 2020).

Given these potential contributions, it is expected that chairwomen will be more likely to support innovation strategies that drive both competitive growth and the development of a corporate culture focused on innovative business practices. Therefore, the following hypothesis is proposed:

Hypothesis 3. Chairwomen positively influence a company's ability to create economic value through innovation.

CEOs Driving Innovation: The Presence of Female CEOs

The number of female-led firms remains low (Almor et al., 2022), making it difficult to draw definitive conclusions about their influence on R&D investments. Previous research has had to exclude the "CEO gender" variable owing to the scarcity of female-led companies in their samples (E-Vahdati & Binesh, 2022). However, some argue that, rather than a supposed higher risk aversion, the low presence of female CEOs may better explain their perceived negative influence on corporate innovation (Loukil & Yousfi, 2022). Despite this, the greater effort, resilience, and determination required by women to reach CEO positions could equip them with the necessary capabilities to face complex challenges and make confident decisions, fostering the right leadership qualities to manage R&D strategies (Yin et al., 2019). In addition, female CEOs tend to adopt a collaborative and team-oriented leadership style, which can stimulate creativity and problem-solving within organizations, both critical factors for driving innovative projects and increasing R&D investments (Javaid et al., 2023; Khushk et al., 2023). Their leadership may also strengthen connections with female board members, reducing gender stereotypes and amplifying the positive impact of board gender diversity on innovation (Saggese et al., 2021). Conversely, some research suggests that female CEOs may allocate fewer resources to R&D, opting instead for external investment strategies such as mergers and acquisitions to drive firm growth (Wang & Fung, 2022). Other authors argue that corporate innovation is not influenced by CEO gender (Cummings & Knott, 2018; Exposito et al., 2023).

Given the limited and mixed results, further research is essential to better understand the relationship between female CEOs and innovation. This research proposes that, despite the scarcity of female-led firms, once women reach CEO positions, they actively take responsibility for driving strategic decisions toward innovation, fostering long-term value creation for their companies. Therefore, the following hypothesis is proposed:

Hypothesis 4. Female CEOs positively influence a company's ability to create economic value through innovation.

CEOs Driving Innovation: CEO Tenure

The relationship between CEO tenure and corporate innovation has yielded mixed results. On the one hand, CEOs who have been running the company for years accumulate greater knowledge, experience, and expertise, which fosters greater commitment to exploring new R&D opportunities (Barker & Mueller, 2002). With years of tenure, CEOs become less concerned about job security or board scrutiny, allowing them to focus on long-term strategic decisions, including increasing R&D investments (Zona, 2016). Their time in the position also increases their confidence, power, and acceptance by the board, which further motivates them to propose and execute innovative projects (Chen, 2013).

On the other hand, other research has suggested that, after years of dedicated service, CEOs may gradually shift their focus to less risky projects with more predictable results, ultimately leading to a reduction in R&D investments. Having already earned the support and respect of board members, CEOs with many years of service may feel less pressure to pursue new challenges and innovative projects (Loukil & Yousfi, 2022). Instead, they may prefer stable and proven strategies or even prioritize personal interests over high-risk R&D initiatives that require considerable effort and commitment (Azzam, 2022; Hsu et al., 2020). In addition, their prolonged focus on internal operations may reduce their ability to be aware of the dynamic external environment, limiting their ability to identify new innovation opportunities (Chen, 2013). To counteract these potential obstacles, companies can avoid prolonged CEO tenures by bringing in new CEOs who are more willing to differentiate themselves from their predecessors and by reallocating resources to R&D (Ahmad et al., 2024).

The mixed results in previous research regarding the influence of CEOs tenure on R&D investments highlight the need for further research. This study assumes that experienced CEOs play a crucial role in company leadership and resource management. However, successfully driving R&D projects demands the ability to set a clear strategic vision and the willingness to approve complex and high-risk investment decisions. Therefore, the following hypothesis is proposed:

Hypothesis 5. The CEOs tenure does not influence a company's ability to create economic value through innovation.

Board Member-CEO driving Innovation

Previous research often suggests that R&D investments tend to decrease when CEOs also sit on corporate boards. This is because, as board members, CEOs have the power to influence board meeting agendas, which may divert board discussions away from R&D investments to other strategic priorities (E-Vahdati & Binesh, 2022). In addition, their close relationship with shareholders may pressure them to prioritize short-term financial performance over long-term R&D commitments (Asad et al., 2023). Serving on corporate boards may also create a conflict of interest between their roles as managers and supervisors, weakening the independence of boards and hindering their ability to effectively oversee R&D project decisions (Muhammad et al., 2022). In addition, CEOs' increased visibility as board members may lead them to favor safe and predictable initiatives over risky innovation projects to protect their reputation (Chou & Johennesse, 2021). Consequently, the greater power and authority that CEOs acquire by sitting on corporate boards is often correlated with a reduction in R&D spending (Ginesti et al., 2023).

