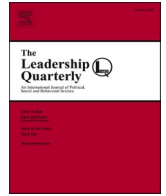




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CEO vision articulation, TMT relational attachment, and corporate entrepreneurship

Samuel Adomako^{a,*}, Nadia Zahoor^{b,c}, Shi Tang^d, Irene Chu^e, Stephen X. Zhang^f^a Birmingham Business School, University of Birmingham, Edgbaston, Birmingham, UK^b School of Business and Management, Queen Mary, University of London, UK^c InnoLab, University of Vaasa, Finland^d Department of Management, City University of Hong Kong, Hong Kong, China^e Newcastle University Business School, Newcastle upon Tyne NE1 4SE, UK^f Maness Chair in Entrepreneurship, Baylor University, Waco, USA

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ABSTRACT

In this paper, we propose a fresh theoretical perspective on *why* and *when* the chief executive officer's (CEO) vision articulation has a beneficial effect on a firm's corporate entrepreneurship pursuits through top management team (TMT) relational attachment. Integrating the CEO-TMT interface perspective with insights from attachment theory, we construct a moderated-mediation model to demonstrate that: (a) TMT relational attachment mediates the relationship between CEO vision articulation and corporate entrepreneurship (*why*), and (b) this mediated effect is influenced by the level of TMT gender diversity (*when*). We test our model in the context of Taiwanese small- and medium-sized enterprises. Using a multi-wave survey involving 558 TMT members (including CEOs) in 175 firms, the results show that CEO vision articulation positively influences corporate entrepreneurship via TMT relational attachment, and this mediated effect is more potent when TMT gender diversity is high than when it is low.

Introduction

Corporate entrepreneurship refers to a firm's innovative, renewal, and venturing efforts, which play a critical role in sustaining competitive advantage in ever-shifting market landscapes (Boone et al., 2019; Chen et al., 2022; Covin & Miles, 1999; Ireland et al., 2003; Zahra, 1996). Despite its benefits, the quest for corporate entrepreneurship is fraught with challenges as it inherently involves risk-taking and changes that may be unwelcome to organizational members who prefer the status quo (Dissanayake et al., 2020). At the helm of this quest is the chief executive officer (CEO), who plays a key role in shaping firm strategy (Hambrick, 2007; Ling, et al., 2008). Given that corporate entrepreneurship is inherently a future-oriented strategy, CEO vision articulation—the CEO behavior that communicates a future image of a collective with the intention to persuade others to contribute to its realization (van Knippenberg & Stam, 2014; Wang et al., 2011)—arguably plays a crucial role in driving a firm's corporate entrepreneurship strategy.

While a handful of strategy studies have suggested that a CEO's vision articulation is positively related to corporate entrepreneurship

(Baum et al., 1998; Elenkov et al., 2005; Westley & Mintzberg, 1989), the mechanisms by which CEO vision articulation engages the top management team (TMT) to pursue this critical strategy remain enigmatic (Georgakakis et al., 2022). Specifically, we lack a clear understanding of *why* this occurs. It is puzzling how merely communicating a future vision enables TMT members to embark on highly uncertain and risky entrepreneurial endeavors. Prior research suggests that cognitive persuasion is insufficient; instead, deeply relational and emotional processes are essential (Feeney, 2007). Our study seeks to unpack this “relational black box” (Neely et al., 2020) by examining how CEO vision articulation enables the TMT to embrace an uncertain future and ultimately act on corporate entrepreneurship, as well as the conditions that bolster or hinder this process.

We integrate insights from the CEO-TMT interface research (Simsek et al., 2018) with attachment theory from psychology (Bowlby, 1969, 1988) to explain *why* and *when* CEO vision articulation drives corporate entrepreneurship. In particular, we introduce TMT relational attachment—the degree to which team members feel a sense of emotional connection, security, and dependence on others in the team (Ehrhardt &

* Corresponding author.

E-mail address: s.adomako@bham.ac.uk (S. Adomako).<https://doi.org/10.1016/j.leaqua.2025.101881>

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Ragins, 2019)—as a key mechanism through which CEO vision articulation promotes corporate entrepreneurship. We theorize that when a CEO articulates a clear and inspiring vision, it can ignite emotional engagement and a sense of “we-ness” in the TMT, where members feel part of something greater than themselves (Durkheim, 1912/1915; van Knippenberg & Stam, 2014; Collins, 2004), fostering TMT relational attachment. Such relational attachments, in turn, provide a safe haven and a security base for exploration—also known as the “dependency paradox” (Feeney, 2007), to enable TMT members to embrace corporate entrepreneurship endeavors. Additionally, we contend that this mediated relationship is strengthened by TMT gender diversity, as gender-diverse teams create a conducive environment that facilitates the translation of CEO vision articulation into TMT relational attachment and, in turn, corporate entrepreneurship. We test and find support for our model using multi-wave data from 558 TMT members in 175 firms from CEOs and TMT members.

Our research makes three contributions. First, we introduce an emotion/relational perspective to the CEO-TMT interface literature, advancing understanding of its strategic impact that complements and extends the dominant cognitive/behavioral paradigm. By establishing TMT relational attachment as a critical mechanism through which CEO vision articulation drives corporate entrepreneurship, our study sheds light on the transformative role of emotional bonds in enabling strategic outcomes. This perspective enriches upper echelons research by moving beyond the traditional focus on behavioral and cognitive dimensions of CEO-TMT interactions to address the emotion/relational dynamics (see Georgakakis et al., 2022; Liu et al., 2018; Neely et al., 2020 for reviews). It foregrounds the importance of considering TMT members not merely as decision-making agents but as relational beings whose emotional bonds profoundly shape their pursuit of uncertain and risky strategic initiatives.

Second, we contribute to the cognitive-affective leadership literature (Emrich et al., 2001; Naidoo & Lord, 2008; Rafferty & Griffin, 2004) by demonstrating how CEO vision articulation bridges cognitive and affective domains to influence TMT dynamics. Vision articulation involves the expression of the CEO’s cognition (i.e., vision) into a tangible and aspirational image for the organization, which fosters a distinctively affective mechanism: TMT relational attachment. Through the lens of attachment theory, we offer a novel explanation of how cognitive aspects of leadership translate into relational and emotional team processes that drive collective action. This contribution enriches cognitive-affective leadership scholarship by revealing the interplay between leaders’ cognitive expressions and team members’ affective responses, offering a more integrated understanding of how leadership behaviors shape organizational outcomes.

Finally, we identify the moderating role of TMT gender diversity as a critical team structural factor that amplifies the impact of CEO vision articulation and TMT relational attachment on corporate entrepreneurship. This finding advances the TMT diversity literature by revealing the contingent value of gender diversity as an enabling factor (Dezsó & Ross, 2012; Jeong & Harrison, 2017). By highlighting the importance of internal structural factors, our study complements prior studies that primarily examined environmental factors as moderators in strategic leadership research (Jansen et al., 2006; Simsek et al., 2010). This shift in focus provides a new understanding of the structural factors that influence the efficacy of CEOs through TMTs, demonstrating that the relational outcomes of CEO behaviors are contingent on the structural characteristics of the TMT.

Theoretical background

CEO vision articulation

At its core, a CEO’s vision reflects their cognition related to future-oriented thinking, sensemaking, and the interpretation of environmental cues, all of which shape an aspirational image for the

organization’s future (Baum et al., 1998; Elenkov et al., 2005). Vision articulation—the CEO’s clear communication of this vision—is considered a crucial aspect of CEO behavior (Wang et al., 2011). Specifically, the act of vision articulation translates the CEO’s cognitive construct into a tangible and desirable future organizational state, bridging the internal cognitive work of envisioning with the external act of conveying it to others. Vision articulation is considered a critical aspect of leadership function (Carton et al., 2014; House et al., 2014) and a means through which CEOs can enhance the strategic direction of their firms (Fu et al., 2010).

Vision articulation originates in, but diverges from, the broader transformational-charismatic leadership paradigm by focusing specifically on the act of envisioning and communicating a collective future (van Knippenberg & Stam, 2014). While transformational leadership encompasses a broader set of leader behaviors, such as self-sacrifice, individualized consideration, and intellectual stimulation (Bass, 1985; Shamir et al., 1993; van Knippenberg & Sitkin, 2013), vision articulation specifically pertains to conveying a compelling vision for the future and warrants scholarly attention on its own (Ateş et al., 2020; Rafferty & Griffin, 2004).

Leadership research has shown that leaders’ vision articulation is uniquely associated with followers’ affective commitment—the extent to which followers identify with, are involved in, and are emotionally attached to an organization (Podsakoff et al., 1996; Rafferty & Griffin, 2004). This is likely because leaders who clearly communicate their visions, for example, by using futuristic imagery and vivid, evocative language, evoke sensations that tap into followers’ emotional experiences rather than merely appealing to their intellect (Campos, 1989; Carton & Lucas, 2018; Naidoo & Lord, 2008). Vision articulation enables leaders to channel their cognitive construct of a desirable future into a communicative act that resonates emotionally with followers (Emrich et al., 2001). As such, CEO vision articulation likely influences followers through a unique cognitive-affective pathway, fostering their willingness to embrace and, ultimately, act on the vision.

