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Top management team attributes and corporate entrepreneurship: A meta-analysis

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Abstract

How do the attributes of a firm's top management team (TMT) influence corporate entrepreneurship across organizational and national contexts? Drawing on *upper echelons theory* and the *managerial discretion perspective*, this meta-analytic study examines the dynamic relationship between TMTs' attributes and corporate entrepreneurship, focusing on the moderating role of managerial discretion arising from organizational and national-level factors. To provide insights into the micro-foundations of firm behavior, we explore how key TMT attributes—diversity, size, transformational leadership, tenure, general human capital, and entrepreneurial human capital—affect corporate entrepreneurship. A comprehensive meta-analysis of 57 primary studies reveals that the effect of a TMT's attributes is context-dependent and is significantly influenced by the approach to managerial discretion taken by the country in which the firm operates. By showing that transformational leadership and the TMT's entrepreneurial human capital and size affect corporate entrepreneurship, while attributes like tenure, diversity, and general human capital have limited or no impact, our findings challenge the prevailing view that a standardized approach to the TMT's composition drives corporate entrepreneurship. The study also underscores the role of the national-level managerial discretion and finds that firms in institutional environments that feature low managerial discretion must align their TMT strategies with local institutional contexts to maximize their corporate entrepreneurship. These findings advance upper echelons theory by demonstrating that managerial discretion acts as a boundary condition in shaping how the TMT's attributes influence corporate entrepreneurship based on the national context. This research contributes to the fields of strategic and innovation management and offers practical insights for leaders who seek to harness the full potential of their TMTs.

KEYWORDS

corporate entrepreneurship, managerial discretion, meta-analysis, TMTs, upper echelons theory

1 | INTRODUCTION

Many business scholars agree that corporate entrepreneurship enhances firms' vitality and competitiveness (Dess et al., 2003; Kuratko et al., 2015). As a multifaceted concept, corporate entrepreneurship encompasses a range of formal and informal activities at the firm level that target the discovery and exploitation of new opportunities. These activities, which include strategic renewal, innovation, and corporate venturing (Sharma & Chrisman, 1999), can improve the firm's competitiveness (Ireland et al., 2009; Phan et al., 2009), and performance (Bierwerth et al., 2015). Beyond its impact on individual firms, corporate entrepreneurship also contributes to broader economic development at the national level (Antoncic & Hisrich, 2003; Zahra et al., 1999), underscoring its role in fostering economic resilience and growth.

The literature that draws on upper echelons theory (Finkelstein, 2009; Hambrick & Mason, 1984) suggests that responsibility for sensing and seizing opportunities for corporate entrepreneurship rests primarily with the firm's top management team (TMT) (Boone et al., 2019; Heavey & Simsek, 2013; Ling et al., 2008; Zahra et al., 2009). TMTs are at the apex of firms and have decision-making authority and accountability for resource allocation, strategy development, and overall firm performance (Quigley & Hambrick, 2015; Westphal & Zajac, 1995), so they affect firms' successes and failures, including their ability to drive corporate entrepreneurship initiatives (Corbett et al., 2013; Heavey & Simsek, 2013). The central tenet of upper echelons theory is that TMTs interpret and respond to their environments based on their members' backgrounds and personal attributes (Hambrick, 2007), so these attributes can determine whether a firm can drive corporate entrepreneurship by identifying business opportunities or misses them entirely. Such lack of foresight has led to the decline and disappearance of many once-prominent corporations (Gupta et al., 2018).

However, the literature on the relationship between TMTs and corporate entrepreneurship is not without limitations. Empirical results are mixed in terms of TMTs' attributes. For instance, the effect of a TMT's size on corporate entrepreneurship is reported as being positive (Chen et al., 2022), negative (Arzubiaga et al., 2018), and null (Chen & Nadkarni, 2017). Similarly, research generally indicates a positive impact of a TMT's level of diversity on corporate entrepreneurship (Chen et al., 2022; Hayton, 2005), yet some studies report negative outcomes for dimensions like diversity in education, functional experience, and general experience (Ling et al., 2008; Srivastava & Lee, 2005). Whereas a TMT's size and diversity are considered to be at the heart of organizational governance, both of these attributes are also considered to be double-edged swords (Certo et al., 2006; Li & Jones, 2019). These inconsistencies pose challenges for large multinational companies and small- to medium-sized enterprises that seek to leverage corporate entrepreneurship to gain sustained competitive advantage, adaptability, and growth (Boone et al., 2019; Chin et al., 2021; Heavey & Simsek, 2013; Zahra, 1996a).

In addition, research that focuses on the upper echelons theory demonstrates that the TMT's actions do not occur in isolation but are embedded in environments that are substantially shaped by the level of managerial discretion (Crossland & Hambrick, 2007, 2011). In the corporate entrepreneurship domain, Heavey and Simsek (2013) suggest that a firm's pursuit of corporate entrepreneurship is positively associated with the TMT's attributes and that these relationships vary according to the environmental context in which the firm operates. Building on upper echelons theory to substantiate that

Practitioner points

- Firms should tailor their top management teams' (TMT) composition to fit their organizations' national contexts. A standardized one-size-fits-all approach may not be effective in driving corporate entrepreneurship.
- TMTs that have the right mix of attributes are more likely to drive corporate entrepreneurship. Appointing TMT members with strong entrepreneurial human capital and transformational leadership skills is most likely to foster corporate entrepreneurship, as these attributes encourage innovation, strategic renewal, and corporate venturing.
- Larger and more diverse TMTs can offer a broader range of perspectives, which helps firms identify and exploit new entrepreneurial opportunities. However, attributes like tenure and general human capital may have limited impacts on corporate entrepreneurship.
- In international settings, firms should adapt their TMTs' composition to the level of managerial discretion that is typical in each country to optimize corporate entrepreneurship. In institutional environments where the level of managerial discretion is low, as formal and informal institutional factors constrain decision-making, firms should design carefully their TMTs to ensure effective entrepreneurial outcomes.

relationship, we test the role of managerial discretion—that is, TMT members' latitude in taking action—as a boundary condition (Crossland & Hambrick, 2007). Some research suggests that TMTs' courses of action vary depending on the level of managerial discretion, which is influenced by organizational characteristics and national-level institutions that may constrain their decisions and actions (Burkhard et al., 2023; Kraft, 2022; Wang et al., 2023; Wangrow et al., 2015). In setting that feature high levels of managerial discretion settings, TMTs' operations are relatively unconstrained, but in settings where managerial discretion is low, organizational and national conditions impose constraints that limit the TMT's strategic actions (Chatterjee & Hambrick, 2007; Simsek et al., 2010). We use a meta-analysis of 57 primary studies to explore whether the relationship between TMTs' attributes and corporate entrepreneurship is stronger when managerial discretion is high or when it is low.

In response to the limitations in the literature, our meta-analysis examines differences in the strength of the relationship between the TMT's attributes and corporate entrepreneurship based on the level of managerial discretion that stems from organizational and national conditions. Our study offers three primary contributions to theory and research on TMTs and corporate entrepreneurship and to the broader innovation management literature. First, we contribute to upper echelons theory by providing a meta-analytic synthesis and generalization of research on TMTs' attributes as antecedents of corporate entrepreneurship. By leveraging meta-analytic techniques, this research offers a comprehensive empirical evaluation of the TMT attributes that are examined most often. This assessment addresses the mixed findings that previous qualitative reviews present regarding the relationship between TMTs' attributes and corporate entrepreneurship (Corbett et al., 2013; Schindehutte et al., 2018; Urbano et al., 2022) and resolves some of these ambiguities by offering clearer insights into how TMTs' attributes systematically influence corporate entrepreneurship.

Second, our study quantifies the relationships between TMTs' attributes and corporate entrepreneurship by producing estimates of effect size to clarify the extent to which TMTs' attributes relate to corporate entrepreneurship. It also enriches the micro-foundations perspective by examining the roles that TMTs play in shaping organizational outcomes (Felin et al., 2015).

Third, we expand on upper echelons theory by embedding in the managerial discretion perspective an investigation of how the impact of TMTs' attributes on firms' entrepreneurial endeavors varies across contexts. This analysis emphasizes the context-dependent nature of corporate entrepreneurship and responds to calls for a more nuanced understanding of management in varied institutional frameworks (e.g., Dess et al., 2003; Guerrero et al., 2021; Schindehutte et al., 2018; Urbano et al., 2022).

2 | THEORETICAL BACKGROUND

2.1 | Defining corporate entrepreneurship

Over the past three decades, corporate entrepreneurship has emerged as a multifaceted concept in the field of entrepreneurship and innovation research. Variously termed organizational entrepreneurship, intrapreneurship, corporate venturing, and strategic entrepreneurship (Schindehutte et al., 2018), corporate entrepreneurship focuses on entrepreneurial activities at the firm level (Jennings & Lumpkin, 1989; Kuratko et al., 1990). Arriving at a more nuanced understanding of management in varied institutional frameworks can assist explorations of firms' trajectories by differentiating between entrepreneurial activities and entrepreneurial behaviors. This study focuses on the latter because of its value in ensuring firms' sustainability and growth.

Corporate entrepreneurship encompasses three core phenomena: innovation, corporate venturing, and strategic renewal (Heavey & Simsek, 2013; Kuratko, 2017; Zahra, 1993, 1996a). Innovation refers to a firm's ability to transform its organizational knowledge and resources creatively into new products, processes, and systems, thereby increasing its economic value (Ireland et al., 2009). Whether radical or incremental, innovation is central to firms' ability to increase their market success, growth, and competitiveness (Zahra, 1996a). Strategic renewal involves the reconfiguration of a firm's resources to revitalize its operations and build new wealth through changes in its business scope, competitive approach, and capabilities (Guth & Ginsberg, 1990; Zahra, 1996a, 1996b). Corporate venturing refers to pursuing entrepreneurial endeavors in an existing organization, including expanding into new markets (Guth & Ginsberg, 1990).

2.2 | Theoretical framework

Drawing on an array of integrative models, scholarship on corporate entrepreneurship focuses primarily on the TMT's strategic role in pursuing corporate entrepreneurship (Burgelman, 1983a; Guth & Ginsberg, 1990; Ireland et al., 2009; Kuratko, 2010; Zahra, 1993; Zahra et al., 2009). While scholars extensively research the attributes of TMTs that affect corporate entrepreneurship,

consensus on the overall impact of these attributes remains elusive. In addition, the consensus that corporate entrepreneurship is context-dependent necessitates a multi-level analytical approach to capture the nuances of the interplay between TMTs' attributes and corporate entrepreneurship fully (Dess et al., 2003; Ireland et al., 2007).