However, Sun et al. (2023) argue that CEOs with board roles can use their great power to make independent management decisions and respond quickly to the challenges of innovative projects. In addition, playing both roles provides CEOs with access to a wider range of information: As board members, they have access to strategic decisions discussed at board meetings (Driver & Guedes, 2012), and as CEOs, their deep understanding of internal processes allows them to make more informed decisions about R&D investments (Sierra-Moran et al., 2024). This duality may be especially advantageous for companies with long-term business models focused on innovation-driven competitive advantages (Gonzales-Bustos et al., 2020). However, other research has found no significant relationship between CEOs participation on boards and R&D activities (Ahmad et al., 2023; Loukil & Yousfi, 2022), indicating that innovation is not affected by whether or not the CEO holds a board seat (Rodrigues et al., 2020).

The mixed results of previous research demand further investigation. This research assumes that positive effects on R&D strategic decisions are not necessarily driven by the presence of a company's CEO on its corporate boards. Therefore, the following hypothesis is proposed:

Hypothesis 6. The CEO serving as a board member positively influences a company's ability to create economic value through innovation.

Methodology

Data and Sample

This research analyzes the 250 most innovative European companies between 2012 and 2022, as identified by the EU Industrial R&D Investment Scoreboard, which ranks firms on that basis of their R&D investments. Unlike previous studies that often focus on a single country or region (Asad et al., 2023), this research broadens the scope to include European companies, an area where the relationship between corporate decision-makers and R&D investments remains underexplored (Miroshnychenko & De Massis, 2020). Although most companies remain in the dataset throughout the study period, some have been excluded owing to corporate restructurings such as spin-offs, mergers, or liquidations. In addition, UK companies have been omitted after Brexit. As a result, the final sample consists of 172 listed and unlisted companies, in contrast to previous research that mainly examines only listed companies (Miroshnychenko & De Massis, 2020).

Data on corporate board composition and governance variables were obtained from BoardEx, a widely used database in corporate governance research (Almor et al., 2022; Asad et al., 2023; Azzam, 2022; Boone et al., 2019; Griffin et al., 2021). In total, the database includes information on 29,674 board members across the selected companies.

Variables and Model

The measure of the company's ability to create economic value through innovation is based on the ratio of operating profits to R&D investments. This metric provides a balanced view by linking a company's economic performance to its innovation strategies, providing insight into how innovation decisions contribute to long-term profitability and overall company value. Using this ratio, companies can make more informed decisions about resource allocation and the alignment of innovation efforts with strategic outcomes. It emphasizes that R&D investments are not a mere expense but a critical driver for improving competitiveness.

The characteristics of corporate boards and their members, as well as CEO attributes that can influence the company's ability to create economic value through innovation, are presented in Table 1.

Table 1. List of variables.

Dependent variable	**Explanation**
opprofrd	The ratio of operating profits to R&D investment
Independent variables	
female_natdiverse/ male_natdiverse	The number of different nationalities among female and male directors in each company per year
nat_fdirectors/ nat_mdirectors	The total number of directors (female or male) whose nationality corresponds to the company's country of domicile in each company per year
chairwoman/ chairman	A dummy variable that takes the value 1 if the chair on the board is held by a woman, and 0 otherwise
female_ceo/ male_ceo	A dummy variable that takes the value 1 when the CEO is a woman, and 0 otherwise
ceo_tenure	The average number of years that the CEO served in the same firm throughout the analyzed period
ceo_boardmember	A dummy variable which takes the value 1 when the CEO is a board member, and 0 otherwise
Control variables	
lnop_profits	The log of operating profits of each firm per year
lnemployess	The log of the total number of employees in each firm per year

Source: Created by authors.

To test the hypotheses mentioned above, two separate models (one for female directors and another for male directors) have been applied to two distinct subsamples, the first comprising all firms (both listed and unlisted) and the second focusing exclusively on listed firms.