Relatedly, socio-psychological literature suggests that when vision articulation resonates on an emotional level, it can foster a sense of “we-ness,” where individuals feel being part of something greater than themselves, echoing the dynamics of collective effervescence (Durkheim, 1912/1915; Collins, 2004; Hopkins et al., 2016). Indeed, leadership research indicates that visionary leadership not only aligns individual actions towards a common goal but also fosters a sense of shared purpose and connectedness (van Knippenberg & Stam, 2014). When a leader articulates a clear, inspiring vision, it has the potential to ignite shared enthusiasm and excitement (Páez et al., 2015; Pizarro et al., 2022). As such, leaders’ vision articulation unifies followers around a shared purpose, with the vision serving as a focal point around which collective emotional engagement is built and a relational foundation of trust and unity is established (Stam et al., 2014).

Drawing on these insights, we posit that a CEO’s vision articulation can create a shared emotional experience and sense of unity within the TMT, leading to stronger bonding among members and deeper commitment to the organizational mission. Specifically, grounded in attachment theory, we propose that CEO vision articulation drives corporate entrepreneurship by fostering the TMT’s relational attachment.

TMT relational attachment

As an established theory of human relationships and one of the most influential theories in psychology (Finkel & Simpson, 2015), attachment theory centers on the emotion/relational processes of “attachment,” i.e., the human propensity to seek and develop emotional bonds to particular others (Bowlby, 1969, 1979). According to Bowlby (1969, p. 224), in the process of “evolutionary adaptedness”, attachment serves a fundamental role in ensuring protection from predators and increasing adaptivity to the environment. While initially focused on parent-child relationships,

attachment research has later identified similar attachment dynamics in organizational contexts (Hazan & Shaver, 1990; Richards & Hackett, 2012). As scholars note, “attachment theory provides a distinct relational perspective to the study of organizational behavior” (Yip et al., 2018, p. 185). Specifically, relational attachment—“the cumulative experience of feeling connected, attached, and close to others at work” (Ehrhardt & Ragins, 2019, p. 249)—has been shown to relate to organizational outcomes such as employee proactivity (Wu & Parker, 2017), ethical decision-making (Chugh et al., 2014), and creative problem solving (Mikulincer et al., 2011).

Relational attachment develops from consistent emotional support and serves a crucial role in providing individuals with a sense of security through two key functionalities: a safe haven and secure base support (Bowlby, 1988). The safe haven entails offering support and comfort during times of psychological or physical distress, while the secure base facilitates a person’s autonomy and exploration of their environment (Ainsworth et al., 1978; Hazan & Shaver, 1994). This dynamic is often referred to as the “dependency paradox” (Feeney, 2007), wherein dependence fosters independence, or relational attachment lays the groundwork for greater autonomy and agency.

As an important extension of attachment theory, scholars have directed attention to group attachment, where researchers examine attachment at the group level (as opposed to individuals’ trait-like attachment styles). In their seminal work, Smith, Murphy, and Coats (1999, p. 96) defined group attachment as “models [people hold] of themselves as group members and models of groups that in combination affect their thoughts, emotions, and behaviors regarding group memberships.” Distinct from trait-like attachment styles, group attachments are affected by situational factors (Rom & Mikulincer, 2003). Similar to attachment in the dyadic relationships, group-level relational attachments are thought to offer evolutionary advantages, as groups provide resources, and assistance during threats, and are specific to group relationships (Smith et al., 1999).

Building on the above, we apply the notion of group relational attachment to the TMT context, defining it as the experience of TMT members feeling connected, attached, and close to others in the team. As scholars have emphasized, relational attachments represent emotional bonds reflecting team members’ perceptions of their connection to others in the team, along with the feelings of closeness, commitment, and attachment (Ehrhardt & Ragins, 2019; Kahn, 2007). As such, TMT relational attachment differs from the commonly studied process of TMT behavioral integration (Liu et al., 2018). Whereas TMT behavioral integration emphasizes the team’s interaction, communication, and information exchange (Simsek et al., 2005), TMT relational attachment focuses on the emotional bonds among team members and its inherent socio-emotional functionalities, such as the safe haven and secure base. Given the core functionality of relational attachment in fostering autonomous and exploratory behavior (Feeney, 2007; Mikulincer et al., 2011; Yip et al., 2018), we propose that TMT relational attachment serves as a critical mechanism linking CEO vision articulation to the pursuit of corporate entrepreneurship.

Hypotheses development

Identifying corporate entrepreneurial opportunities necessitates a CEO’s vision capable of aligning the personal goals of TMT members with those of the organization. However, pursuing corporate entrepreneurship involves substantial uncertainty, changes, and the need for new competencies, potentially leading to resistance from TMT members (Chin et al., 2021). Integrating the CEO-TMT interface literature (Georgakakis et al., 2022) with insights from attachment theory, we theorize *why* CEO vision articulation promotes corporate entrepreneurship—by fostering TMT relational attachment. In addition, we theorize that this relationship is contingent on the level of gender diversity within the TMT, which is likely to create a conducive context for realizing the benefits of TMT relational attachment. We elaborate on

each of our hypotheses in the following sections.

CEO vision articulation and TMT relational attachment

We expect CEO vision articulation to enhance TMT relational attachment. When a CEO clearly and consistently communicates a vision, it does more than outline strategic goals; it provides an emotional anchor for TMT members, fostering a sense of stability and security. Secure attachment bonds develop when individuals perceive reliability and safety (Bartholomew & Horowitz, 1991; Bowlby, 1979). A CEO’s consistent vision articulation offers TMT members a stable and reliable direction, helping them feel supported and anchored (Judge et al., 2004; Locke & Latham, 1990). This dependable vision gives the team a shared, predictable foundation that they can rely on, allowing TMT members to engage confidently with their roles. By reducing uncertainty and establishing emotional safety, CEOs’ clear and consistent vision articulation fosters the development of relational attachment within the TMT.

CEO vision articulation also plays a crucial role in aligning individual efforts with the organization’s goals (Mascareño et al., 2020; van Knippenberg & Stam, 2014), which can create a sense of shared purpose that draws TMT members together. Attachment theory emphasizes the importance of proximity maintenance—the desire to stay close to those with whom one has an attachment bond (Bowlby, 1979, 1988; Heffernan et al., 2012). In the TMT context, the CEO’s articulated vision serves as a focal point for this proximity, uniting team members in the pursuit of a common goal. This alignment not only reinforces members’ commitment to the shared vision but also strengthens their connections to one another (Chang & Lee, 2017; Páez et al., 2015). In this way, a shared sense of purpose fosters deeper relational attachment, as TMT members come to view themselves as part of a greater good and their individual contributions as integral to the organization’s success (Collins, 2004; Hopkins et al., 2016).

Moreover, CEO vision articulation can cultivate positive emotional experiences that resonate within the TMT, which are essential for building relational attachment given emotional attunement and resonance are key to secure bonds (Hazan & Shaver, 1994). This emotional connection often manifests in mutual encouragement and shared enthusiasm sparked by the CEO’s inspiring vision articulation (Emrich et al., 2001). A CEO who conveys an inspiring vision instills a sense of excitement that becomes contagious within the team, allowing members to collectively experience the highs and challenges of their shared mission (Bono & Ilies, 2006; Naidoo & Lord, 2008). When an articulated vision resonates emotionally, it creates an atmosphere of positivity, driving team members to support one another in pursuit of collective objectives (Pizarro et al., 2022; Zumeta et al., 2016). Strong relational attachment hence develops through these emotionally charged experiences, where TMT members feel mutually valued and understood.

Finally, the emotional resonance that emerges from a CEO’s vision articulation can transform daily interactions into moments of shared significance, reinforcing TMT relational attachment. Scholars note that secure attachment bonds are reinforced through repeated positive interactions, as they create a cumulative sense of connection and belonging (Mikulincer et al., 2001; Shaver & Mikulincer, 2007). As TMT members work together, CEO vision articulation provides a context for these recurring moments of connection, transforming daily interactions into opportunities for positive reinforcement. Each time members come together to discuss strategies, solve problems, or celebrate small wins, they experience a renewed sense of attachment (Gabriel et al., 2020). Over time, the reinforced positive dynamics fostered by CEO vision articulation can lead to more profound attachments among TMT members, creating a strong, enduring relational foundation. Taken together, we hypothesize that:

H1: CEO vision articulation has a positive influence on TMT relational attachment.

TMT relational attachment and corporate entrepreneurship

Attachment theory challenges the conventional belief that dependence equates to weakness, suggesting instead that healthy dependence fosters autonomy and exploration. Emotional bonds provide both a safe haven and a secure base for independent exploration (Bowlby, 1979, 1988; Ainsworth et al., 1978). When individuals feel secure, they are more inclined to take risks and embrace new challenges, knowing that support is available if needed. Bowlby (1988) likened this process to a military officer embarking on an expedition: the extent of exploration depends on the strength and security of his/her base. In contrast, individuals lacking emotional connection and support may struggle to explore new territory (Mikulincer et al., 2011). Thus, dependency—or relational attachment—paradoxically leads to increased independence (Feeney, 2007). Supporting this notion, research has shown that healthy relational attachments enhance individuals' novelty seeking (Carmelley & Ruscher, 2000), exploration of new, unusual information and goals (Feeney & Van Vleet, 2010), and innovative behavior (Wang et al., 2021).