Central to our research framework is the upper echelons theory, which posits that TMTs' attributes significantly influence their strategic decisions and organizational outcomes by shaping how they allocate resources and guide their firms' actions (Hambrick & Mason, 1984). Upper echelons theory underscores the critical role of the TMT's demographics, values, personalities, and experiences in shaping its members' perceptions, priorities, and behaviors (Hambrick & Mason, 1984). Since obtaining data on TMT members' psychology would be prohibitively time-consuming and otherwise challenging, researchers use such observable attributes as human capital and diversity as proxies for managers' cognitive bases, values, and perceptions (Burkhard et al., 2023; Quigley & Hambrick, 2015). A large body of meta-analytical evidence demonstrates that such attributes as a TMT's diversity, size, type of leadership, tenure, and human capital (general and entrepreneurial) influence organizational outcomes (Carpenter et al., 2004; Certo et al., 2006; Kirca et al., 2012; Wang et al., 2015, 2023). However, evidence for the influence of such attributes on corporate entrepreneurship remains unexplored, although it is needed to move the field forward (Corbett et al., 2013; Guerrero et al., 2021).

Building on upper echelons theory, this study considers how *managerial discretion* context stemming from organizational and national context, serves as a boundary condition that influences the strategic choices TMTs make, thereby affecting the success of corporate entrepreneurship (Hambrick & Finkelstein, 1987). Managerial discretion, which is the latitude TMT members have in influencing their firms' strategy and performance (Hambrick, 2007), is extensively documented in empirical studies (Wangrow et al., 2015) and meta-analytical evidence (Burkhard et al., 2023; Kraft, 2022; Wang et al., 2019, 2023; Zaandam et al., 2021). Managerial discretion arises from two sources: organization- and national-level factors that dictate an organization's receptiveness to a variety of strategic actions, and institutional environmental factors that delineate the extent of strategic options that are available externally (Hambrick & Finkelstein, 1987). *Organization-level* context, such as firm size, determining the degree of freedom and autonomy that TMTs enjoy within the organizational framework, influences the firm's direction and outcomes (Jeong & Harrison, 2017). *National-level* institutional environments may either constrain or enhance managerial discretion, thus affecting the strategic latitude that is available to TMTs (Crossland & Hambrick, 2007, 2011). Incorporating a managerial-discretion perspective, our research probes into how the organizational and national context of TMTs' managerial discretion serves as a boundary condition that influences the relationships between TMTs' attributes and corporate entrepreneurship.

Our study combines upper echelons theory and insights on managerial discretion to determine whether the relationships between TMTs' attributes and corporate entrepreneurship are universally applicable or vary depending on the level of managerial discretion at the organizational and national levels. This approach seeks to bridge the gap in our understanding of how TMTs' attributes systematically influence corporate entrepreneurship based on the context, thus clarifying the variable impacts of TMT-driven strategies on corporate entrepreneurship. Figure 1 presents the theoretical framework.

2.3 | The TMT's attributes and corporate entrepreneurship

The role of the TMT's attributes in fostering corporate entrepreneurship is multifaceted and well-supported by theories that emphasize strategic choice, particularly upper echelons theory (Hambrick & Mason, 1984). Upper echelons theory suggests that organizations reflect their TMTs' strategic choices and managerial philosophies, both of which are pivotal in cultivating a climate that is conducive to innovation (Green et al., 2008) and overseeing the mechanisms that are essential to corporate venturing, strategic renewal, and continual innovation (Chen & Nadkarni, 2017; Kuratko & Audretsch, 2013). TMTs also play a central role in providing a strategic direction (Benitez-Amado et al., 2010; Burgelman, 1983a) and translating organizational policy into actionable strategies, goals, and objectives (Heavey & Simsek, 2013). Extensive research highlights the importance of the TMT in initiating, promoting, and implementing entrepreneurial activities (Srivastava & Lee, 2005).

Given the robust foundation provided by upper echelons theory and empirical evidence on the role of TMTs' attributes in fostering corporate entrepreneurship, testable hypotheses can anchor our theoretical discussion in empirical inquiry and set the stage for a deep exploration of how the TMTs' attributes influence corporate entrepreneurship. The six hypotheses we propose quantify the impact of each TMT attribute on corporate entrepreneurship, thus providing a framework for subsequent empirical validation.

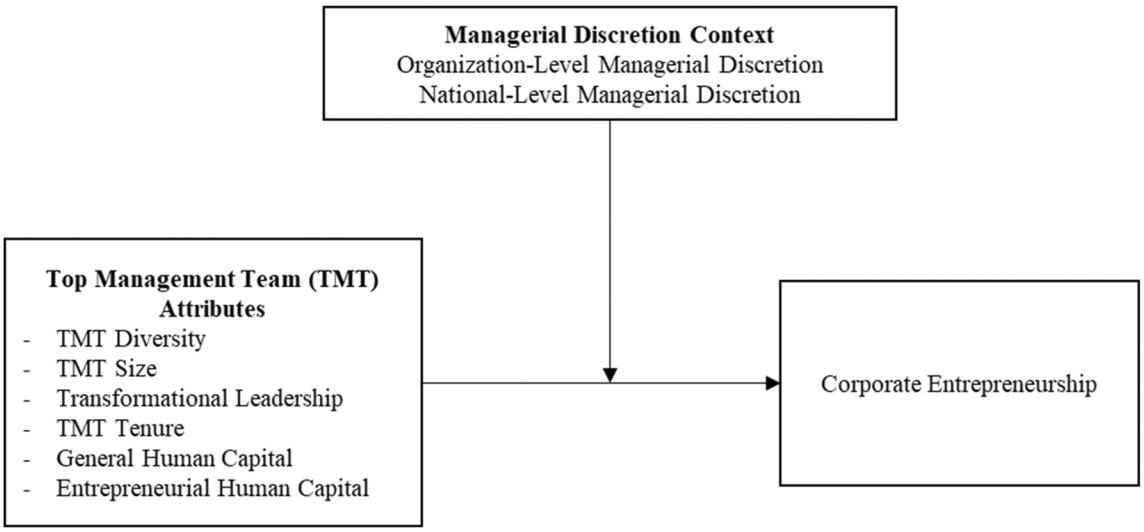

FIGURE 1 Research framework.

Diversity in a TMT, defined as the variety of personal attributes among team members, extends a TMT's access to external information networks (Díaz-Fernández et al., 2020) so it can connect with a broad range of stakeholders from which to gather unique insights (Heavey & Simsek, 2013; Li et al., 2021). Diversity also increases TMTs' ability to recognize a wide array of opportunities, a key advantage in dynamic markets where rapid identification of opportunities can mean securing a competitive edge (Hayton, 2005; Nuscheler et al., 2019). In addition, the varied perspectives that operate in a diverse TMT foster rigorous decision-making during times of uncertainty or rapid technological change and enable firms to navigate complex challenges (Blanco-Oliver et al., 2018). The richness of perspectives brought about by diversity in the form of team members' nationalities in particular enhances TMTs' human and social capital and has a positive influence on team dynamics and corporate entrepreneurship (Boone et al., 2019). This form of diversity also fosters productive conflict, resulting in a variety of creative solutions to complex problems (Olson et al., 2020; Talke et al., 2010). Therefore, the multifaceted influence of diversity on a TMT is integral to fostering a firm's entrepreneurial capabilities, suggesting that greater diversity in TMTs is associated with enhanced corporate entrepreneurship.

Hypothesis 1. TMTs' diversity is positively associated with corporate entrepreneurship.

The *size* of a TMT plays a role in its firm's corporate entrepreneurship through multiple facets of organizational capability. Larger TMTs offer a richer variety of human capital than smaller TMTs can, as their large size broadens the team's scope and depth of expertise (Haleblian & Finikelstein, 1993; Yang & Wang, 2014). This diversity in skills and perspectives amplifies the team's ability to scan and evaluate the environment, thus increasing the volume and quality of information that can be used to extend corporate entrepreneurship (Bui et al., 2020; Jin et al., 2017; Li et al., 2021; Zahra et al., 2000) and navigate the complex challenges that are inherent in fostering an entrepreneurial spirit in established corporations (Heavey & Simsek, 2013). While size alone does not invariably correlate with capability (Díaz-Fernández et al., 2020), it signals a team's collective ability to process complex information (Rovelli, 2020). Moreover, a large TMT can facilitate environmental scanning, which increases the quality of information used in making the strategic decisions that drive corporate entrepreneurship (Li et al., 2021; Tribbitt & Yang, 2017). Large TMTs also bring a wide array of both tangible and intangible assets—from financial resources to cognitive skills and network ties—that are less likely to be available in smaller TMTs (Jahanshahi et al., 2018).

However, large TMTs also present challenges, such as when quick decision-making is required, as the size of the team can sometimes hinder the swift decision-making that is needed when the firm must act quickly to seize or execute an opportunity (Baron, 2006; Lehner & Kansikas, 2012; Urban & Wood, 2015). This challenge is often compounded by communication and integration issues in large teams (Amason et al., 2006; Haleblian & Finikelstein, 1993). In short, while larger teams can provide the resources and capabilities that facilitate corporate entrepreneurship, they must also manage the complexities that come with large groups to optimize their entrepreneurial outcomes. Given these dynamics,

we posit that the size of the TMT is positively associated with corporate entrepreneurship.

> **Hypothesis 2.** The TMT's size is positively associated with corporate entrepreneurship.

Transformational leadership plays a pivotal role in fostering corporate entrepreneurship by inspiring an organization to pursue innovative and entrepreneurial endeavors and mobilizing them to that end. Leaders who exhibit transformational leadership are adept at crafting visionary scenarios that articulate a clear vision and rally support for discovering and capitalizing on new opportunities and markets (Gupta et al., 2004; Li et al., 2021). This ability to inspire and engage has significant value in settings that demand innovation and adaptability. Moreover, a transformational leadership style significantly enhances employees' satisfaction, intellectual engagement, and creativity, all of which are components of a vibrant innovative culture (Pan et al., 2021; Shafique & Kalyar, 2018). By fostering an environment that encourages exploration and challenging the status quo, transformational leaders enhance their firms' capacity for innovation, a key driver of corporate entrepreneurship. Transformational leadership is also instrumental in the effective execution of corporate entrepreneurship strategies. Leaders who engage their teams and communicate a compelling vision of the future facilitate the smooth implementation of innovative strategies that improve firm performance (Boukamcha, 2019; Ocak & Ozturk, 2018). The dynamic capabilities that are imbued in transformational leadership enable organizations to respond swiftly and effectively to emerging opportunities in the marketplace, thus sustaining competitive advantage and driving business growth. Given these benefits, we hypothesize that transformational leadership is positively associated with corporate entrepreneurship. This relationship underscores the significance of the TMT's leadership style in guiding strategic direction and innovation and embedding a resilient entrepreneurial culture in the organization.

> **Hypothesis 3.** Transformational leadership on the TMT is positively associated with corporate entrepreneurship.

The *length of TMT members' tenure* has a significant influence on corporate entrepreneurship by affecting firms' strategic orientation and innovative capabilities. Equipped with a wealth of historical knowledge and deep industry experience, long-tenured TMT members have honed the decision-making skills that are valuable in navigating complex business environments (Kraus et al., 2019; Sahaym et al., 2016). Their profound understanding of their companies' historical context and industry dynamics enables them to identify opportunities and engage confidently in the risk-taking activities that are necessary for the successful pursuit of entrepreneurial initiatives (Hayton, 2005; Simsek, 2007).