The Model 1 focuses on the role of female directors, and the equation for this model is:

$$\mathrm{opprofrd}_{i,t} = \alpha + \beta \sum_{j=1}^{6} \mathrm{decisorvariables} + \delta \sum_{l=1}^{2} \mathrm{controlvariables} + \varepsilon_{i,t}$$

where decisor variables include female_natdiverse, nat_fdirectors, chairwoman, female_ceo, ceo_tenure, and ceo_boardmember. Control variables refer to the log values of operating profits and the number of employees per company and year.

The Model 2 specifically analyzes the role of male directors, and its equation is:

$$\mathrm{opprofrd}_{i,t} = \alpha + \beta \sum_{j=1,}^{6} \mathrm{decisorvariables} + \delta \sum_{l=1}^{2} \mathrm{controlvariables} + \varepsilon_{i,t}$$

where board variables include male_natdiverse, nat_mdirectors, chairman, male_ceo, ceo_tenure, and ceo_boardmember. Control variables refer to the log values of operation profits and the number of employees per company and year.

A GLS regression model was employed to ensure robust estimation. The Hausman test was conducted to determine whether fixed or random effects were more appropriate, and the Breusch–Pagan Lagrange multiplier confirmed the suitability of a random effects model. Given this result, additional diagnostic tests were performed to assess model adequacy.

The Wald test detected heteroscedasticity in two models, and the Wooldridge test confirmed the presence of first-order autocorrelation. To address these concerns and improve result accuracy, the GLS regression model was ultimately selected.

Results

Table 2 presents the results for the first subsample, which includes all firms (both listed and unlisted), reporting *z*-statistics and *p*-values to indicate the influence and the significance of the variables.

Table 2. Results for the subsample encompassing listed and unlisted firms.

Variable	Model 1 (female directors)	Model 2 (male directors)
female_natdiverse	−1.581***	
	(0.000)	
male_natdiverse		−0.181**
		(0.029)
nat_fdirectors	−0.473**	
	(0.027)	
nat_mdirectors		−0.080*
		(0.087)
chairwoman	0.223	
	(0.716)	
chairman		−0.220
		(0.346)
female_ceo	−0.015	
	(0.974)	
male_ceo		0.666
		(0.123)
ceo_tenure	−0.051	0.013
	(0.513)	(0.748)
ceo_boardmember	2.987***	0.412
	(0.000)	(0.388)
*Note: *p<0.1; **p<0.05; ***p<0.01*		

Source: Created by authors.

The results indicate that both the diversity of nationalities and the presence of board members whose nationality corresponds to the country in which the company is headquartered are statistically significant. However, both have a negative influence on the company's ability to create economic value through innovation, indicating that having more foreign or national directors results in lower operating profits from R&D expenditures. These results do not support Hypothesis 1 but align with Hypothesis 2. The results also show that neither the role of board chairs nor the role of CEOs, independent of their gender, has a significant effect, which does not support Hypothesis 3 and Hypothesis 4. Similarly, CEO tenure does not exhibit a statistical significance, which supports Hypothesis 5. These results demonstrate that both the role of the board chair and the gender of the CEO, as well as the number of years in this position, have no influence on the creation of economic value through innovation. However, the results reveal that CEOs who also serve on the board have a significant positive influence on the creation of economic value through innovation, which supports Hypothesis 6, although this effect is only observed when considering female board members. These results show that a higher number of women on boards is linked to better results when the CEO holds a seat on the corporate board.

The results for the second subsample, which includes only listed companies, are presented in Table 3.

Table 3. Results for the subsample encompassing listed firms.

Variable	Model 1 (female directors)	Model 2 (male directors)
female_natdiverse	−0.800***	
	(0.009)	
male_natdiverse		−0.253**
		(0.016)
nat_fdirectors	−0.289	
	(0.282)	
nat_mdirectors		−0.131**
		(0.027)
chairwoman	−1.733*	
	(0.079)	
chairman		−0.317
		(0.381)
female_ceo	0.497	
	(0.337)	
male_ceo		0.823
		(0.145)
ceo_tenure	−0.054	−0.052
	(0.539)	(0.350)
ceo_boardmember	1.012	0.062
	(0.887)	(0.936)
*Note: *p<0.1; **p<0.05; ***p<0.01*		

Source: Created by authors.