In light of the above, we argue that TMT relational attachment plays a crucial role in facilitating corporate entrepreneurship. Exploration is characterized by one's motivation to master the environment and reduce knowledge gaps, particularly in the face of novelty, complexity, and uncertainty (Elliot & Reis, 2003; Loewenstein, 1994). These characteristics lie at the core of corporate entrepreneurship. Unlike routine organizational performance, corporate entrepreneurship demands a proactive and innovative approach to exploring new opportunities, often amid dynamic market conditions and unforeseeable challenges (Dess et al., 2003; Zahra, 1996). In pursuing corporate entrepreneurship, TMT members shape their environments to drive organizational changes (Ling et al., 2008), generate new ideas to improve the firm's strategic positioning and operational efficiency (Boone et al., 2019), and scan the environment for important cues to venture into new businesses (Elenkov et al., 2005; Heavey & Simsek, 2013). Thus, corporate entrepreneurship involves actively exploring one's environment to navigate complexity, uncertainty, and novelty.

As attachment theory suggests, individuals with secure emotional bonds and relational attachments are more inclined to explore confidently and autonomously (Bowlby, 1969; Ainsworth et al., 1978; Feeney, 2007). When TMT members feel secure and supported, they are better equipped to navigate uncertain environments, take calculated risks, and pursue corporate entrepreneurial opportunities. This sense of security provides a firm foundation from which TMT members can venture into uncharted territory, knowing that they have the support and backing of the team. Moreover, in a TMT where relational attachment is strong, members are more likely to embrace autonomy and take ownership of their entrepreneurial endeavors, driving innovation and growth of the firm. In essence, by offering a safe haven and secure base, relational attachment within TMTs facilitates exploration and risk-taking—key components of successful corporate entrepreneurship.

Furthermore, given the complex and risky nature of corporate entrepreneurship, top executives must demonstrate a strong commitment to overcoming challenges and difficulties arising from its initiation and implementation (Chin et al., 2021). Attachment theory posits that the felt security provided by relational attachments fosters the development of internal working models—positive mental representations of self and others—that contribute to self-worth, adaptive emotion regulation, and positive psychological states (Ehrhart & Ragins, 2019; Kahn, 2007; Shaver & Mikulincer, 2007). These positive outcomes serve as crucial psychological resources that allow TMT members to fully engage in their work, enhance their capacity to learn, and exhibit reciprocity and citizenship behaviors towards their colleagues (Baker & Dutton, 2017; Rousseau & Ling, 2007; Wu & Parker, 2017), all of which are key to their collective pursuit of corporate entrepreneurship.

H2: TMT relational attachment has a positive influence on corporate entrepreneurship.

The mediation of TMT relational attachment

The CEO-TMT interface perspective, building upon upper-echelons theory (Hambrick, 2007), explains how CEOs influence firm strategic outcomes through the intervening mechanisms of TMT processes (Simsek et al., 2018). This perspective increasingly recognizes that CEOs shape TMT processes not only through direct decision-making but also by influencing relational dynamics within the TMT that ultimately affect firm outcomes (Georgakakis et al., 2022; Neely et al., 2020). Integrating this insight with the cognitive-affective leadership research that explains how leaders' cognitive-behavioral constructs translate into affective outcomes (e.g., Bono & Ilies, 2006), we argue that TMT relational attachment serves as a key mechanism translating CEO vision articulation into corporate entrepreneurship.

As noted earlier, CEO vision articulation is more than a directive message—it elicits emotional engagement and connection that strengthen the relational fabric in the TMT. By providing a sense of security, fostering proximity, and reinforcing emotional bonds, CEO vision articulation enables TMT members to experience a sustained sense of shared purpose and emotional unity. This experience shapes the way TMT members relate to each other, cultivating strong relational attachments within the team. TMT relational attachment, in turn, plays a pivotal role in enabling corporate entrepreneurship. As relationally attached teams feel secure and supported, they are better equipped to navigate uncertainty and engage in explorative initiatives (Bowlby, 1979, 1988; Feeney, 2007), which are essential for the pursuit of corporate entrepreneurship.

Thus, we contend that a mechanism through which CEO vision articulation facilitates corporate entrepreneurship is by operating through its impact on TMT relational attachment. Vision articulation fosters the emotional and relational conditions necessary for TMT members to internalize the CEO's strategic direction, trust in their collective ability to execute it, and take bold, entrepreneurial actions. In this way, TMT relational attachment serves as the emotion/relational bridge that links CEO vision articulation to corporate entrepreneurship.

H3: TMT relational attachment mediates the positive relationship between CEO vision articulation and corporate entrepreneurship.

Moderating role of TMT gender diversity

Both CEO-TMT interface research and attachment theory emphasize the importance of contextual factors in shaping key relationships. In the CEO-TMT interface literature, TMT compositions serve as an immediate milieu shaping CEO-TMT interactions and their strategic ramifications (Bromiley & Rau, 2016). Attachment theory also highlights the role of team contexts in shaping group attachment (Smith et al., 1999; Rom & Mikulincer, 2003). Drawing on these perspectives, we identify TMT gender diversity as a key moderator of the hypothesized mediated relationship. Specifically, we posit that the complementary emotional responses and perspectives brought by men and women in gender-diverse teams amplify the positive effect of CEO vision articulation on TMT relational attachment and, in turn, corporate entrepreneurship. We explain how TMT gender diversity moderates each stage of this mediated relationship.

First-stage moderation. CEO vision articulation is most effective when it resonates emotionally with the team (Emrich et al., 2001; Naidoo & Lord, 2008). In gender-diverse TMTs, the complementary responses that men and women bring to leadership communication can amplify this resonance (Bear et al., 2010). Research suggests that women are often more emotionally attuned and empathetic in group interactions, which may help them connect more deeply with the emotional aspects of the CEO's vision articulation (emotional enthusiasm), while men may be more inclined to engage with the vision's strategic and task components (strategic excitement) (Corwin et al., 2022; Nishii, 2013; Woolley et al., 2010). This interplay in a gender-diverse TMT enables the CEO's vision articulation to resonate on

multiple aspects, creating a more holistic and engaged interpretation of the CEO's vision. Such engagement likely strengthens relational bonds within the TMT and deepens their collective attachment to the vision articulation.

Moreover, gender-diverse teams tend to engage in more inclusive discussions, bringing a broader range of concerns, preferences, and interpretations when responding to a CEO's vision articulation (Jeong & Harrison, 2017; Krishnan & Park, 2005; van Knippenberg & Schippers, 2007). For instance, women may draw attention to collaborative aspects of the articulated vision, while men may focus on innovation or growth. This broader perspective enhances the collective understanding of the vision, enabling the TMT members to anchor their attachment to a secure base that is both emotionally and strategically enriched. Conversely, while gender-homogeneous teams may form quick initial bonding, this homogeneity may constrain the development of deep and rich emotional resonance with the CEO's vision articulation, potentially creating relatively superficial alignment rather than genuine connections at a deeper level. Therefore, we posit that TMT gender diversity strengthens the positive effect of CEO vision articulation on TMT relational attachment.

Second-stage moderation. We propose that TMT gender diversity also strengthens the positive relationship between TMT relational attachment and corporate entrepreneurship. As previously discussed, relational attachment within a TMT facilitates the pursuit of corporate entrepreneurship by providing a secure base and safe haven for exploration. We further argue that the richer emotional resources and broader perspectives enabled by TMT gender diversity enhance the breadth and depth of this exploration. The presence of women in TMTs contributes to a climate of psychological safety, characterized by trust, openness, and the willingness to take interpersonal risks (Edmondson, 1999). Women's emotional sensitivity and empathic communication create an environment where TMT members feel valued and respected, fostering open communication and inclusive decision-making (Lee et al., 2018; Tang et al., 2021). In relationally attached TMTs, these qualities amplify the secure base effect by reinforcing members' confidence to voice unconventional ideas, admit mistakes, and feel psychologically safe and supported to engage in exploratory behaviors critical for corporate entrepreneurship.

Meanwhile, men in a TMT likely contribute qualities such as assertiveness and a propensity to challenge others (Jeong & Harrison, 2017; Tang et al., 2021), which can counterbalance the potential downsides of relational attachment, such as groupthink or excessive consensus-seeking. By questioning assumptions and encouraging critical evaluation, men help ensure that the team remains vigilant and adaptive in its exploration of entrepreneurial opportunities. In a relationally attached TMT, this dynamic ensures that the team's secure base does not lead to overly cohesive behaviors but instead fuels robust debates and rigorous evaluations of risks and opportunities. The result tends to be a more thorough exploration of corporate entrepreneurial opportunities and a greater ability to identify and address potential risks in corporate entrepreneurship (Dezső & Ross, 2012; Nielsen et al., 2018; Post et al., 2022).

In sum, the complementary contributions of men and women create a synergistic dynamic in gender-diverse TMTs. Relational attachment provides a secure base for exploration, while gender diversity ensures that this base is both inclusive and critical. These complementary qualities enable gender-diverse TMTs to more effectively translate the secure base of relational attachment into entrepreneurial outcomes, navigating the complexities and uncertainties of corporate entrepreneurship. Taken together, we predict a two-stage moderated mediation relationship.

H4: The strength of the mediated effect of CEO vision articulation on corporate entrepreneurship through TMT relational attachment varies along with the degree of TMT gender diversity, such that the mediated effect will be stronger when TMT gender diversity is higher than when it is lower.