Moreover, the successful implementation of corporate entrepreneurship strategies often requires a high degree of interdependence in the organization. Long-tenured TMT members typically foster a strong sense of social cohesion in the TMT and have the shared cognitive frameworks that help to ensure that organizational resources and capabilities are aligned with the pursuit of innovative and entrepreneurial goals (Amason & Sapienza, 1997). Not to be outdone, short-tenured TMT members bring with them fresh perspectives and insights into emerging market trends and competitive landscapes, which can be equally beneficial for corporate entrepreneurship (Floyd & Lane, 2000). Their willingness to challenge the status quo and to introduce new ideas fosters an organizational culture that is receptive to innovation and change (Certo et al., 2006; Heavey & Simsek, 2013). When managed effectively, this dynamism can enhance their firms' entrepreneurial activities by encouraging agility and adaptiveness (Heavey & Simsek, 2013). Given these dynamics, we hypothesize that TMT members' length of tenure is positively associated with corporate entrepreneurship. This hypothesis explores how the blend of stability provided by long-tenured members and the innovative push from newer members can together foster a conducive environment for corporate entrepreneurship, enabling firms to leverage their cumulative experiences and fresh insights for sustained entrepreneurial success.

> **Hypothesis 4.** The length of TMT members' tenure is positively associated with corporate entrepreneurship.

The *general human capital* embodied in the TMT, as reflected in its members' educational background and experience, plays a valuable role in driving corporate entrepreneurship. TMT members' education level and fields of study have a significant influence on the quality of the TMTs' decisions related to corporate entrepreneurship. Academic backgrounds provide the cognitive tools that enhance team members' analytical capabilities and improve their decision-making processes in the complex entrepreneurial context (Jahanshahi et al., 2018; Nkongolo-Bakenda et al., 2010; Yuan et al., 2017). Similarly, TMTs' experience equips them with the practical skills necessary to identify and capitalize on opportunities and to pursue a proactive approach to corporate

entrepreneurship (Nuscheler et al., 2019). Their experience also broadens their internal and external networks, which can aid them in pursuing corporate entrepreneurship initiatives (Yuan et al., 2017). Effective networking enhances access to resources, including information and partnerships, which are instrumental in navigating the entrepreneurial landscape (Li et al., 2020).

The depth of experience and knowledge in TMTs make them particularly alert to new opportunities for corporate entrepreneurship, often before they become apparent to the market at large (Tang et al., 2012; Tzabbar & Margolis, 2017). This alertness, combined with a propensity for proactiveness and risk-taking, enables these TMTs' firms to outmaneuver competitors and seize market opportunities (Heavey et al., 2009).

Finally, the TMT's *entrepreneurial human capital* refers to the knowledge, skills, and connections that allow them to spot opportunities for new corporate entrepreneurship initiatives. Their connections in the organization help them to build collaboration and assemble the resources needed for the successful execution of corporate entrepreneurship activities.

Therefore, we hypothesize that TMTs' general and entrepreneurial human capital are positively associated with corporate entrepreneurship such that the richer and more varied a TMT's general and entrepreneurial human capital, the more effectively the firm can engage in and sustain entrepreneurial activities by leveraging its leaders' strategic acumen and operational capabilities.

> **Hypothesis 5.** The amount of the TMT's general human capital is positively associated with corporate entrepreneurship.

> **Hypothesis 6.** The amount of the TMT's entrepreneurial human capital is positively associated with corporate entrepreneurship.

2.4 | The moderating effect of managerial discretion context

This section considers the moderating impact of managerial discretion on the relationship between the TMT's attributes and corporate entrepreneurship. Beginning with Hambrick and Finkelstein's (1987) seminal work, which develops the concept of managerial discretion, scholars explore its applications in various contexts and at various levels, including the individual level (e.g., Wang et al., 2019), the organization level (e.g., Burkhard et al., 2023), and the national level (e.g., Burkhard et al., 2023; Wang et al., 2023; Zaandam et al., 2021). Our study explores the dynamic interplay between the TMT's attributes and corporate entrepreneurship, considering organization-level and national-level contexts as moderators.

The concept of managerial discretion serves as a pivotal mechanism through which the TMT exerts influence over corporate entrepreneurship initiatives (Hambrick, 2007; Wangrow et al., 2015). Managerial discretion refers to TMTs' ability to act autonomously, bounded by the extent of stakeholder power and institutional constraints that may either facilitate or restrict their strategic choices. Therefore, the amount of managerial discretion available to TMTs can enhance or limit their impact on corporate entrepreneurship. We hypothesize that the positive relationship between TMTs' attributes and corporate entrepreneurship is managerial discretion context-dependent arising from organization-level (e.g., organizational inertia) and national-level contexts (e.g., the institutional environment).

2.4.1 | Organization-level managerial discretion

There is evidence that organizational managerial discretion significantly influences the relationship between TMT attributes and firm-level outcomes (Burkhard et al., 2023; Jeong & Harrison, 2017) and we expect it will similarly affect the relationship between TMT attributes and corporate entrepreneurship. The latitude of managerial action varies with organizational size and affects how effectively TMTs can implement corporate entrepreneurship initiatives. Small firms' managerial discretion is typically high because their routines are not entrenched and their organizational structures tend to be flexible. Compared to large firms, small firms often have flatter hierarchies, fewer bureaucratic constraints, and closer interactions between TMT members and other organizational members, which give their TMTs high levels of managerial discretion in adopting and implementing entrepreneurial strategies. For instance, top managers in smaller firms can compensate for limited resources with their personal capabilities and direct involvement in both strategic and operational roles (Alexiev et al., 2010; Lubatkin et al., 2006). Reduced board oversight and higher ownership concentration among executives also enhance TMTs' managerial discretion in decision-making about entrepreneurial activities (Robson & Bennett, 2000; Zahra et al., 2000).

Conversely, large firms often exhibit low managerial discretion because of organizational inertia. Large firms are characterized by complex bureaucratic structures, established routines, and institutionalized processes that constrain strategic flexibility (Gilbert, 2001; Hannan &

Freeman, 1984). The presence of extensive hierarchical layers and rigorous oversight mechanisms limits their TMTs' ability to enact strategic changes and innovate swiftly. Consequently, the impact of their TMTs' attributes on corporate entrepreneurship is diminished in such environments, as the ability to pursue diverse strategic paths is restricted (Finkelstein & Hambrick, 1990; Lavie & Rosenkopf, 2006).

The nuanced interplay between organizational context and TMTs' attributes suggests that, while large firms may have more resources to support entrepreneurial initiatives, their bureaucratic nature can impede quick decision-making and strategic flexibility. In contrast, small firms' high levels of managerial discretion allow their TMTs to leverage their attributes to foster corporate entrepreneurship. Therefore, we hypothesize:

> **Hypothesis 7.** Organizational managerial discretion moderates the relationship between TMT attributes and corporate entrepreneurship such that the impact of the TMT's attributes on corporate entrepreneurship is more pronounced in smaller firms, which are typified by high levels of managerial discretion, than it is in large firms, which are typified by low levels of managerial discretion.

2.4.2 | National-level managerial discretion

National-level managerial discretion plays a central role in shaping the relationship between TMTs' attributes and corporate entrepreneurship. Grounded in institutional theory, national-level managerial discretion context is embedded in the formal and informal rules that govern appropriate and legitimate top managers' behaviors, including the freedom executives have to allocate firm resources (Crossland & Hambrick, 2011; North, 1990). Informal institutions establish unwritten social norms and cultural values, while formal institutions establish laws and regulations that serve as the legal framework for entrepreneurial endeavors (Vanacker et al., 2021). Together, both types of institutions define the operational environment or "rules of the game" that influence the constraints on TMTs' managerial actions (Burkhard et al., 2023; Wang et al., 2023).

Managerial discretion varies significantly across countries because of differing institutional frameworks. The institutional environment can either constrain or enable TMTs' managerial discretion, affecting their ability to drive firm performance in areas like corporate entrepreneurship (Crossland & Hambrick, 2007, 2011). TMTs that operate in countries that feature weaker institutional constraints (formal and informal) have more managerial discretion to enact strategic changes and influence organizational outcomes like corporate entrepreneurship than TMTs that operate in countries that have more constraints do (Burkhard et al., 2023; Wang et al., 2019, 2023).

In national cultures that tend to be open-minded and tolerant of uncertainty, TMTs can explore a wide range of strategic options without significant resistance. Cultures with high *uncertainty* tolerance are more receptive to innovative and unconventional actions, which provides TMTs latitude in undertaking actions that carry substantial risk and ambiguity (Crossland & Hambrick, 2007; Scott, 1995). In high power distance cultures, where authority is respected and rarely challenged, TMTs can make bold decisions with few obstacles (House, Hanges, Javidan, Dorfman, & Gupta, 2004; Zaandam et al., 2021). Individualistic cultures, which emphasize personal initiative and autonomy, also tend to support unilateral decision-making by TMTs (Aguinis & Henle, 2003; Crossland & Hambrick, 2007). In addition, loose cultures, where norms are weakly enforced, create an environment that allows for greater managerial latitude by TMTs, not strictly penalizing deviations from normative behaviors (Crossland & Hambrick, 2011; Gelfand et al., 2006).

On the formal side, the dispersion of ownership, a country's legal origins, and the flexibility of employment laws affect TMTs' behaviors. For example, in cultures that feature dispersed ownership of firms, TMT members typically enjoy significant autonomy, so they can pursue innovative strategies and entrepreneurial activities without facing immediate pushback from shareholders (Crossland & Hambrick, 2011). Similarly, in common-law countries, where the emphasis is on protecting property rights and prioritizing shareholders' interests, TMTs may have more freedom to make risky investments or pursue the kinds of aggressive growth strategies that are characteristic of corporate entrepreneurship (La Porta et al., 2000). Finally, in countries where employers have high levels of flexibility and weak rules for employee protection such that top managers can hire, reassign, or lay off employees freely, the positive impact of TMTs' attributes on corporate entrepreneurship is enhanced (Vanacker et al., 2021).

Given this intricate interplay of formal and informal institutions, our hypothesis posits that national-level managerial discretion is a moderating factor in the relationship between TMTs' attributes and corporate entrepreneurship. The weaker institutional constraints provide greater managerial discretion, allowing TMTs to more effectively translate their strategic visions into

entrepreneurial actions, thereby enhancing the firm's ability to pursue entrepreneurial endeavors.

> **Hypothesis 8.** National-level managerial discretion moderates the relationships between TMT attributes and corporate entrepreneurship such that the hypothesized direct relationships between TMTs' attributes and corporate entrepreneurship (H1 to H6) are more pronounced in countries where national-level managerial discretion is high than it is in countries where it is low.