The findings show the presence of foreign directors has a significant negative influence, demonstrating that a greater diversity of nationalities on the board hinders the company's ability to create economic value through innovation, which does not support Hypothesis 1. Similarly, the number of national board members has a negative influence, which supports Hypothesis 2, though this effect is only observed when considering male directors. As a result, having more male directors whose nationality corresponds to the country in which the company is headquartered reduces the outcome. The roles of board chair and CEO do not seem to have a significant effect. However, when women occupy the board chair, their influence is significant but negative. These results are not consistent with Hypothesis 3 and Hypothesis 4. In addition, CEO tenure and their participation on the board do not seem to affect the outcome, which supports Hypothesis 5 but not Hypothesis 6.

Discussion

The results of this research highlight the critical role that both the composition of corporate boards and the role of the CEO play in shaping decision-making processes aimed at effectively achieving the company's ability to create economic value through innovation.

The findings suggest that corporate boards should strive for an optimal balance of nationalities among their members. The negative influence of foreign board members is consistent with previous research that has pointed to their lower attendance at board meetings and reduced participation in R&D decisions as barriers to fostering innovation (Khan et al., 2021; Masulis et al., 2012). This could result in a lack of understanding of the company's innovation requirements and a failure to dedicate sufficient time and effort to the complexities of innovation strategies (Belkacemi et al., 2021; Makkonen, 2022). This may lead companies to prioritize national board members. However, this research also reveals that an excessive presence of national board members weakens a company's ability to create economic value through innovation. Rather than favoring one group over the other, the results of this research seem to suggest that a well-balanced composition is key. This balance can help mitigate communication difficulties associated with diverse nationalities on boards (Belkacemi et al., 2021) while allowing companies to leverage diverse cultural perspectives, knowledge, and global networks to make more informed innovation-related decisions (Luo et al., 2021; Makkonen et al., 2018). In addition, an effective combination can strengthen the commitment of national board members to long-term strategies, ultimately promoting R&D initiatives (Khan et al., 2021; Sierra-Moran et al., 2024).

Interestingly, the results indicate that the presence of women in top management positions, such as board chairs or CEOs, does not necessarily boost the company's ability to create economic value through its commitment to innovation. One possible explanation (although not the only one) could be the persistent underrepresentation of women in these positions (Almor et al., 2022; Shukla & Teraiya, 2022). In this research, women represent only 4.7% of board chairs, holding this position in just 18 of the 172 companies analyzed, and their presence has not been constant throughout all the years analyzed. The representation of female CEOs is even lower, at just 3.6%, with women holding this position in only 20 of the 172 companies, again inconsistently throughout the study period. Although this underrepresentation of women as board chairs and CEOs has not prevented gender considerations in this research, it may limit the reach of the positive benefits identified in previous research (Attah-Boakye et al., 2020; Loukil & Yousfi, 2022). However, given that this study also found no significant influence of male board chairs and CEOs on the companies' ability in creating economic value through innovation, the results seem to suggest that gender may not be the determining factor in innovation-driven decision-making, but rather it may be their strategic capabilities and leadership competencies (Cummings & Knott, 2018; Exposito et al., 2023). In the case of CEOs, this research reveals that such skills are also not linked to CEO tenure. This result contrasts with previous research that highlights the accumulated experience and deep company knowledge acquired by CEOs with a long tenure as crucial to promoting long-term strategic decisions related to innovation (Barker & Mueller, 2002; Zona, 2016). This seems to suggest that shorter CEO tenures may be more beneficial for pursuing new challenges and innovative projects (Ahmad et al., 2024; Loukil & Yousfi, 2022).

However, when CEOs also sit on corporate boards, their dual role can foster the company's ability to create economic value through innovation. This aligns with previous research, which suggests that board participation provides CEOs with greater access to key strategic decisions discussed during board meetings, which, combined with their deep knowledge of the company, allows them to make more informed decisions about R&D investments (Driver & Guedes, 2012; Sierra-Moran et al., 2024). It is worth noting that this influence is only observed when considering female board members. This is consistent with previous research highlighting the beneficial role of women on boards in enriching the decision-making process related to R&D investments (Jiang et al., 2020; Wang et al., 2022). The presence of women on boards can foster more active and long-term oriented board discussions, which are critical for encouraging R&D investments (Attah-Boakye et al., 2020).

Among listed companies, the results continue to highlight the challenges companies face in aligning cultural and strategic perspectives on innovation initiatives when boards are highly diverse in terms of nationality. The lack of significant influence of women in CEO positions and CEO tenure remains consistent. However, the presence of women as board chairs shows a slight, albeit negative, influence on the company's ability to create economic value through its commitment to innovation. This can be attributed to their limited representation (Loukil & Yousfi, 2022). Interestingly, the positive influence observed for CEOs who are also board members disappears among listed companies, probably owing to the regulatory requirements that, in particular, enforce board independence in these companies.