Method

Study context and instrument design

Data were collected between 2021 and 2022 at three points in time from small and medium-sized enterprises (SMEs) (i.e., firms with 25 to 200 employees) located in Taiwan. Taiwan has growing entrepreneurial activities (GEM, 2022). We used a structured questionnaire to measure the constructs of interest. The 200-employee headcount is the most accepted threshold for SME classification in Taiwan (Taipei Times, 2020). We omitted firms with fewer than 25 employees as very small and new ventures still engaging in the start-up founding, growing, and development processes (Cardon & Kirk, 2015). Although we agree that what constitutes a "small" firm differs greatly (e.g., Cardon & Tarique, 2008), our focus was on SMEs that have reached relative stability, hence having the potential to engage in corporate entrepreneurship (Morse et al., 2007). The SMEs' context offers a suitable setting to test our hypotheses due to the challenges confronted by top executives of these firms in pursuing corporate entrepreneurship (Chen et al., 2022). We focused on Taiwan due to its conducive setting for doing business in East Asia. For example, Taiwan has an excellent track record for stability and peace, the rule of law, and press freedom (World Bank, 2020).

Sample and data collection

We collected data from CEOs and a senior member of the TMT with decision-making responsibilities in each firm. Our sample was derived from the *Taiwan Business Directory*. Our data collection procedure involves three waves. We developed reliable survey instruments in English and translated them into Chinese via back-to-back translation procedures (Brislin, 1970). The survey relied on previously validated psychometric measures. We then conducted a pilot test on 11 CEOs in each setting (not part of the current sample) to enhance face validity through the feedback obtained from the pilot survey. Next, we randomly selected 450 firms with 25 to 200 employees from the list in each setting and contacted them by telephone. Following accepted practice (e.g., Ling et al., 2008; Tang et al., 2021), the CEOs were asked to identify TMT members—top executives who report directly to the CEO and make important strategic decisions in the firm. Previous TMT research suggests that CEOs are a main and reliable source for identifying TMT members of their firms (e.g., Carpenter et al., 2004). The CEOs were asked to share the names and contact details of their deputies or senior executives in the TMT and encourage them to participate in our study (Nadkarni & Herrmann, 2010). The CEOs of 175 firms out of the initial sample of 450 agreed to take part in the study.

We utilized the approach suggested in previous studies (e.g., Nadkarni & Herrmann, 2010; Chen et al., 2022) in eliciting information. The approach involved the delivery of the survey instrument to a designator (e.g., a human resource assistant or a receptionist) in each firm. The designator then sent out the survey instrument to the CEO and senior team members to participate in the study. The survey instrument was delivered in a sealed envelope without names or job titles. Data were collected in three waves from TMT members. In the first survey (T1), TMT members (excluding the CEO) provided information about CEO vision articulation, TMT gender diversity, and the control variables. Four weeks later (T2), TMT relational attachment was measured by asking all TMT members (including the CEO) to fill out the TMT relational attachment scale. About one year later (T3), using an established practice in TMT studies (see Heavey & Simsek, 2017; Simsek et al., 2010), we obtained corporate entrepreneurship ratings from TMT members (including CEOs). A one-year time lag is appropriate for multi-wave surveys investigating strategic behaviors in SMEs (see Chen et al., 2022; Tang, et al., 2021). We received complete surveys from the three waves from 558 TMT members in 175 firms, representing 40.74% (558 out of 756 participating TMT members).

We investigated potential sources of non-response bias in our sample

by checking whether the CEOs who provided answers to the survey differed from those who did not respond to the survey. Assuming that late respondents are similar to non-respondents (Kanuk & Berenson, 1975), we performed a one-way ANOVA to compare key CEO characteristics. The results of the one-way ANOVA yielded no significant differences between early and late respondents. Second, we manually collected data on firm size, firm age, and CEO age in our database. We then compared the means of firm size ($t = 0.87$, ns), firm age ($t = 0.77$, ns), and CEO age ($t = 0.83$, ns) between responding and non-responding firms. These results demonstrate no statistically significant differences between the two groups, providing no evidence of nonresponse bias (Armstrong & Overton, 1977).

Measures

Unless otherwise stated, all multi-item measures were based on previously validated scales (see Online Appendix A for the scale items). We used a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree).

CEO vision articulation ($\alpha = 0.83$). To measure perceived CEO vision articulation, we used the two-item scale developed by House et al. (2014), which has been validated and widely adopted to capture a leader's vision articulation (e.g., Ashford et al., 2018; Ateş et al., 2020; Kim et al., 2023).¹ This scale was designed to assess whether TMT members perceived that their CEO had a vision for the future and acted based on future goals. In line with the recommendations of van Knippenberg and Stam (2014), the items capture visionary communication and acts, instead of confounding with their effects such as inspiration. Senior executives (e.g., deputy CEOs, or general managers) were asked to rate the CEO vision articulation measure. A sample item is "the CEO has a vision and imagination of the future". The high level of agreement between raters (with a mean $rwg(j)$ of 0.96 and ICC values of 0.38 and 0.65), as well as the significant between-team differences found through one-way ANOVA (with an F-value of 5.51 and p-value less than 0.01), justified combining individual ratings into team-level scores (Bliese, 2000; LeBreton & Senter, 2008).

TMT relational attachment ($\alpha = 0.94$). We measured TMT relational attachment by adapting the six-item scale from Ehrhardt and Ragins (2019) to the team level. A sample is "The top management team members feel close to each other". We obtained adequate agreement between the raters and the variance between teams which provides a stronger justification for the aggregation of individual ratings to the team level. The interrater agreement was good with a mean $rwg(j)$ of 0.96, ICC [1] of 0.40, and ICC [2] of 0.68. The between-team variance was justified by one-way ANOVA with $F = 5.59$ and $p < 0.01$.

TMT gender diversity. The TMT gender diversity variable was computed utilizing Blau's (1977) index ($1 - \sum P^2i$, where P is the proportion of members in a specific gender category; and i represents the number of categories). Previous studies have demonstrated that Blau's index is robust in capturing team diversity when using a categorical

variable including gender diversity (del Carmen et al., 2019; Tang et al., 2021). This approach consists of a continuous measure from 0 (same-gender teams) to 0.50 (gender-balanced teams with equal female and male proportions). Gender was coded as 1 = female; and 0 = male and the computation of TMT gender diversity includes the CEO and all TMT members. Previous studies have established that the CEO is an important TMT member in any firm (Chen et al., 2022; Nadkarni & Herrmann, 2010), hence should be included in the measure of TMT gender diversity (Jeong & Harrison, 2017; Tang et al., 2021).

Corporate entrepreneurship ($\alpha = 0.75$). We measured corporate entrepreneurship with a three-dimensional scale involving innovation, venturing, and strategic renewal. The three dimensions were captured with 14 items from previously validated studies (Yiu et al., 2007; Zahra, 1996; Zahra et al., 2000). In particular, innovation was measured by six items, and both venturing and strategic renewal were captured by four items. At the dimension level, Cronbach's alpha for innovation was 0.94, venturing was 0.93, and renewal was 0.90. At the aggregate level, Cronbach's alpha for corporate entrepreneurship was 0.75. We received acceptable values for aggregation checks for the overall scale (innovation [$rwg(j)$] 1] = 0.72; venturing [$rwg(j)$ 2] = 0.75; and renewal [$rwg(j)$ 3] = 0.64). Thus, we averaged the responses of the TMT members to derive the overall score corporate entrepreneurship measure. Next, we performed a confirmatory factor analysis (CFA), which revealed the three-factor structure of innovation, venturing, and renewal ($\chi^2 = 49.21$, Prob $> \chi^2 = 0.00$, CFI = 0.94, TLI = 0.91, RMSEA = 0.05, SRMR = .07) had a significantly stronger model fit than the one-factor model ($\chi^2 = 75.29$, Prob $> \chi^2 = 0.00$, CFI = 0.88, TLI = 0.81, RMSEA = 0.13, SRMR = 0.11) based on the chi-square difference test ($\Delta\chi^2 = 28.26$, $p < 0.01$).

Controls. Several control variables at the industry, firm, TMT, and CEO levels were included to account for their influences in the research model. First, we controlled for two industry-level variables (i.e., industry type, and environmental turbulence). Following previous studies (Karami & Tang, 2019; Tang et al., 2012), we controlled for industry type by classifying two manufacturing industry types (i.e., high and low-technology industries). Accordingly, we used the firms' standardized scores for R&D intensity and the percentage of knowledge workers in each industry and coded the firms as follows: '0' = low-technology industry and '1' = high-technology industry. We assessed environmental turbulence with five items from Jaworski and Kohli (1993).

Second, at the firm level, we controlled for firm size, firm age, and past performance as these variables have been found to influence corporate entrepreneurship (Chen et al., 2022; Zahra, 1996). Firm size was measured as the number of full-time employees and firm age was captured as the age of the firm since its incorporation. A firm's past performance was measured by asking the CEOs to compare their firms' past performance with their main competitors in the last three years. We used five perceptual measures to capture past performance (Brothers et al., 2003).

Third, at the TMT level, we controlled for TMT size because this variable can foster different ideas and points of view which are likely to enhance a broader set of skills and specializations for decision-making for innovative ideas (Qian et al., 2013). TMT size was measured as the number of members that constitute a TMT in each firm (Chen, 2020).