In contrast to previous perspectives that emphasize the benefits of high managerial discretion suggesting that greater freedom for TMTs fosters CE, an alternative hypothesis proposes that low managerial discretion can also significantly enhance corporate entrepreneurship. This perspective acknowledges the complex dynamics of corporate entrepreneurship, which often require a balance between top-down strategic directives and bottom-up entrepreneurial initiatives (Phan et al., 2009).

Burgelman (1983a, 1983b) introduced the concept of autonomous and induced strategic behaviors as the two primary forms of CE. Autonomous strategic behavior emphasizes the role of middle managers and even front-line employees as "product champions" who pursue new ideas and initiatives independently of top management's strategic frameworks (Kuratko, 2017). This bottom-up process is of significant value in organizations and cultivates in national contexts with low managerial discretion and the ability to innovate and adapt is dispersed across organizational levels, rather than being confined to the executive suite.

In the case of autonomous strategic behavior (Burgelman, 1983a, 1983b), lower managerial discretion could enhance corporate entrepreneurship by fostering more collaborative and inclusive environments. In environments that are characterized by low managerial discretion, such as those that are typically found in collectivistic cultures or societies with strong normative pressure, the need for alignment and consensus could lead TMTs to promote a collaborative and inclusive approach (Triandis, 1995) to align the activities of middle managers and other employees to foster a distributed form of entrepreneurship. In such contexts, strategic initiatives are not solely the prerogative of the TMT but are influenced by a broad range of internal stakeholders through consultative processes (Aguinis & Henle, 2003).

In contrast to high power distance countries, in which high levels of managerial discretion facilitate rapid and efficient top-down implementation of novel ideas, low power distance countries exhibit low levels of managerial discretion that also tend to facilitate idea generation. This dynamic arises because individuals are willing to challenge the status quo and pursue independent initiatives even in the face of supervisory resistance, unhindered by the constraints typically imposed by organizational hierarchy (Hofstede, 2001; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Shane et al., 1995). Integration and the collaborative mechanisms that operate in the context of low managerial discretion can help to align followers with leaders in their efforts to pursue corporate entrepreneurship.

High uncertainty avoidance, which is also associated with low managerial discretion, plays a central role in facilitating corporate entrepreneurship by imposing a structured environment that promotes order, conformity, routine, and stability (Erez & Nouri, 2010). A structured approach is particularly beneficial for implementing corporate entrepreneurship initiatives, where clear, predictable processes enhance the organization's ability to execute new ideas. A culture that is characterized by high uncertainty avoidance ensures the presence of established protocols and strong adherence to rules, which can streamline the process of bringing innovations to fruition by reducing ambiguity and aligning all organizational activities with common goals. Conversely, cultures that are characterized by low uncertainty avoidance (or high tolerance of uncertainty), which typically exhibit high managerial discretion, foster an environment that is conducive to deviating from rules, breaking routines, and tolerating mistakes. While these attributes can enhance creativity and the generation of innovative ideas, they may impede the systematic implementation of those ideas into structured organizational processes (Sarooghi et al., 2015). The lack of strict guidelines and the permissive attitude toward errors, while beneficial for early stages of idea generation and development, can create challenges when it comes to scaling innovations and integrating them into a firm's core operations (Bledow et al., 2011).

As for the formal institutional environment, labor market regulations (stringent employee protection) often impose significant constraints on managerial actions, particularly in terms of hiring, firing, and adjusting workforce levels in response to strategic shifts. These regulations can introduce a degree of inflexibility in workforce management but can also mitigate the risks that are associated with poorly considered strategic changes that might be initiated when managerial discretion is high. Such stringent regulations may encourage firms to invest more in employee training and development (Bartelsman et al., 2016), which can enhance employees' skills and innovative ability, thus helping to foster an

entrepreneurial environment. In common law countries, the courts tend to protect the rights of inventors and creators vigorously by ensuring that intellectual property rights are robustly enforced. In such countries, TMTs operate under legal frameworks that, while ensuring stability and security for investors, could also impose rigid constraints that limit the agility required for corporate entrepreneurship. Kraft (2022) notes that TMTs that operate in contexts that feature high levels of managerial discretion have leeway to make idiosyncratic decisions like those that are typical in corporate entrepreneurship.

> **Hypothesis 8.** Alternative: National-level managerial discretion moderates the relationships between TMTs' attributes and corporate entrepreneurship such that the hypothesized direct relationships between TMTs' attributes and corporate entrepreneurship (H1 to H6) are more pronounced in countries where national-level managerial discretion is low than they are in countries where it is high.

3 | METHODOLOGY

3.1 | Literature search

We followed a multi-step search process to compile the database for our meta-analysis. Our search covered articles that were published up to June 2023 in databases that included ABI/INFORM, PsycINFO, EBSCO, EconLit, ERIC (the expanded academic index), JSTOR, Science Direct, and Wilson Business Abstracts. We conducted the search using keywords like "executives," "CEO," "top management team," "TMT," "upper echelons," "corporate entrepreneurship," "firm-level entrepreneurship," and "strategic entrepreneurship." Subsequently, we performed a manual search in premier management and entrepreneurship journals, including *Academy of Management Journal*, *Journal of Product Innovation Management*, *Journal of Management Studies*, *Journal of Management*, *Journal of World Business*, *Strategic Management Journal*, *Entrepreneurship: Theory and Practice*, *Journal of Business Venturing*, and *Strategic Entrepreneurship Journal*. To augment our database, we scrutinized the reference lists of published reviews of corporate entrepreneurship, such as those by Bierwerth et al. (2015), Dess et al. (2003), Kuratko (2017), and Urbano et al. (2022).

We took several steps to minimize publication bias. First, we extended our database search to include institutional repositories like ProQuest Dissertations & Theses and academic platforms like arXiv and SSRN, targeting working papers, conference proceedings, and unpublished doctoral dissertations related to the antecedents of corporate entrepreneurship. We standardized the terms these manuscripts use to ensure consistency. Second, we reached out to subject-matter experts and academics in the field of corporate entrepreneurship, requesting any in-progress or unpublished works that may be relevant to our meta-analysis. Third, we reviewed the reference lists of the articles we had retrieved to uncover additional relevant studies. We applied the same inclusion and exclusion criteria that we used for the published works to any source identified through these steps to determine their suitability for the meta-analysis. Finally, to ensure we included nascent scholarship, we ran specialized search algorithms on Google Scholar using the "cited by" and "related articles" features, focusing on work that had not been published in peer-reviewed journals but were cited by articles in these journals.

Our study employed the following key inclusion criteria. We focused on studies that use firm-level corporate entrepreneurship as their unit of analysis and excluded studies that focus on the individual/employee level (e.g., intrapreneurship). We also included only studies that report Pearson correlation coefficients between TMTs' attributes and corporate entrepreneurship or that provided sufficient statistical details to allow us to compute a correlation coefficient using the formulas Hunter and Schmidt (2011) provide. In addition, we selected studies that draw on the corporate entrepreneurship literature and are set in a corporate context, so we excluded studies on academic entrepreneurship, social entrepreneurship, and product innovation (when corporate entrepreneurship was not their main theoretical framework). Finally, although some scholars (e.g., Rensburg, 2015) consider entrepreneurial orientation a dimension of corporate entrepreneurship, we treated the two concepts separately, as entrepreneurial orientation encapsulates a firm's entrepreneurial inclination (Cruz & Nordqvist, 2012) and corporate entrepreneurship is concerned more with entrepreneurial activities themselves (Schindehutte et al., 2018; Thi & Trang, 2018).

We adhered to several guidelines to maintain a reliable level of independence among the correlations in our database (Aguinis et al., 2011). When a publication presents results from multiple independent samples, we treated each as a separate, independent sample (Geyskens et al., 2006). When multiple publications rely on identical or largely overlapping datasets, we treated them as a single study, entering the correlation between two identical variables into our database only once (Franke & Park, 2006; Geyskens et al., 2006). When a study provides multiple indicators of the same outcome variable (e.g., facets of TMTs' human capital like experience and

TABLE 1 Definition of TMT attributes and coding schemes.

TMT attributes	Definition	Coding scheme examples
TMT Diversity	The distribution of personal attributes among interdependent members of a work unit (Jackson et al., 2003, p. 802)	Diversity in education, tenure and functional background and experiences (Chen & Nadkarni, 2017; Hayton, 2005)
TMT Size	Number of members of the top management team members (Kirca et al., 2012)	TMT size (Heavey & Simsek, 2013)
Transformational Leadership	The ability of the leader to motivate and inspire followers to move beyond their immediate self-interests through his charisma and being a role model (Bass, 1999)	Transformational leadership (e.g., Chen et al., 2014)
TMT Tenure	Number of years within the firm/held a position as a member of TMT (Certo et al., 2006)	Company tenure (Olson et al., 2020), top management team tenure (Pan et al., 2021)
TMT General Human Capital	Skills and knowledge that individuals acquire through investments in schooling, on-the-job training, and other types of experience (Unger et al. 2011)	Education (Hayton 2005); Experience (Jahanshahi et al., 2018)
TMT Entrepreneurial Human Capital	Specific human capital related to entrepreneurship tasks (Unger et al. 2011)	Scanning, evaluation (Lee et al., 2016; Nkongolo-Bakenda et al., 2010); entrepreneurship education (Nuscheler et al., 2019 Entrepreneurial alertness knowledge (Simsek et al., 2009)

education), we averaged the effect sizes to account for statistical interdependence. When a study explores various outcome variables under corporate entrepreneurship (e.g., innovation, corporate venturing and/or strategic renewal), we entered the effect sizes separately into the database (Eisend, 2017).

Our search process produced data on 128 effects from 57 independent samples, spanning the period from 1996 to 2023. A list of these studies and their characteristics is available in the Online Appendix.

3.2 | Variable classification and coding procedures

To ensure accuracy and consistency in coding, we followed a manual coding process that outlines the information to be extracted from each study (Eisend, 2017; Lipsey & Wilson, 2001). The first two authors were responsible for the coding process, in which one author coded all the primary studies, while the other coded a randomly selected subset of effect sizes to ensure reliability (Borenstein et al., 2009). The intercoder reliability, measured through Cohen's kappa, was 0.96, indicating a high level of reliability (Valentine et al., 2010). We paid particular attention to the scales reported in primary studies to ensure that variables with conceptually similar constructs were not coded separately because of minor differences in labeling (Pigott, 2012).