Theoretical Contributions and Practical Implications

This research makes a significant contribution to the literature on corporate governance and innovation, particularly with regard to its economic viability. This research advances the understanding of how companies' main decision-making bodies can promote (or hinder) innovation. By analyzing the personal attributes and structural characteristics of corporate boards, along with the role of the CEO, this research provides deeper insight into the key factors that enhance decision-making for the successful implementation of innovation. Rather than merely exploring the influence of corporate governance on innovation, this research takes a crucial step further by exploring how corporate decision-makers create economic value through innovation. This perspective represents a notable advance in the existing literature by shifting the focus in two key ways. First, this research emphasizes the initial step toward innovation (corporate decision-makers making strategic decisions) rather than focusing on the subsequent influence of innovation on corporate performance (once the decision to innovate has been made). Second, this research goes beyond the analysis of technological development to examine how these advancements are actually converted into economic outcomes. By providing a more comprehensive view of the mechanism that drives innovation-based value creation, this research extends current knowledge on the viability of innovation and strategic decision-making within corporate governance.

The findings of this research have practical implications for companies seeking to strengthen their commitment to R&D investments and effectively convert these efforts into economic value. To achieve this, companies should carefully structure their corporate boards to ensure a balanced composition in terms of nationality diversity. This balance allows them to maximize the benefits of diverse perspectives and global networks while maintaining effective communication and decision-making. In addition, companies should recognize that executive effectiveness in strategic decision-making cannot be determined solely by CEO tenure. Instead, companies could prioritize leadership skills, adaptability, and strategic vision to foster innovation and value creation. The findings also urge companies to increase female representation in top executive positions, not only to achieve gender diversity but also to promote more dynamic and participative board discussions, as well as a more collaborative and team-oriented leadership approach, which can enhance innovation strategies. To facilitate this, companies should recognize the important role played by women on boards in improving the performance of CEOs who also serve on boards, ensuring their presence better aligns innovation strategies with economic value.

Conclusions

The purpose of this paper is to analyze how the specific characteristics of corporate boards, their members, and CEOs influence the company's ability to create economic value through its commitment to innovation. The results suggest that the presence of women on boards is necessary to improve the effectiveness of CEOs in driving innovation strategies. Female directors bring a broader range of perspectives and different decision-making dynamics, which can optimize CEO performance and, ultimately, lead to better corporate outcomes. However, the results also reveal persistent challenges in corporate governance, particularly the underrepresentation of women in top executive positions. In addition, the research highlights the importance of assessing the CEO's role in innovation strategies beyond their years of service at the company and underscores the need for a balanced approach to shaping the diversity of nationalities on boards. The research also identifies slight differences between unlisted and listed companies and how stricter regulations for the latter may reduce the benefits of CEOs serving as board members in driving innovation and economic value.

The results highlight the critical role of corporate boards and CEOs in innovation-related decision-making processes. This research provides clear evidence of the positive influence of female directors on innovation and competitiveness while also driving the debate to extend their presence beyond corporate boards, particularly in leadership positions. Having demonstrated its effectiveness in strategic decision-making, this research lays the foundation for justifying their increased representation. Therefore, current regulations aimed at improving gender diversity on boards should broaden their focus to ensure women's participation in all corporate governance roles. In addition, this paper presents a strategic framework for aligning innovation with economic value through collaboration among decision-makers. The results highlight the importance of strengthening strategic cohesion, promoting collaboration, and fostering synergy among governance bodies to make the most effective strategic decisions to meet modern challenges. In addition, this research suggests possible avenues for future organizational initiatives, including training programs aimed at improving communication and collaboration among board members of various nationalities, as well as executive programs to enhance the strategic decision-making capabilities of long-serving CEOs. In doing so, this research provides valuable insights into creating governance structures that not only drive innovation but also contribute to the economic growth of companies.

Expanding this research to other geographical areas or focusing on strategic sectors should be a future line of research. In addition, future research could consider analyzing other personal attributes of board members and CEOs, such as their age, academic background, and professional experience. Future investigations of different structures of boards, such as board size, the presence of independent directors, or board members serving on multiple boards, could also provide valuable information. Similarly, future research could explore how leadership competencies, specifically in communication, strategic vision, and decision-making, influence corporate innovation. The role of committees, particularly those related to innovation and sustainability, should also be examined to better understand the influence of decision-makers on firm innovation and economic viability.

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