Finally, given that CEO demographics are likely to influence their skills and perspectives to pursue corporate entrepreneurship (Chen & Nadkarni, 2017; Chen et al., 2022), we controlled for three CEO variables: CEO age, CEO education, and CEO tenure. We measured CEO age as the number of years since the CEO was born. CEO education was captured as the highest education attained by the CEO and this was coded as follows: 1 = high school; 2 = bachelor's/professional, 3 = masters, 4 = Ph.D./DBA). CEO tenure was measured as the number of

¹ Though a widely used and validated two-item scale for CEO vision articulation, it might miss an important element of the concept due to the complexity of leader behavior (Banks et al., 2023). Thus, we also used an alternative four-item scale (Cronbach's alpha = 0.89) of CEO vision articulation developed by Tsui et al., (2006). A sample item is "The CEO clearly communicates his/her vision about the future of the company". The findings confirmed our main results that CEO vision articulation is positively and significantly related to TMT relational attachment ($\beta = 0.15$, SE = 0.04, $p < 0.001$), supporting Hypothesis 1. Additionally, we found support for Hypothesis 3, regarding the mediation effect of TMT relational attachment. The indirect effect of CEO vision articulation on corporate entrepreneurship (CE) through TMT relational attachment is positive and significant (indirect effect = 0.06, SE = 0.02, 95% CI = [0.02, 0.10]). The total effect of CEO vision articulation on corporate entrepreneurship, including both direct and indirect effects, was also positive and significant ($\beta = 0.15$, SE = 0.04, 95% CI = [0.07, 0.22]).

years the CEO had been in the current position in the firm.²

Common method variance

To mitigate concerns about common method variance (CMV), we took several additional steps. First, we collected data for the independent variable, mediator, and dependent variables separately for each of the three time periods. This approach reduced biases associated with the cross-sectional design (Podsakoff et al., 2012). Second, we conducted Harman’s (1967) single-factor test and found no significant common method variance. The exploratory factor analysis suggested that the one-factor model could only explain 18.19 % of the variance in the study variables. We also performed a general factor covariate technique test (Podsakoff et al., 2012), which supported our main results. Third, we considered the notion that common method variance bias may not be a concern for studies that examine an interaction effect, such as the current study (Chen et al., 2022; Siemsen et al., 2010). Overall, we concluded that our findings were unlikely to be affected by common method bias.

Results

The ordinary least square (OLS) hierarchical regression was used to test Hypothesis 1 and Hypothesis 2 (Aiken & West, 1991). The largest value of variance inflation factors (VIFs) was 1.98, well below the suggested threshold of 10 (Neter et al., 1996). This confirms that multicollinearity does not pose a serious threat to our results. Descriptive statistics and correlations are presented in Table 1. Table 2 displays the regression results. In Models 1 – 4, the dependent variable is TMT relational attachment, whereas Models 5 – 10 included corporate entrepreneurship as a dependent variable. Model 1 and Model 5 were baseline models with only control variables.

Hypothesis 1 proposed that CEO vision articulation would be positively related to TMT relational attachment. The results in Model 2 (Table 2) show that CEO vision articulation was positively related to TMT relational attachment ($\beta = 0.28, p < 0.001$), supporting Hypothesis 1. The study argued in Hypothesis 2 that TMT relational attachment would be positively associated with corporate entrepreneurship. The results of Model 7 (Table 2) show that TMT relational attachment was positively related to corporate entrepreneurship ($\beta = 0.39, p < 0.001$), supporting Hypothesis 2.

Hypothesis 3 proposed that TMT relational attachment mediates the relationship between CEO vision articulation and corporate entrepreneurship. To test the mediation effect, we used the PROCESS macro in SPSS introduced by Preacher, Rucker, and Hayes (2007) to test the mediation effect. The PROCESS macro is based on OLS regression and uses a bootstrapping approach (Preacher & Hayes, 2004). This approach can overcome the shortcomings of Baron and Kenny’s (1986) approach as well as Sobel test’s low sensitivity in detecting effects, high Type I error rate, and dependence on the assumption of normality (Mackinnon et al., 2002). We applied PROCESS model 4, which allows us to test the mediation effect and provides estimates of direct, indirect, and total effects. The model was run by using 5,000 bootstrap samples of bias-corrected confidence intervals with a 95 % confidence level.

The results suggest a significant mediation effect of TMT relational attachment between CEO vision articulation and corporate entrepreneurship. As shown in Table 3, the indirect effect estimate is 0.10 ($SE = 0.03, 95 \% CI = [0.05, 0.15]$), providing support for Hypothesis 3. Furthermore, the direct effect of CEO vision articulation on corporate

² We used various alternative controls to test our models such as CEO founder status, and the coefficient of variation of males’ and females’ averaged TMT tenure for gender-weighted TMT tenure diversity. Additionally, we used TMT size, overlapping tenure, age diversity, CEO education, and location dummies. The inclusion of these controls did not affect our main results.

Table 1
Descriptive statistics and correlations.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Firm age	27.73	6.85	1.00													
2. Firm size	78.33	52.82	-0.07	1.00												
3. Industry type ^{***}	0.44	0.50	-0.14*	0.05	1.00											
4. TMT size (log)	1.57	0.29	-0.03	0.01	-0.01	1.00										
5. CEO age (log)	3.81	0.23	0.04	-0.09	0.04	-0.09	1.00									
6. CEO tenure (log)	1.00	0.59	0.14*	0.09	-0.14*	-0.24***	-0.02	1.00								
7. CEO education	2.40	1.36	0.10	0.07	-0.03	-0.04	-0.05	0.21***	1.00							
8. TMT gender diversity	0.32	0.20	-0.04	0.04	0.02	0.03	-0.07	0.08	0.02	1.00						
9. Environmental turbulence	4.65	1.23	0.03	0.05	0.00	-0.10	-0.05	-0.01	-0.01	0.08	1.00					
10. Slack resources	4.71	1.25	-0.06	0.03	0.05	0.11	-0.03	-0.09	-0.05	-0.03	-0.07	1.00				
11. Past performance	4.73	0.91	0.06	-0.09	0.00	0.00	-0.02	-0.12*	-0.04	-0.05	-0.02	-0.02	1.00			
12. CEO vision articulation	4.20	0.92	0.00	0.01	-0.04	0.02	-0.06	0.05	0.15**	0.10	0.05	-0.06	0.16**	1.00		
13. TMT relational attachment	4.86	0.86	-0.12*	-0.04	0.15**	-0.01	0.02	-0.14*	-0.02	-0.05	0.08	0.09	0.14*	0.27***	1.00	
14. Corporate entrepreneurship	4.77	0.83	-0.06	-0.01	0.15**	0.08	0.07	-0.02	-0.01	0.00	0.02	0.22***	-0.02	0.14*	0.40***	1.00

Note: N = 175; ** p < 0.01, * p < 0.05. SD = standard deviation; CE = corporate entrepreneurship; *** dummy variable.

Table 2
Regression results for TMT relational attachment and corporate entrepreneurship.

<i>Controls</i>	TMT relational attachment				Corporate entrepreneurship					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Firm age (log)	-0.11 (-1.83)	-0.10 (-1.72)	-0.11 (-1.87)	-0.10 (-1.83)	-0.04 (0.49)	-0.03 (-0.59)	0.00 (0.02)	0.00 (0.03)	-0.04 (-0.70)	-0.00 (-0.01)
Firm size (log)	-0.04 (-0.67)	-0.04 (-0.70)	-0.04 (-0.65)	-0.04 (-0.72)	-0.03 (0.66)	-0.03 (-0.46)	-0.01 (-0.20)	-0.01 (-0.22)	-0.03 (-0.44)	-0.01 (-0.11)
Industry type ^{***}	0.12* (2.05)	0.13* (2.30)	0.12 (2.07)	0.11 (2.03)	0.14* (2.47)	0.15 (2.60)	0.10 (1.81)	0.10 (1.87)	0.14 (2.47)	0.09 (1.75)
TMT size (log)	-0.03 (-0.57)	-0.04 (-0.79)	-0.03 (-0.53)	-0.03 (-0.46)	0.08 (1.42)	0.08 (1.31)	0.10 (1.78)	0.09 (1.71)	0.08 (1.42)	0.11 (1.98)
CEO age	0.02 (0.42)	0.03 (0.63)	0.02 (0.37)	0.04 (0.73)	0.08 (1.38)	0.08 (1.51)	0.07 (1.32)	0.07 (1.37)	0.08 (1.37)	0.07 (1.41)
CEO tenure	-0.10 (-1.58)	-0.11 (-1.85)	-0.09 (-1.51)	-0.12* (-2.12)	0.05 (0.76)	0.04 (0.64)	0.08 (1.48)	0.08 (1.39)	0.05 (0.76)	0.08 (1.41)
CEO Education	0.03 (0.54)	-0.01 (-0.17)	0.03 (0.54)	0.00 (-0.01)	0.01 (0.10)	-0.02 (-0.34)	-0.01 (-0.12)	-0.02 (-0.30)	0.01 (0.11)	-0.03 (-0.54)
Environmental turbulence	0.06 (1.12)	0.06 (1.03)	0.07 (1.19)	0.05 (0.98)	0.05 (0.88)	0.05 (0.81)	0.03 (0.48)	0.03 (0.47)	0.05 (0.88)	0.01 (0.26)
Slack resources	0.09 (1.50)	0.10 (1.83)	0.08 (1.48)	0.08 (1.51)	0.21** (3.71)	0.22 (3.91)	0.18** (3.37)	0.18** (3.46)	0.21** (3.68)	0.18** (3.45)
Past performance	0.12 (2.14)	0.08 (1.39)	0.12 (2.09)	0.08 (1.49)	-0.02 (-0.34)	-0.05 (-0.82)	-0.07 (-1.26)	-0.08 (-1.41)	-0.02 (-0.33)	-0.06 (-1.11)
CEO vision articulation		0.28*** (4.98)		0.31*** (5.62)		0.17* (2.97)		0.07 (1.21)		0.05 (0.93)
TMT relational attachment							0.39*** (7.26)	0.37*** (6.65)		0.37*** (6.68)
TMT gender diversity			-0.04 (-0.77)	-0.07 (-1.30)					-0.01 (-0.10)	0.01 (0.11)
CEO vision articulation x TMT gender diversity				0.17* (3.01)						
TMT relational attachment x TMT gender diversity										0.14* (2.67)
<i>Goodness-of-fit statistics</i>										
F-value	2.39	4.60	2.23	6.69	2.63	3.26	7.60	7.10	2.39	6.70
R ²	0.07	0.15	0.08	0.23	0.08	0.11	0.22	0.22	0.08	0.24
Adjusted R ²	0.04	0.11	0.04	0.19	0.05	0.08	0.19	0.19	0.05	0.21
Largest VIF	1.18	1.18	1.18	1.19	1.09	1.18	1.19	1.19	1.18	1.19