3.3 | Dependent variable: Corporate entrepreneurship

While the literature conceptualizes firm-level entrepreneurial activities in various ways, we focus on corporate entrepreneurship because it captures a firm's actual entrepreneurial activities (Heavey et al., 2009). Following Zahra (1996a), who provides one of the measures of corporate entrepreneurship most frequently cited in our database, we assessed firms' corporate entrepreneurship based on three dimensions: innovation, corporate venturing, and strategic renewal. This approach aligns with prior meta-analyses in the context of corporate entrepreneurship, such as that by Bierwerth et al. (2015). We measured *innovation* using several scales, including the number of new products launched (Hayton, 2005), the number of patents (Rothaermel et al., 2006), and the amount of investment in cutting-edge research and development (R&D) (Yiu et al., 2007). We measured *strategic renewal* using scales like the percentage change in a firm's competitive strategies (Boeker, 1997), changes in structure and control systems (Gordon et al., 2000), and vertical integration patents (Rothaermel et al., 2006). We measured *corporate venturing* using scales that capture entrepreneurial ventures, such as when a firm enters a new industry (Hayton, 2005), enters an alliance with a new venture (Zahra, 2010), invests in a new venture (Zahra, 1995), or undertakes related and unrelated international acquisitions (Zahra & Hayton, 2008).

3.4 | TMTs' attributes

Most research on TMTs centers on individual executives (e.g., chief executive offers) and broader groups of executives with "overall responsibility for the organization" (Krause et al., 2022), such as TMTs. To align with this research landscape, we included both chief executive officers' (CEOs') and TMTs' characteristics in our operationalization of TMTs' attributes whenever possible (Wang et al., 2023). We included TMTs' attributes only when multiple studies offer at least five correlations with corporate entrepreneurship to ensure that our meta-analysis offers a meaningful investigation of their effects (Damanpour, 1991; Szymanski & Henard, 2001). Table 1 details the definitions, coding schemes, and examples of the key TMT attributes we included as antecedents to corporate entrepreneurship.

3.5 | Managerial discretion moderators

3.5.1 | Organization-level managerial discretion

We operationalized organizational managerial discretion level through firm size by classifying firms into small and large firms (Wang et al., 2019), defining small firms as having 500 or fewer employees and/or annual sales revenues that do not exceed $20 million (e.g., Zahra et al., 2000), and large firms as having more than 500 employees and/or annual sales revenues that exceed $20 million. When data on the number of employees or sales revenues was not available, we inferred firm size from the nature of the databases from which the samples were drawn, such as the Fortune 500 list. We coded small firms as "1" and large firms as "0." Following Jeong and Harrison (2017), we used the concept of organizational inertia as reflecting a firm's resistance to change, which can limit TMTs' influence on strategic decisions and overall organizational outcomes. Organizational inertia tends to be more pronounced in large firms than it is in small firms, as large firms tend to be entrenched in standardized routines and institutionalized mechanisms that impede adaptability and innovation (Finkelstein & Hambrick, 1990). A higher coding value in our model suggests that a firm exhibits less organizational inertia than one that has a low coding value and so has a high level of managerial discretion to implement strategic changes that foster entrepreneurial activities.

3.5.2 | National-level managerial discretion

We measured national managerial discretion using Crossland and Hambrick's (2007, 2011) well-established methodologies, which have seen subsequent application in other studies (e.g., Burkhard et al., 2023; Kraft, 2022; Wang et al., 2023). This measure incorporates the four informal institutional variables of uncertainty tolerance, power distance, individualism, and cultural tightness and the three formal institutional variables of ownership dispersion, legal origin, and employer flexibility.

Informal Institutions are based on societal norms and cultural factors in the national context that influence the acceptance of and ability to execute TMTs' decisions. We combined Hofstede's (2001, 2022) and Gelfand et al.'s (2011) institutional dimensions to define informal institutions as consisting of uncertainty tolerance, power distance, individualism, and cultural tightness. Cultures that score high in *uncertainty tolerance* tend to provide broad acceptance of unpredictable actions by TMTs, thereby offering TMTs significant managerial discretion. Cultures that score high in *power distance* demonstrate inherent respect and deference to authority, which can translate into less scrutiny of TMTs' decisions and enhanced managerial discretion. Cultures that emphasize *individualism* favor personal initiative and autonomy, which facilitates TMTs' unilateral decision-making. Finally, Gelfand et al.'s (2011) scores for *cultural tightness* (reversed) refer to the degree to which societal norms are enforced. "Loose" cultures, which are characterized by ambiguous and weakly enforced norms, offer TMTs more operational leeway than tight cultures do.

Formal Institutions include legally codified rules and regulations that directly affect organizational governance and managerial actions. *Ownership dispersion* and *legal origin* are dichotomous variables, coded 1 for common law countries and dispersed firm structures and 0 for civil law countries and concentrated firm structures. This measure reflects the legal frameworks that govern corporate behavior and managerial discretion (La Porta et al., 1999). The seventh institutional variable, *employer flexibility*, gauges the legal flexibility employers have in terms of labor relations and employment decisions (Botero et al., 2004).

Finally, we created a composite score of managerial discretion for each country of interest using the mean of each country's standardized scores for the seven institutional variables. A higher value indicates that the country's TMTs are less constrained by their environment, so they have higher managerial discretion.

3.6 | Control variables

Our methodological controls include the type of corporate entrepreneurship the study addresses, the study's publication year, and the journal's quality. Methodological moderators include the year of publication (dichotomized as pre-2010, which takes a value of 1, and 0 otherwise) and the journal's quality, which we rated based on the ranking system of the Association of Business Schools (Storey et al., 2016).

3.7 | Meta-analytic technique

The random-effects meta-analysis method was adopted for synthesizing effect size estimates from primary studies (Hunter & Schmidt, 2011; Schmidt et al., 2009). This approach is consistent with recent meta-analyses, where the random-effects model is preferred (Franke & Park, 2006; Rodriguez Cano et al., 2004; Storey et al., 2016). The random-effects model operates on the premise that observed variability arises from both between-study variance and within-study variance (also known as sampling error variance). Compared to the fixed-effects model, which attributes variability solely to sampling error, the random-effects model offers a more comprehensive view and is less susceptible to Type I errors (Hunter & Schmidt, 2011).

Using reliability coefficients from the original study, we corrected each effect size (correlation) for measurement errors in both variables. We used the mean reliabilities from other relevant studies for studies that lack reliability coefficients (Cooper, 2017; Eisend, 2017) and obtained the true score correlation ($\overline{\rho}$) by computing the weighted average of the reliability-corrected correlations. We calculated the 95% confidence interval and tested the homogeneity of the population correlations using the *Q*-statistic, where a significant *Q*-value indicates that variances in the studies' effect sizes studies might be explained through moderators (Hunter & Schmidt, 2011). We employed Comprehensive Meta-Analysis software, which incorporates Hunter and Schmidt's (2011) artifact-distribution formulas for artifact control (Borenstein et al., 2009).

The I^2 statistic estimates the proportion of variance that is due to heterogeneity while avoiding the sample size sensitivity that can bias the Q-statistic (Borenstein et al., 2009). The I^2 ranges from 0% to 100%, with higher values indicating true score variance in effect sizes relative to sampling error variance; if I^2 is low, then the sample shows no heterogeneity, and nothing is worth exploring in the subgroup or moderator analysis. *Tau* is the measure of the dispersion of true effect sizes between studies in terms of the scale of the effect size. We conducted file-drawer analyses to assess the susceptibility of the findings to availability bias—that is, the tendency of published studies to report greater effect sizes than unpublished ones do—which may lead to inflated meta-analytic estimates (Koricheva et al., 2013). Therefore, we calculated the *fail-safe* number to determine the number of unpublished studies that would be required to change the effect size (Rosenthal, 1979).

To complement the findings from the bivariate analysis and substantiate the relationships we identified, we used meta-analytical structural equation modeling and meta-analytical regression, which allowed for a more robust examination of the intricate TMT attributes and corporate entrepreneurship relationships (e.g., Chliova et al., 2015; Kirca et al., 2005; Unger et al., 2011).

3.8 | Meta-analytic structural equation modeling

We supplemented the bivariate meta-analysis with meta-analytic structural equation modeling, one of the advantages of which is its comprehensive framework, which allows for a nuanced and in-depth examination of all variables in a single model (Kirca et al., 2012). Unlike the bivariate approach, which focuses on determining the strength of relationships, meta-analytic structural equation modeling considers a wide spectrum of potential antecedents and control variables, as controls like the firm's size and age might affect the strength of the relationships. Through this exhaustive approach, meta-analytic structural equation modeling paves the way to discerning the singular impact of a particular relationship, such as that between TMTs' entrepreneurial human capital and corporate entrepreneurship, after accounting for other key influences. In essence, it provides a panoramic view, thus ensuring that the effect size derived reflects the net influence, adjusted for other potential antecedents of corporate entrepreneurship.

We conducted the meta-analytic structural equation modeling in two stages (Cheung & Chan, 2005). In the first stage, we used meta-analytic techniques to create a pooled correlation matrix, which serves as the input for the second stage, where the pooled correlation matrix is analyzed using path analysis (e.g., Viswesvaran & Ones, 1995). In the second stage, we tested the direct effects of TMTs' attributes (H1 to H6) on corporate entrepreneurship, which involved creating a pooled correlation matrix that included the pairwise relationships among the variables under study. We conducted meta-analytic structural equation modeling on this pooled correlation matrix using AMOS software (Arbuckle &

Wothke, 1999), which allowed us to test the direct relationships between TMT attributes and corporate entrepreneurship across multiple studies.

3.9 | Meta-analytical regression analysis

To test the moderating hypotheses (H7 and H8), we employed meta-analytical regression analysis, that uses weighted least squares to model the previously unexplained variance in effect sizes (Lipsey & Wilson, 2001). In addition to our key organization-level and national-level explanatory variables that capture the strength of managerial discretion, we included four control variables in our meta-regressions to account for the primary studies' characteristics: a dummy variable denoting the publication period (pre-2010 or not), each publication's ranking provided by the Association of Business Schools to account for differences in journal quality (Storey et al., 2016), a dummy variable indicating whether a study used panel data (reference group) or cross-sectional data (Burkhard et al., 2023), and a categorical variable (strategic renewal, innovation, venturing, and overall corporate entrepreneurship) that controlled for differences in the studies' operationalizations of corporate entrepreneurship. We employed a random-effects model, through Comprehensive Meta-Analysis software (Borenstein et al., 2009). To clarify the moderating role of contextual factors hypothesized in H7 and H8, we complemented the main regression with another set of meta-regressions for each relationship between TMT attributes and corporate entrepreneurship. Following Hedges and Olkin's (2014) recommendation, we conducted meta-regression analyses only when there were at least 10 effect sizes.

4 | RESULTS

4.1 | Summary of bivariate analysis results

Table 2 displays the main effects results for TMTs' attributes and corporate entrepreneurship. To interpret the magnitude of the effect sizes, we followed Cohen's (1988) guidelines, which categorize correlations as weak (around 0.10), moderate (around 0.30), and strong (approaching 0.50). Weak correlations, despite being statistically significant, are considered to have only a modest impact on corporate entrepreneurship, moderate correlations suggest a tangible but not overwhelming influence, and strong correlations indicate key drivers with substantial direct impact on corporate entrepreneurship. In terms of publication bias, large fail-safe *k* values indicate that the meta-analytic effect sizes are robust in showing resistance to potential biases introduced by unpublished null results.