Note: $N = 175$; significance levels: *** $p < 0.01$, ** $p < 0.01$, * $p < 0.05$.

Table 3
Mediation results of CEO vision articulation on corporate entrepreneurship through TMT relational attachment.

Variable	Effect	SE	95% CI
Total effect	0.14*	0.05	[0.03, 0.24]
Direct effect	0.04	0.05	[-0.06, 0.13]
Indirect effect	0.10*	0.03	[0.05, 0.15]

Note: SE = standard error; CI = confidence interval; SE = standard error; * denotes significance.

entrepreneurship was insignificant after partialling out the mediation effect of TMT relational attachment ($\beta = 0.04$, $SE = 0.05$, $95\% CI = [-0.06, 0.13]$). The total effect of CEO vision articulation on corporate entrepreneurship, including both direct and indirect effects, was significant ($\beta = 0.14$, $SE = 0.05$, $95\% CI = [0.03, 0.24]$). These results indicate that the direct relationship between CEO vision articulation and corporate entrepreneurship is partially channeled through TMT relational attachment.

In Hypothesis 4, we proposed that TMT gender diversity moderates the indirect effect of CEO vision articulation on corporate entrepreneurship via TMT relational attachment. Firstly, we argued that TMT gender diversity enhances the effect of CEO vision articulation on TMT relational attachment, i.e., first-stage moderation. We tested this hypothesis using PROCESS Model 7 (Preacher & Hayes, 2004). The statistical inference that the index of moderated mediation differs from zero is considered “a formal test of moderated mediation,” indicating that “any two conditional indirect effects estimated at different values of the moderator are significantly different from each other” (Hayes, 2015, p. 2). Results in Table 4 show a significant first-stage moderated mediation (*moderated-mediation index* = 0.12, $SE = 0.06$, $95\% CI = [0.02, 0.25]$), supporting our contention that the indirect relationship between CEO vision articulation and corporate entrepreneurship via TMT relational attachment is moderated by TMT gender diversity. We further estimated the indirect effect of CEO vision articulation on corporate entrepreneurship at low (mean - 1 standard deviation, *SD*) and high (mean + 1 standard deviation, *SD*) levels of gender diversity. When gender diversity is high, the indirect effect is significantly positive (*indirect effect* = 0.17, $SE = 0.05$, $95\% CI = [0.09, 0.26]$), but insignificant when gender diversity is low (*indirect effect* = 0.05, $SE = 0.04$, $95\% CI = [-0.02, 0.12]$). Fig. 1 plots the interaction effect and suggests that the effect of CEO vision articulation on TMT relational attachment is significant at a high level (mean + *SD*) of TMT gender diversity as compared to a low level (mean - *SD*) of TMT gender diversity.

Secondly, we further argued that TMT gender diversity would also strengthen the effect of TMT relational attachment on corporate entrepreneurship, i.e., second-stage moderation. Using Model 14 in PROCESS macro, we found a significant moderated-mediation effect (*moderated-mediation index* = 0.08, $SE = 0.04$, $95\% CI = [0.001, 0.17]$). While the lower confidence interval (0.001) is close to zero, indicating marginal statistical significance, this still suggests that TMT gender diversity’s role in moderating the relationship between TMT relational attachment and corporate entrepreneurship significant but relatively subtly.

Table 4
Moderated mediation results for corporate entrepreneurship across levels of TMT gender diversity.

Conditional indirect effect (first-stage moderation)	Effect	SE	95% CI
Low TMT gender diversity	0.05	0.04	[-0.02, 0.12]
High TMT gender diversity	0.17*	0.05	[0.09, 0.26]
Conditional indirect effect (second-stage moderation)	Effect	SE	95% CI
Low TMT gender diversity	0.05*	0.03	[0.01, 0.11]
High TMT gender diversity	0.13*	0.04	[0.06, 0.22]

Note: TCI = confidence interval; SE = standard error; * denotes significance.

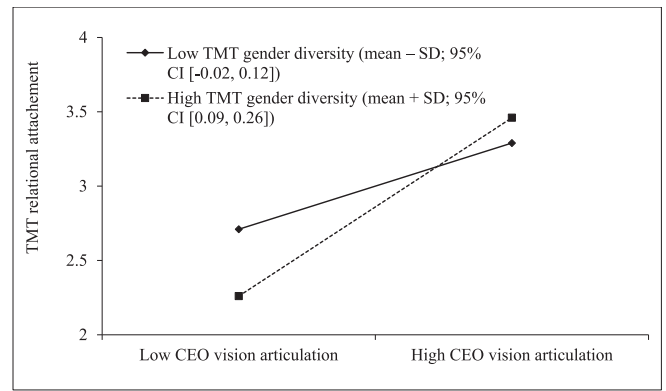


Fig. 1. The interaction of CEO vision articulation and TMT gender diversity on TMT relational attachment.

However, this effect becomes more pronounced when comparing situations with high versus low levels of gender diversity. Table 4 shows that when gender diversity is high, the indirect effect is strongly positive (*indirect effect* = 0.13, $SE = 0.04$, $95\% CI = [0.06, 0.22]$). In contrast when gender diversity is low, the size of the indirect effect is reduced by nearly two-thirds and becomes considerably less significant (*indirect effect* = 0.05, $SE = 0.03$, $95\% CI = [0.01, 0.11]$). Fig. 2 plots the interaction effect and suggests that the effect of TMT relational attachment on corporate entrepreneurship is significant at a high level (mean + *SD*) of TMT gender diversity as compared to a low level (mean - *SD*) of TMT gender diversity.

Finally, we tested our model in an integrated manner by using PROCESS Model 58, which allows for testing first- and second-stage moderations simultaneously. In support, we found that the indirect effect of CEO vision articulation on corporate entrepreneurship via TMT relational attachment is significant when TMT gender diversity is high (*indirect effect* = 0.23, $SE = 0.05$, $95\% CI = [0.13, 0.34]$), but insignificant when TMT gender diversity is low (*indirect effect* = 0.03, $SE = 0.02$, $95\% CI = [-0.02, 0.07]$). Together, the results provide support for Hypothesis 4.

Alternative measures of independent and dependent variables

Following the recommendation of increasing the use of objective measures in leadership research (Banks et al., 2023), we relied on the vision statements of the sampled firms as an alternative source of CEO vision articulation measure to validate our findings. The vision statement of a company is, to a large extent, a reflection of its CEO’s vision articulation, especially in SMEs, as it encapsulates the CEO’s strategic direction, personal values, and ability to inspire and align stakeholders

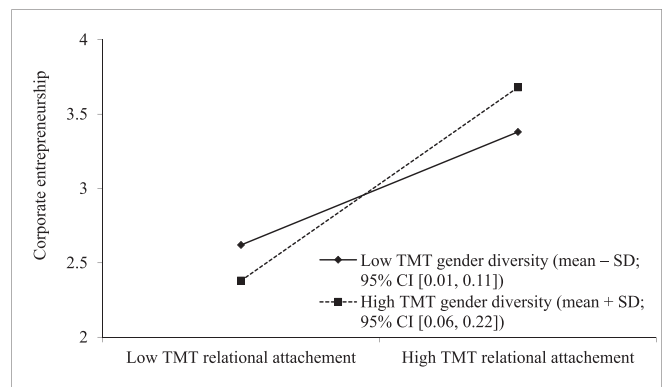


Fig. 2. The interaction of TMT relational attachment and TMT gender diversity on corporate entrepreneurship.

toward a common future (Nanus, 1995). We visited the website of each company and extracted the vision statements of 133 firms. Two trained research assistants who were blind to the study hypotheses independently coded the degree of vision articulation of each statement, with respect to it reflecting “the communication of a future image of a collective with the intention to persuade others to contribute to its realization” (van Knippenberg & Stam, 2014, p. 241).³ The coding achieved satisfactory inter-rater reliability (ICC = 0.902). The findings using this alternative measure validated the main results that CEO vision articulation is positively related to TMT relational attachment ($\beta = 0.37$, $SE = 0.06$, 95 % $CI = [0.26, 0.48]$). Also, the indirect effect of CEO vision articulation on corporate entrepreneurship via TMT relational attachment was significant (*indirect effect* = 0.16, $SE = 0.05$, 95 % $CI = [0.08, 0.26]$). We also found that TMT gender diversity moderates the indirect relationship between CEO vision articulation and corporate entrepreneurship through TMT relational attachment (*moderated-mediation index* = 0.12, $SE = 0.07$, 95 % $CI = [0.01, 0.29]$). We present detailed results in Online Appendix B, Table I.