Our findings provide a nuanced explanation of the complex relationship between TMTs' attributes and

TABLE 2 Bivariate analysis of TMT attributes and corporate entrepreneurship relationships.

Construct	*k*	*N*	Min	Max	$\bar{r}$	$\bar{\rho}$	SE	95% CI	I^2	*z*	TU^2	*Q*	fk
TMT attributes													
TMT Diversity	25	4162	−0.14	0.38	0.06	0.08**	0.03	0.01 to 0.14	77.81	2.28	0.02	109.63***	152
TMT Size	23	24,371	−0.19	0.46	0.14	0.18***	0.02	0.12 to 0.24	92.36	6.16	0.01	56.44***	5876
Transformational Leadership	13	3282	−0.03	0.67	0.33	0.44***	0.06	0.30 to 0.56	95.25	5.74	0.08	253.13***	3114
TMT Tenure	18	4,546,866	−0.23	0.18	0.01	0.01	0.00	−0.05 to 0.03	68.70	0.35	0.01	54.32***	1486
TMT Human Capital (Overall)	49	19,374	−0.15	0.72	0.18	0.29***	0.01	0.14 to 0.38	96.67	6.10	0.11	363.40***	6224
General Human Capital	29	15,497	−0.15	0.30	0.04	0.05**	0.01	0.03 to 0.09	80.75	3.80	0.01	84.14**	134
Entrepreneurial Human Capital	20	3877	−0.15	0.72	0.38	0.53***	0.06	0.28 to 0.64	95.67	7.09	0.13	438.86***	6090
Firm's Characteristics													
Firm Size	44	26,592	−0.56	0.35	0.15	0.19***	0.02	0.10 to 0.19	90.95	8.12	0.01	485.92***	4517
Firm Age	35	25,563	−0.20	0.59	0.02	0.03	0.01	−0.01 to 0.08	93.64	0.37	0.02	264.52***	3057

Abbreviations: $\bar{r}$, sample weighted average correlation; $\bar{\rho}$, estimated population correlation corrected for unreliability; CI, 95% confidence interval; fk, fail-safe-k; I^2, *I* squared; *k*, number of correlations analyzed; *N*, combined sample size; *Q*, heterogeneity; SE, standard error; TU^2, *Tau* squared; *Z*, *Z*-test for significance of effect size.

**$p < 0.01$; ***$p < 0.001$.

corporate entrepreneurship. Two TMT attributes stand out as major influencers: entrepreneurial human capital and transformational leadership. Entrepreneurial human capital shows a strong and statistically significant correlation with corporate entrepreneurship ($\overline{\rho} = 0.53$, $p < 0.001$), which suggests that the TMT's skills and experiences related to entrepreneurship play a pivotal role in shaping corporate entrepreneurship activities. Transformational leadership is another key driver, with a significant and robust relationship to corporate entrepreneurship ($\overline{\rho} = 0.44$, $p < 0.001$) which indicates that the leadership style the TMT adopts can substantially influence the firm's entrepreneurial endeavors. By contrast, the TMT's diversity ($\overline{\rho} = 0.08$, $p < 0.01$) and size ($\overline{\rho} = 0.18$, $p < 0.001$) have weaker influences. Firms' characteristics like firm size ($\overline{\rho} = 0.19$, $p < 0.001$), while relevant, have a more subdued impact on corporate entrepreneurship than firm age ($\overline{\rho} = 0.03$, *n.s.*). Finally, TMT tenure did not show statistically significant correlations with corporate entrepreneurship ($\overline{\rho} = 0.01$, *n.s.*).

4.2 | Summary of the main effects of TMTs' attributes on corporate entrepreneurship with meta-analytic structural equation modeling

Our study leveraged meta-analytic structural equation modeling in an effort to delineate the influence of TMTs' attributes on corporate entrepreneurship and assess the direct effects posited in hypotheses H1–H6. Using a meta-analytic correlation matrix (provided in the Online Appendix), we constructed a structural equation model with a harmonic mean sample size of 1170 to investigate these effects. The path coefficients reported in Table 3 reveal significant and robust relationships between several TMT attributes and corporate entrepreneurship. Our model's fit indices indicate an adequate fit, supporting the structural validity of our analysis ($\chi^2(1) = 3.14$, $p = 0.09$; RMSEA = 0.10; AGFI = 0.95; NFI = 0.97; RMSR = 0.02).

TABLE 3 Path model results from meta-analytic structural equation modeling.

Variable	Model 1
TMT Diversity	0.058 (0.03)*
TMT Size	0.145 (0.03)***
Transformational Leadership	0.257 (0.03)***
TMT Tenure	−0.017 (0.03)
TMT General Human Capital	0.051 (0.03)
TMT Entrepreneurial Human Capital	0.337 (0.03)***
Firm Size	0.063 (0.03)*
Firm Age	−0.002 (0.03)

Note: Standardized path coefficients are presented with standard errors in parentheses.
*$p < 0.05$; ***$p < 0.001$.

Our results, which align closely with our earlier bivariate analysis, show that the TMT's entrepreneurial human capital ($\beta = 0.337$, $p < 0.001$) and transformational leadership ($\beta = 0.257$, $p < 0.001$) in particular have strong, positive relationships with corporate entrepreneurship. This finding aligns with the upper echelons theory's suggestion that TMTs' entrepreneurial capabilities and leadership styles are drivers of corporate entrepreneurial activities.

The analysis also revealed that TMTs' diversity ($\beta = 0.058$, $p < 0.05$) and size ($\beta = 0.145$, $p < 0.001$) relate, albeit more modestly, to corporate entrepreneurship. Other TMT attributes, such as tenure and general human capital, had no significant impact on corporate entrepreneurship when all variables were considered concurrently, even after controlling for firm size and firm age.

In addition, our findings indicate that larger firms are more likely to engage in corporate entrepreneurship activities ($\beta = 0.063$, $p < 0.05$) than smaller firms are. However, firm age, which was not significant in the bivariate analysis, is not significantly related to corporate entrepreneurship. The insights gleaned from the meta-analytic structural equation modeling augment the foundational understanding provided by the bivariate analyses by offering a more nuanced and robust perspective on the complex interplay of the TMTs' attributes that influence corporate entrepreneurship.

4.3 | The moderating role of organization- and national-level managerial discretion

The meta-analytic regression results presented in Table 4 examine the moderating effects of organization- and national-level managerial discretion on the relationship between TMTs' attributes and corporate entrepreneurship. The model, which includes key managerial discretion contextual variables along with control variables, achieves a satisfactory fit, with an R^2 of 0.32, indicating that 32% of the variance in the relationship is explained by our model.

Our analysis tested Hypothesis 7, which proposed that organization-level managerial discretion moderates the relationship between TMTs' attributes and corporate entrepreneurship, with a more pronounced impact in

TABLE 4 Meta-analytic regression of contextual moderators on the overall relationship between TMT attributes and CE.

Variable/Model	Model 1	Model 2	Model 3
Year (Before 2010 = 1)	0.038 (0.06)	0.142 (0.06)*	0.142 (0.06)*
Journal Quality (Leading = 1)	−0.089 (0.05)†	−0.088 (0.05)*	−0.091 (0.04)*
CE types	−0.012 (0.02)	−0.015 (0.02)	−0.015 (0.02)
Data type (Panel = 1)	−0.177 (0.05)***	−0.156 (0.05)**	−0.156 (0.05)**
Organization-level managerial discretion		0.051 (0.04)	0.051 (0.04)
National-level managerial discretion			−0.067 (0.03)*
K	118	118	118
Q (model)	20.23***	19.61***	39.61***
R^2	0.13	0.20	0.32
Tau^2	0.06	0.05	0.04

Note: Standardized regression coefficients are presented with standard errors in parentheses.
Abbreviations: *K*, the number of studies; *Q*, the homogeneity statistic; R^2, the proportion of between-study variance explained by moderator(s); Tau^2, random-effects between study variance component.
†$p < 0.10$;
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

smaller firms, which tend to have high levels of managerial discretion. However, the results did not support this hypothesis. Contrary to our expectations, the data indicated that organization-level managerial discretion had no significant moderating effect on the relationship between TMT attributes and corporate entrepreneurship ($\beta = 0.051$, *n.s.*).

However, the results of testing Hypothesis 8 revealed a significant and negative moderating effect of national-level managerial discretion on the relationship between TMTs' attributes and corporate entrepreneurship ($\beta = -0.067$, $p < 0.05$). Thus, these results support *alternative* Hypothesis 8 and but do not support Hypotheses 7 or 8.

To delve into these relationships, we conducted additional meta-regression analyses that focused on a single TMT attribute, with results summarized in Table 5. These analyses consistently supported the findings from Table 4, showing no support for Hypothesis 7 across all of the TMT attributes, we examined and no moderating effect of organization-level managerial discretion (firm size) on the relationship between TMTs' attributes and corporate entrepreneurship. For TMT general human capital, there was evidence supporting Hypothesis 7, indicating a moderating effect of organization-level managerial discretion on the relationship between TMT attributes and corporate entrepreneurship.

For Hypothesis 8, further analyses confirmed that national-level managerial discretion negatively moderates the positive relationships between four TMT attributes and corporate entrepreneurship: TMT size ($\beta = -0.042$, $p < 0.05$), TMT tenure ($\beta = -0.087$, $p < 0.05$), and both general human capital ($\beta = -0.041$, $p < 0.05$), and entrepreneurial human capital ($\beta = -0.210$, $p < 0.1$).

Finally, in analyzing the results presented in Table 4, we find interesting results for the variables. First, the dummy variable that represents the studies in our sample that were published before 2010 showed significant results ($\beta = 0.142$, $p < 0.05$), suggesting that the temporal context played a role in shaping the research outcomes, reflecting shifts in the corporate entrepreneurship research over time. Second, journal quality exhibited a negative correlation with corporate entrepreneurship outcomes ($\beta = -0.091$, $p < 0.05$), which highlights the influence of the editorial standards and research methodologies that vary across publication outlets. This finding also suggests that studies that are published in non-leading journals report higher effect sizes for corporate entrepreneurship, possibly indicating a publication bias or differences in these outlets' methodological rigor. The finding underscores the importance of considering the source of research data when interpreting results, particularly in meta-analyses, where data synthesis spans a broad range of journals. Third, the analysis revealed that the relationship between TMTs' attributes and corporate entrepreneurship is weaker in panel studies than it is in studies that use other research designs ($\beta = -0.156$, $p < 0.01$), perhaps because of the longitudinal nature of panel studies, which may capture nuanced temporal dynamics that cross-sectional designs overlook.

How corporate entrepreneurship was operationalized was not a significant factor in our model ($\beta = 0.051$, *n.s.*), so how the studies in our sample measure corporate entrepreneurship does not have a significant impact on the relationship between TMTs' attributes and corporate

TABLE 5 Meta-analytic regression of contextual moderators on TMT attributes and corporate entrepreneurship relationships.