Further, we reran the models by replacing the measure of corporate entrepreneurship with the number of new product innovations (NPI), which could be a more objective indicator of the company’s corporate entrepreneurship outcomes. Eighteen months later (T4), we approached the CEO of each firm and asked him or her “how many new products or services has your company introduced to a different customer segment since the first survey (i.e., T1)?” This item was used to obtain data on the number of new product innovations by the firms. The results show that TMT relational attachment is positively and significantly related to NPI ($\beta = 0.27$, $SE = 0.10$, $p < 0.01$) as well as TMT relational attachment mediates the relationship between CEO vision articulation and NPI (*indirect effect* = 0.15, $SE = 0.05$, 95 % $CI = [0.06, 0.26]$). Furthermore, in terms of first-stage moderated mediation, we found that TMT gender diversity moderates the indirect effect of CEO vision articulation on NPI via TMT relational attachment (*moderated-mediation index* = 0.18, $SE = 0.09$, 95 % $CI = [0.03, 0.37]$). We also found a significant second-stage moderated mediation effect (*moderated-mediation index* = 0.09, $SE = 0.06$, 95 % $CI = [0.02, 0.23]$). We present detailed results in Online Appendix B, Table II.

Endogeneity concerns

To alleviate potential endogeneity concerns in the studied relationships, we used the two-stage least-square (2SLS) approach by identifying instrumental variables (IV) (Semadeni et al., 2014; Wooldridge, 2002). For the effect of CEO vision articulation on TMT relational attachment, we identified two instruments: CEO birthplace and CEO birth order. CEO birthplace is theorized to shape early life experiences that influence a CEO’s values, beliefs, and strategic outlook, hence relating to vision articulation (Chin et al., 2021; House et al., 2014; Ren et al., 2023). Similarly, CEO birth order was found to affect leadership style related to vision articulation, e.g., firstborns tend to adopt structured visions, while later borns may have more innovative approaches (Campbell et al., 2019). Both factors thus likely fulfil the relevance condition for instrumental variables. In the meantime, neither the geographic location of a CEO’s birthplace nor the CEO’s birth order is influenced by the relationships they form within the company, these factors are as if random in relation to TMT relational attachment. Given they are exogenous, random characteristics that are not directly related to TMT

dynamics, they meet the exogeneity condition to be considered as appropriate instruments (Semadeni et al., 2014). CEO birthplace was measured as a binary variable (1 = CEO’s hometown matches the firm’s headquarters location, 0 = otherwise) and CEO birth order as an ordinal variable (1 = first-born, 2 = second-born, etc.).

In the TMT relational attachment–corporate entrepreneurship relationship, we used prior friendship ties and prior colleague ties as instruments (Tang et al., 2021). Prior friendship or colleague ties—whether an individual had pre-existing friendship or colleague tie (s) with other TMT members—foster trust and likely facilitate the development of TMT relational attachment (Ruef et al., 2003; Zuckerman & Reagans, 2001), meeting the relevance condition. However, the decision and action to pursue corporate entrepreneurship is driven by current TMT dynamics and collective decision-making. Past friendship or colleague ties at the individual level are unlikely to have a direct impact on the firm’s corporate entrepreneurship outcomes, meeting the exogeneity condition for instruments. We measured prior friendship and colleague ties as binary variables (1 = individual had pre-existing ties with TMT members, 0 = otherwise).

We utilized a two-stage least-square (2SLS) estimation to address potential endogeneity concerns. From the first stage of 2SLS, the strength of instruments was confirmed based on the F statistics (i.e., $F = 22.78$, $p < 0.001$ for CEO vision articulation; $F = 18.19$, $p < 0.001$ for TMT relational attachment). Then, the exogeneity of instrument variables is supported by the Sargan test ($p > 0.10$). Moreover, the results of Durbin-Wu-Hausman test and Hansen J-statistics confirmed that estimates from 2SLS and OLS regressions did not significantly differ ($p > 0.10$). We report the detailed results of the IV/2SLS approach in Online Appendix C: Table III presents the results of first-stage regression, and Table IV shows the results of second-stage regression.

Furthermore, to assess potential endogeneity arising from omitted variable bias (OVB), we analyzed the impact threshold of confounding variables (ITCV), which indicates the level of correlation an omitted variable would need with both the dependent and independent variables to influence the statistical inference (Busenbark et al., 2022; Frank et al., 2013). By calculating the ITCV and comparing it with the partial impacts of other variables, we assessed the likelihood of significant OVB. The ITCV results show that for TMT relational attachment, an omitted variable would need a partial impact above 0.19 to alter the inference, yet the highest impact among controls is 0.02, suggesting minimal risk of OVB. Similarly, for corporate entrepreneurship, an omitted variable with an impact below 0.31 would be needed to bias results, whereas the lowest partial impact observed is 0.02. This makes it unlikely that an omitted variable could invalidate our findings. We report detailed ITCV results in Online Appendix C, Table V. Combining results of the IV/2SLS and ITCV approach, endogeneity did not constitute a major concern in our study.

Sample selection bias

Prior research shows that collecting primary data from CEOs and TMTs is challenging as it requires extensive access to executives who are typically hesitant to participate in academic research (Hambrick, 2007; Tang et al., 2021). Even though we made efforts to reach out to CEOs, some did not respond, which could have resulted in sample selection bias. To address this issue, we followed Heckman’s (1979) two-stage procedure. In the first stage, we used a binary variable to determine which observations would be included in the second stage. To adhere to the recommendation that at least one variable should differ between the stages, we used a probit model and regressed the binary variable on firm age, and size. We calculated the inverse Mills ratio and included it as a control in the second stage. The insignificant lambda value ($\beta = -0.02$, $SE = 0.25$, $p = 0.86$) indicates that sample selection bias was not present in our sample. The positive and significant coefficient for TMT relational attachment ($\beta = 0.19$, $SE = 0.08$, $p = 0.027$) and the positive and significant coefficient for the interaction between TMT relational

³ The coders were first trained with 25 randomly selected vision statements after comprehending the literature and the notion of vision articulation and its various manifestations (House et al., 2014; Tsui et al., 2006; van Knippenberg & Stam, 2014). After reaching satisfactory inter-rater reliability (ICC = 0.908) in the trial coding by joint discussion and resolving major inconsistencies, the coders each completed the coding of 133 companies (ICC = 0.902). CEO vision articulation was measured by averaging their rating scores.

attachment and TMT gender diversity ($\beta = 0.27, SE = 0.12, p = 0.016$) were consistent with our initial results.

Estimation of economic significance

To assess the economic significance of our findings, we calculated effect sizes and changes in R-squared (ΔR^2) for key relationships. The standardized coefficient for CEO vision articulation predicting TMT relational attachment ($\beta = 0.28, \Delta R^2 = 0.07$) indicates a medium effect size, while TMT relational attachment predicting corporate entrepreneurship ($\beta = 0.39, \Delta R^2 = 0.13$) suggests a medium to large effect (Cohen, 1988). The indirect effect of CEO vision articulation on corporate entrepreneurship through TMT relational attachment represents 71 % of the total effect, indicating TMT relational attachment’s substantial mediating role. In the moderated mediation analysis, the indirect effect when TMT gender diversity is high (0.23) is nearly eight times larger than when it is low (0.03), underscoring the economic significance of TMT gender diversity in enhancing these relationships.

Additional insights from interviews

In addition to the quantitative results, we conducted follow-up interviews with six participating firms to gain a more contextualized understanding of our findings. The interviews reveal additional insight into the CEO-TMT interface in which this process unfolds. CEO vision articulation can enhance TMT relational attachment through several specific interfaces. First, regular face-to-face meetings structured around the vision can foster a sense of shared purpose and emotional connection among TMT members. As the CEO of Company E notes, “We hold regular face-to-face meetings at various levels of management. These meetings are not just about sharing updates but are structured to align our activities with the CEO’s vision.” Second, granting autonomy to TMT members in implementing the vision can strengthen their emotional investment in the team. The CEO of Company B explains, “We empower our managers by clearly defining their areas of responsibility and providing them with the authority to make decisions within those boundaries. This aligns with the CEO’s vision of fostering a culture of innovation and responsiveness.” Lastly, regular performance evaluations tied to the vision can reinforce relational bonds by providing a shared framework for accountability and growth. The CEO of Company C describes, “We conduct quarterly reviews that assess both individual and team performance against strategic objectives. This helps us identify any deviations from the CEO’s vision early on and allows us to take corrective actions as needed.”