Moderator	TMT diversity—CE	TMT size—CE	Transformational leadership—CE	TMT tenure—CE	Human capital (overall)—CE	TMT general human capital	TMT entrepreneurial human capital—CE
Organizational-level managerial discretion	−0.025 (0.06)	−0.046 (0.06)	−0.145 (0.21)	0.063 (0.05)	−0.025 (0.07)	−0.08 (0.02)**	−0.106 (0.11)
National-level managerial discretion	−0.040 (0.09)	−0.042 (0.02)*	0.050 (0.06)	−0.087 (0.04)*	−0.130 (0.07)*	−0.041 (0.02)**	−0.210 (0.11)†
k	21	23	13	18	42	26	20
Q model	0.28	6.82*	0.65	2.89†	5.55*	15.35***	2.79
R^2	0.00	0.08	0.03	0.02	0.33	0.90	0.01
Tau^2	0.012	0.007	0.03	0.00	0.06	0.003	0.05

Note: Standardized regression coefficients are presented with standard errors in parentheses.
Abbreviations: *K*, the number of studies; *Q*, the homogeneity statistic; R^2, the proportion of between-study variance explained by moderator(s); Tau^2, random-effects between study variance component.
†$p < 0.1$;
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

entrepreneurship. The uniformity in effect across the operational definitions of corporate entrepreneurship underscores the robustness of TMT attributes' influence on corporate entrepreneurship, irrespective of how it is measured.

5 | DISCUSSION

In contributing to the ongoing debate on the impact of TMTs' attributes on corporate entrepreneurship (e.g., Schindehutte et al., 2018; Urbano et al., 2022), our meta-analysis has useful implications for TMT research. While the TMT's role in driving corporate entrepreneurship is a focal point in academia, a comprehensive understanding of how TMTs' attributes affect corporate entrepreneurship remains elusive. Our study helps to fill this gap by exploring the influence of TMTs' diversity, size, use of transformational leadership, tenure, general human capital, and entrepreneurial human capital on corporate entrepreneurship. In doing so, our study enriches the dialogue initiated by Lieberson and O'Connor (1972) concerning the TMT's influence on organizational outcomes, especially under varying levels of managerial discretion (Hambrick & Mason, 1984).

Our results challenge the prevailing wisdom by suggesting that a one-size-fits-all approach to assembling TMTs may not be as effective as once thought. In doing so, we respond to calls to reintroduce context into TMT research (Hambrick, 2007; Yamak et al., 2014). We found that the effects of TMTs' attributes depend on context, particularly the organization- and national-level context, and its effect on managerial discretion. Our findings also suggest that firms cannot blindly replicate the composition of successful TMTs that operate in other national contexts and expect the same outcomes, as the contextual effect could be attributed to variations in the informal and formal institutional environments that substantially shape countries' views of an acceptable level of managerial discretion.

5.1 | Theoretical implications for upper echelons theory

The findings from this study contribute to upper echelons theory research, which suggests that organizational outcomes are largely reflective of TMTs' attributes. Our research extends upper echelons theory by providing a nuanced empirical examination of how certain of TMTs' attributes influence corporate entrepreneurship, an area that is not otherwise comprehensively explored. Our findings contribute to the literature in four primary ways.

First, our study enriches the strategic management and innovation management literatures' discussions that are based on meta-analytical evidence regarding the impacts of TMTs' attributes on a variety of organizational outcomes, such as financial performance (Burkhard et al., 2023; Certo et al., 2006; Wang et al., 2016; Zaandam et al., 2021), corporate social responsibility (Wang et al., 2023), innovation (Kraft, 2022), and multinationality (Kirca et al., 2012). Building on this established stream of meta-analytical evidence that underlies upper echelons theory, our study contributes by demonstrating

empirically how TMTs' attributes can foster corporate entrepreneurship, an underexplored area in this broad field of innovation management and strategic management. By highlighting the pivotal role of TMTs' attributes in corporate entrepreneurship, our study fills a significant gap in strategic leadership research and helps to explain how leadership dynamics influence not just typical firm performance metrics but also corporate entrepreneurship (Busenbark et al., 2016; Neely et al., 2020).

Second, our study offers the first meta-analysis that investigates the attributes of TMTs that drive corporate entrepreneurship empirically. Our research extends the corporate entrepreneurship literature's attempts to consolidate TMTs' attributes through qualitative reviews (e.g., Corbett et al., 2013; Phan et al., 2009; Sakhdari, 2016; Schindehutte et al., 2018; Urbano et al., 2022) by reconciling the mixed findings that have characterized previous research and offering a more refined and precise description of how TMTs' attributes influence corporate entrepreneurship. Conducting this meta-analysis enabled us to determine the true magnitude and direction of relationships between key TMT attributes and corporate entrepreneurship. This research helps to resolve ambiguities and provides a clearer direction for both future academic research and practice by defining the strength and significance of TMTs' attributes in enhancing corporate entrepreneurship.

In adopting Aguinis et al.'s (2011) recommendation to juxtapose meta-analytic findings with previously published meta-analyses, we contextualize the relative strength and implications of our findings. This approach illuminates our findings on the impact of TMTs' attributes on corporate entrepreneurship compared to their impact on other organizational outcomes, such as financial performance and non-financial performance (e.g., corporate social responsibility). We discuss where we found some differences and similarities with other meta-analytical evidence on TMTs' attributes.

Third, our study reveals TMT attributes that predict corporate entrepreneurship that differ from those that other meta-analyses link to organizational outcomes (e.g., financial outcomes, corporate social responsibility outcomes, multi-nationality outcomes). These differences illustrate the contextual specificity of TMTs' attributes in the realm of corporate entrepreneurship. Our study found that TMT members' tenure does not significantly influence corporate entrepreneurship, whereas other meta-analytical studies show that it negatively correlates with corporate social responsibility (Wang et al., 2023), positively with financial performance (Wang et al., 2016), and not at all with multi-nationality (Kirca et al., 2012). This difference could suggest that the proactivity and risk-taking that is required for corporate entrepreneurship may not align with the stability and consistency that is often associated with longer tenures, which may both benefit financial performance and have adverse effects on corporate social responsibility but not necessarily corporate entrepreneurship.

Our results indicate that TMTs' general human capital does not have a significant impact on corporate entrepreneurship (when analyzed alongside TMTs' entrepreneurial human capital using meta-analytic structural equation modeling). This finding diverges from Wang et al. (2016), who find that general education has a positive influence on firms' strategic actions (e.g., strategic scope, risk, and change). This difference suggests that certain entrepreneurial competencies are more useful in fostering corporate entrepreneurship than the TMT's general educational background and underscores the need for a more nuanced approach to selecting TMT members when a firm seeks entrepreneurial outcomes. Contrary to Certo et al. (2006), whose findings indicate a negative relationship between the TMT's size and the firm's financial performance, and Kirca et al. (2012), who conclude no relationship between the TMT's size and multi-nationality, our analysis reveals that the TMT's size has a positive impact on corporate entrepreneurship. This result could suggest that large TMTs, which may offer a broader range of skills and more comprehensive managerial capacities than small firms do, are better equipped to drive corporate entrepreneurship. Overall, these differences highlight the need for a more nuanced understanding of how TMTs' attributes that are grounded in upper echelons theory influence various dimensions of organizational outcomes.

Fourth, our study reveals relationships between TMTs' attributes and corporate entrepreneurship that resemble those that other meta-analyses find, thereby substantiating and expanding upper echelons theory's scope in the strategic management and innovation management literature. For instance, among the most influential antecedents of corporate entrepreneurship is TMT members' entrepreneurial human capital. This finding highlights that experiences in entrepreneurial ventures, a willingness to take risks, and an aptitude for innovative thinking are not just beneficial but could be critical for established firms that seek to be more entrepreneurial. While Unger et al. (2011) find a modest effect of task-related human capital on entrepreneurship (effect size = 0.11), our study reveals an effect size that is almost five times larger (effect size = 0.53). Moreover, Wang et al. (2016) meta-analysis shows that TMT members' task-related experience is positively related to their firms' strategic actions (e.g., strategic scope, risk, and change) but that TMT members' general experience is only moderately to negatively related to these actions. This finding

shows that TMTs' entrepreneurial (or task-related) human capital is far more valuable to established firms than it is to individual entrepreneurs.

Our results are consistent with other meta-analyses in the strategic leadership field that find that TMTs' transformational leadership significantly contributes to their firms' innovativeness (Lee et al., 2020; Watts et al., 2020). Transformational leaders, known for their ability to inspire and intellectually stimulate employees and to foster an inclusive culture, are pivotal in driving corporate entrepreneurship. This leadership style catalyzes innovation by empowering employees, encouraging risk-taking, and nurturing a forward-thinking organizational ethos. Our results resonate with the broader literature that connects transformational leadership with increasing firms' entrepreneurial output, reinforcing the value of such leadership qualities in achieving strategic entrepreneurial outcomes.

The positive associations of TMT size and diversity with corporate entrepreneurship that our study finds echo the findings from other meta-analyses (Certo et al., 2006; Hosseini, 2019) that report that larger and more diverse TMTs are likely to bring a wide range of the perspectives, skills, and experiences that can be useful in identifying and exploiting new opportunities and driving corporate entrepreneurship.

5.2 | Implications for the managerial discretion perspective

Our study's findings have significant implications for the discourse surrounding TMTs' power (Ozgen et al., 2024; Wangrow et al., 2015) in the organization- and national-level contexts. Among these implications is that our results complement research that focuses on national-level and organization-level sources of managerial discretion (Crossland & Hambrick, 2011) while exploring the TMT's influence on a variety of organizational outcomes.

Another implication for the managerial discretion perspective is related to our finding that the effects of the organization-level managerial discretion moderator are weak and nonsignificant. Building on Jeong and Harrison (2017) and Burkhard et al. (2023), we designed this measure to explain the amount of TMTs' discretion that stems from firm size, with high levels of managerial discretion expected in small firms and low levels in large firms. However, the weak effects our analysis revealed suggest that TMTs' attributes have a similar impact on corporate entrepreneurship regardless of firm size (as the source of managerial discretion). This finding indicates that the influence of TMTs' attributes on corporate entrepreneurship may be robust across organizational contexts, challenging the view that firm size alters TMTs' strategic influence.

In line with Crossland and Hambrick (2011), who argue that the degree of national managerial discretion afforded to TMTs can vary based on institutional settings, our results also confirm that a low level of national managerial discretion is an important contextual variable in considering corporate entrepreneurship. This finding emphasizes that managerial discretion significantly influences the relationship between TMTs' attributes and corporate entrepreneurship. However, national managerial discretion is unlikely to be the only contextual factor, so future research could explore additional institutional variables that may affect this relationship.

The literature's mixed findings regarding the role of national-level managerial discretion as a moderator between TMTs' attributes and organizational outcomes underscore the complexity of this relationship. Studies like Burkhard et al. (2023), Kraft (2022), and Wang et al. (2023) provide insights into these mixed findings by considering the impacts of national managerial discretion and the importance of certain of TMTs' attributes and behaviors. For instance, Burkhard et al. (2023) observe that high levels of managerial discretion positively moderate the relationship between overconfident TMT members and strategic risk-taking. This observation suggests that, in environments that feature large amounts of managerial freedom, bold decisions that are driven by overconfidence can lead to the aggressive risk-taking that can translate into strategic gains, although it depends on the context. In contrast, Kraft (2022) finds that narcissistic CEOs have a negative effect on firm performance when the level of managerial discretion is high. This finding points to the risks associated with high levels of managerial discretion, where the self-serving and potentially harmful behaviors that are typical of narcissistic leaders can undermine organizational objectives and performance. Wang et al. (2023) report that national-level managerial discretion does not significantly moderate the relationship between TMT members' attributes and corporate social responsibility. This finding could indicate that the factors that influence corporate social responsibility are less sensitive to variations in managerial discretion or that other contextual or organizational factors play a more decisive role in shaping the outcomes of corporate social responsibility.

These mixed results call for a more nuanced and attribute-specific approach to studying managerial discretion. The literature indicates that managerial behaviors and traits like overconfidence and narcissism interact with the level of managerial discretion in distinct ways. For instance, when the level of managerial discretion is high, overconfidence might lead to beneficial risk-taking

while narcissism might have detrimental effects on risk-taking.

Despite these complexities, our study is the first large-scale empirical research to delve into the influence of the national context on corporate entrepreneurship from the perspective of managerial discretion. The study adds a new layer to studies that explore the national-level context in relation to corporate entrepreneurship (Han & Park, 2017; Vanacker et al., 2021). Our study addresses multiple calls for exploring the effect of national-level conditions on corporate entrepreneurship (e.g., Urbano et al., 2022) empirically in light of the complexities of conducting cross-country research. The scarcity of cross-country evidence in corporate entrepreneurship may stem from the difficulties in conducting international research in this domain, particularly since most studies collect primary data (Maula et al., 2009).

5.3 | Future research directions

Our proposed directions for future research build on our understanding of the impact of TMTs' attributes on corporate entrepreneurship and capitalize on recent advancements in the literature. Since our study provides a nuanced empirical examination of the TMT attributes that influence corporate entrepreneurship, future research could expand on this exploration by investigating the role of TMT members' cognitive bases, values, and perceptions that are not covered in this study in shaping their perceptions, priorities, and behaviors (Hambrick & Mason, 1984). Integrating conceptual models from related fields, such as sensemaking and leadership, could advance upper echelons theory research. These models advance the understanding of TMT members' cognition and its impact on leadership behavior (Heavey & Simsek, 2017; Maitlis & Christianson, 2014). For instance, investigating how TMT members' cognition and emotion influence processes and initiatives related to corporate entrepreneurship, which has been a significant area of focus in micro leadership research (Dinh et al., 2014), could provide a deeper and more comprehensive understanding of how TMT members' attributes drive corporate entrepreneurship.

Another area for future research involves examining the types of TMTs' human capital that are particularly relevant to corporate entrepreneurship. While research extensively examines the impact of TMTs' human capital (e.g., education, experiences, values) on corporate entrepreneurship, other nuances can also be explored. The entrepreneurship field recognizes that human capital's effectiveness is context-dependent (Canavati et al., 2021; Unger et al., 2011), so future studies could focus on the types of human capital, such as certain tasks, geographic locations, or types of corporate entrepreneurship, that are most closely matched to the context of corporate entrepreneurship. This approach may yield more precise insights into how TMTs' human capital influences corporate entrepreneurship in various settings.

In addition, most research on TMTs' diversity examines the independent effects of demographic diversity, such as functional and educational heterogeneity. Future research can draw on the demographic faultline theory (Lau & Murnighan, 1998), which highlights how demographic characteristics interact to form subgroups in TMTs (e.g., Ndofor et al., 2015; Richard et al., 2019), as this perspective has been largely overlooked in corporate entrepreneurship research. Integrating demographic faultline theory into corporate entrepreneurship studies could provide insights into how the interplay of various TMT attributes affects entrepreneurial outcomes. Another related area for future research is exploration of the roles that TMTs' diversity-related attributes beyond nationality play (Boone et al., 2019), such as culture, language, and religion. Future research could benefit from examining these less-studied dimensions of diversity to provide a more comprehensive understanding of how diverse attributes influence TMTs' dynamics and corporate entrepreneurship in international settings.

The general TMT literature highlights the dual and potentially conflicting impacts of TMTs' size and diversity on firm performance. The *information processing* perspective posits that larger and more diverse TMTs enhance a firm's information-processing ability, thereby improving firm performance by harnessing a wide range of perspectives and expertise (Certo et al., 2006). In contrast, the *similarity-attraction* perspective argues that increased TMT size and diversity could have a negative impact on firm performance because of difficulties in communication and increased conflict, which can slow decision-making and the ability to reach consensus (Homberg & Bui, 2013). These opposing viewpoints present a compelling area for empirical investigation, particularly in the context of corporate entrepreneurship, that develops integrative models that combine elements from upper echelons theory and the similarity-attraction and information-processing perspectives.

Another promising direction for research involves examining the interactions among CEOs, TMTs, and boards of directors, particularly in their roles in setting agendas for exploiting opportunities (Bromiley & Rau, 2016). Despite some initial explorations (Chen et al., 2022), significant gaps remain in understanding these interactions in the context of corporate entrepreneurship. Future studies could develop comprehensive theories that integrate the roles of all strategic leaders to

explain how these interactions foster corporate entrepreneurship.

In addressing the relationship between TMTs' attributes and corporate entrepreneurship, research should explore a range of attributes simultaneously, rather than one or another in isolation. This approach would allow researchers to explain how combinations of attributes influence corporate entrepreneurship, leading to more tailored and effective management practices.

In terms of boundary conditions of the relationships between TMTs' attributes and corporate entrepreneurship, we considered organization-level and national-level moderators, building on a managerial discretion perspective (Crossland & Hambrick, 2007, 2011). While our study considers organization-level managerial discretion as a moderator of the relationship between TMTs' attributes and corporate entrepreneurship, this exploration could be expanded to other sources of managerial discretion that Ozgen et al. (2024) highlight, such as structural power (e.g., formal position), ownership power (e.g., stockholdings), expert power (e.g., skills and knowledge), and prestige power (e.g., status and reputation). These moderators could influence how TMTs' attributes influence corporate entrepreneurship. Exploring them could help to clarify the conditions under which TMTs' attributes are most likely to affect corporate entrepreneurship; doing so may require integrating external perspectives with upper-echelons theory.

Finally, in line with research on TMTs and managerial discretion (Burkhard et al., 2023; Wang et al., 2023), we operationalized the national-level context as a moderator using composite scores of formal and informal institutional dimensions to capture the strength of national-level managerial discretion. Future research should extend this inquiry to other national-level institutions that could play roles in shaping managerial discretion.

5.4 | Practical implications

The practical implications we derived from our meta-analysis are both significant and actionable. The attributes that have larger effect sizes—because effect size is "what science is about" (Cohen, 1988, p. 532)—and are significant in meta-analytic structural equation modeling are the TMT's entrepreneurial human capital, size, and diversity and its use of transformational leadership. Organizations and strategic leaders should prioritize recruiting and developing TMTs that have these attributes to enhance their entrepreneurial capabilities. For example, selecting TMT members who have strong entrepreneurial backgrounds, proven track records in innovation, and the ability to inspire and lead diverse teams can boost corporate entrepreneurship.

The moderating effects of national-level managerial discretion also have implications for strategic leaders, who should consider the broader institutional context when determining the optimal composition of TMTs. Countries' levels of managerial discretion vary, but they can influence TMT attributes' ability to drive corporate entrepreneurship.

For multi-national corporations that operate across diverse geographical landscapes, our findings underscore the need to tailor their TMT compositions to fit the national institutional context. For example, the TMT of a new subsidiary or new operational unit (e.g., R&D) in a country that features a low level of national managerial discretion should recognize local cultural and regulatory nuances and have experience in engaging employees and fostering consensus-building and collective decision-making. This approach helps to ensure alignment with and buy-in from all organizational levels, which is essential in low-discretion contexts where collaboration and adherence to local practices are valued. A related implication is to ensure that entrepreneurial initiatives are executed with a high degree of discipline and adherence to plans, which can enhance efficiency and effectiveness in implementing new ideas.

For their part, policymakers should recognize the role of national-level managerial discretion in shaping the effectiveness of TMTs' attributes. Policies that enhance or constrain managerial discretion can have significant impacts on firms' entrepreneurial outcomes. Therefore, creating a regulatory environment that balances the need for managerial autonomy with appropriate oversight can foster corporate entrepreneurship at the national level.

5.5 | Limitations

Although our study offers valuable insights into the key drivers of corporate entrepreneurship located at the upper echelons of the firm and their boundary conditions, several limitations must be acknowledged. Among them, we restricted the TMT attributes that influence corporate entrepreneurship that were included in the meta-analysis to attributes that had sufficient data available in the original studies (Hunter & Schmidt, 2011). We could not examine some TMT attributes because of data limitations. In addition, the study's cross-sectional design limited our ability to establish causal relationships. To strengthen causal inferences, future research could consider incorporating time lags, using longitudinal designs, and applying endogeneity corrections. Another limitation is the study's heavy reliance on the data reported in

primary studies, which necessitated making certain methodological choices. Although we followed Aguinis et al.'s (2011) guidelines, we were still constrained in our options in coding study-level characteristics. For example, most of the primary studies in our sample did not report reliability estimates.

Continuing with limitations, future researchers could sample small and medium-sized enterprises in various contexts, including family firms, and replicate our findings as more studies become available. Another limitation is that our meta-analysis exhibited significant heterogeneity, suggesting the presence of moderating variables that were not accounted for. Future research could explore organization- and national-level contexts as moderators in the relationship between TMTs' attributes and corporate entrepreneurship. In addition, we used a limited number of country groups in our analysis of national managerial discretion as a moderator, so caution should be used in interpreting our results.

Finally, in our assessment of national-level managerial discretion, we followed Crossland and Hambrick (2011) in weighting seven formal and informal institutional dimensions equally. However, these dimensions may not be equally important (Berrone et al., 2020). Future research could consider the differential importance of these institutions and refine the model to capture their effects more precisely. We were not able to distinguish the relative importance of these institutions theoretically in the context of corporate entrepreneurship, which highlights an area for future investigation.

Despite these limitations, this study is the most extensive quantitative review to date of the relationship between TMTs' attributes and corporate entrepreneurship. In answering enduring questions and offering avenues for future research, our meta-analysis offers a thorough assessment of the current state of the corporate entrepreneurship literature.

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The authors declare no conflicts of interest.

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We have read and agreed to the Committee on Publication Ethics (COPE) international standards for authors.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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