The interview quotes also illustrate a wide range of entrepreneurial activities of these firms. Table 5 provides these illustrative examples. For instance, a social media management software company (Company C) started by producing scheduling tools but quickly expanded into new activities such as analytics and collaboration features, emphasizing innovation as a core value. Similarly, a craft brewery (Company D), which was initially focused on craft beer, demonstrated entrepreneurial behavior by expanding its product offerings to include non-alcoholic brews and adopting sustainable practices. These examples showcase how SMEs in our sample balance their corporate foundation with entrepreneurial initiatives, aligning with the theoretical essence of corporate entrepreneurship.

Discussion and implications

Theoretical implications

The upper echelons perspective has fundamentally shaped our understanding of strategic leadership, i.e. how top executives influence firm strategies (Hambrick, 2007). However, after four decades of research, a key question remains underexplored—how do CEOs’ behaviors translate into strategic outcomes through the “relational black

Table 5

Illustrative examples of corporate entrepreneurship activities of the sampled SMEs.

Company	Industry	Corporate Entrepreneurship Activities and Initiatives
Company A	Consulting and Technology Solutions	In our company, our roots are in consulting for defense and tech solutions. Early on, we recognized that staying competitive meant fostering creativity from within. We’ve developed programs encouraging our teams to think like entrepreneurs, pushing creative boundaries to find new consulting methods and technology solutions. Our focus is crucial as it drives innovative thinking and keeps us agile amid rapid industry changes.
Company B	Floral retailer	We started this company to disrupt the traditional flower delivery model. We began with our ‘letterbox flowers,’ an idea to deliver fresh bouquets that fit through customers’ mail slots. We’ve continued to innovate with sustainable packaging and personalized reminders for occasions, which has allowed us to expand our customer base and maintain a unique, customer-centric brand.
Company C	Social media management software	We started as a simple social media scheduling tool, but our team quickly realized the need for more comprehensive tools. We have now ventured into other activities. This allows us to propose new solutions—like analytics and collaboration features—so we’ve developed a more versatile platform. Innovation is key for us, encouraging everyone to bring forward ideas to improve and better serve our users.
Company D	Craft brewery	When we launched this company, it was all about great craft beer. But, through our ‘Equity for Punks’ campaign, we’ve also allowed our customers to become shareholders. This innovative approach has been powerful—not only did we raise funds, but we also created a community of loyal customers who are invested in our success. Our expansion into non-alcoholic brews and sustainable practices further pushes our limits in the brewing industry.
Company E	Household goods	We began with ergonomic kitchen tools designed for everyone, including those with limited hand mobility. Innovation is integral here; we constantly look for feedback and ways to improve our products’ design and accessibility. Our commitment to customer-centric innovation has led to hundreds of household items, each crafted to make life a bit easier. Our team knows that no product is ever ‘finished’—there’s always room for improvement.
Company F	Beauty and skincare	The company was founded on the idea of beauty products inspired by real people’s needs. Innovation means staying close to our community, which helps us co-create products directly with customers. We initially focused on online sales, but with pop-up stores and flagships, we now create physical experiences, too. Our innovative approach allows us to stay adaptable and grow alongside our customers’ evolving needs.

box” of CEO-TMT dynamics (Georgakakis et al., 2022; Neely et al., 2020)? While we know that CEOs significantly influence firm strategies through their TMTs, we have limited understanding of the relational mechanisms through which this influence occurs. This theoretical puzzle is particularly salient when it comes to CEOs’ vision articulation. Consider Microsoft’s dramatic transformation under Satya Nadella. When he became CEO in 2014, Microsoft was struggling with missed

opportunities in mobile and cloud computing. Nadella articulated a clear vision of Microsoft as a cloud-first, mobile-first company, declaring “Microsoft must transform and reimagine itself for the digital era” (Nadella et al., 2017). This vision galvanized his top management team to pursue ambitious entrepreneurial initiatives. Within five years, Microsoft’s cloud business Azure grew from \$2.8 billion to \$45 billion in revenue, while the company launched transformative ventures in artificial intelligence, mixed reality, and quantum computing. Notably, this transformation was led by largely the same top management team that had been hesitant to pursue such ventures under previous CEO Steve Ballmer. In contrast, consider Intel’s struggles under Brian Krzanich. Despite recognizing the importance of AI and mobile computing, Krzanich’s unclear vision and frequent shifts left his top team fragmented. In 2017 and 2018, Intel had the opportunity to acquire a 15 % stake in OpenAI for \$1 billion, with an option to double that stake by providing hardware at cost. However, then-CEO Bob Swan declined the offer, doubting the near-term potential of generative AI models. This decision is now viewed as a significant missed opportunity, especially as competitors like NVIDIA have since captured substantial market share in AI chip technology (Reuters, 2024). These contrasting examples highlight our limited understanding of how CEOs’ vision articulation influences their top teams to embrace or resist corporate entrepreneurship and the relational mechanisms through which this influence occurs. As such, our study makes a valuable contribution to the literature on strategic leadership in organizations by shedding light on the CEO behavior of vision articulation and its impact on relational states within the TMT. Specifically, we find a significant indirect impact of CEO vision articulation on corporate entrepreneurship through TMT relational attachment to offer a novel perspective on the CEO-TMT interface and upper echelons research. While the CEO-TMT interface literature has traditionally focused on cognitive and behavioral processes through which CEOs influence TMTs and organizational performance (Simsek et al., 2018), our findings significantly advance the understanding of the CEO-TMT interface by highlighting the importance of TMTs’ relational processes, their antecedents, and strategic ramifications. By demonstrating how CEO vision articulation fosters TMT relational attachment and, in turn, drives corporate entrepreneurship, we provide a relational view that shifts existing paradigms and opens new avenues for research in strategic leadership, emphasizing the critical role of emotional and social bonds in achieving strategic outcomes.

Furthermore, our study adds to the cognitive–affective leadership literature by helping to understand a critical cognitive–affective puzzle that has long confounded scholars in the field: how does the cognition of leaders shape affective and relational processes within the team? We introduce attachment theory as a novel lens to understand how CEO vision articulation translates into TMT relational dynamics, particularly relational attachment, helping to unpack this puzzle. Attachment theory provides a robust framework for understanding how relational attachments are formed (Bowlby, 1979). This theory posits that individuals seek security and a sense of belonging through close relationships. For TMTs, we argue that by communicating a clear and compelling vision, leaders create a sense of stability and direction, which fosters emotional bonds and relational attachment within the team. Moreover, distinct from prior research that focused on leaders’ generic leadership styles, our findings highlight the potent and unique role of leader vision articulation in eliciting team relational attachment, along with its boundary conditions. As one of the first to apply attachment theory in the context of leadership and move beyond its predominant focus at the individual level (Yip et al., 2018), our research reveals the significant influence of TMT relational attachment on organizational outcomes.

Finally, our study makes a significant contribution by identifying the novel moderating role of TMT gender diversity. This insight provides a deeper understanding of how internal TMT structural factors shape and enhance the effectiveness of CEOs in driving organizational outcomes. Traditionally, research on the strategic impact of CEO behaviors has focused on external structural factors, such as market dynamism and

industry velocity, as moderators (Jansen et al., 2006; Simsek et al., 2010). Our study diverges from these traditional examinations by highlighting the importance of internal structural factors, specifically TMT gender diversity. Advocates of gender diversity have long emphasized the “business case” for higher representation of women in TMTs, linking it with improved firm performance (McKinsey & Company, 2018). Our study extends this line of argument by demonstrating that gender diversity enhances the relational dynamics within TMTs. Our findings reframe the role of diversity in leadership research by demonstrating that gender diversity acts as a facilitator of effective leadership, rather than merely a direct contributor to performance outcomes. This reframing highlights the importance of diversity as a contextual factor that amplifies the impact of leadership behaviors on organizational success.

Practical implications

The findings of our study have significant implications for CEOs in SMEs in terms of enhancing relational attachment within their top management teams. Our research suggests that CEOs who can communicate their vision to their team members are more likely to foster a sense of purpose and affective commitment within their TMTs. Hence, CEOs in SMEs could prioritize the development and communication of their vision to ensure that it is well understood and embraced by their teams. It is noteworthy that CEOs who overlook the relational dynamics of their top teams and fail to articulate their visions may face challenges in maintaining relational attachment within their top management teams. This, in turn, can hinder the firm’s ability to pursue entrepreneurial initiatives. This is because effectively communicating an inspiring vision is widely recognized as a crucial component of effective leadership behavior (van Knippenberg & Stam, 2014). Furthermore, it is imperative for CEOs in SMEs to prioritize the role of relational attachment in fostering entrepreneurial behaviors. When TMT members feel a strong emotional connection and attachment to their colleagues and organization, they are more likely to engage in exploratory and innovative behaviors. Thus, CEO in SMEs may consider organizing group-building activities such as ice-breaking games or family days. These activities can facilitate bonding and strengthen relationships among team members. Overall, by the current findings, we suggest that incorporating leader vision articulation as a selection criterion for CEOs may be feasible in many SMEs if the firm is not still led by founder CEOs. In addition, executive training programs and strategic retreats can be utilized to improve relational attachment at the senior executive level. TMT members tend to value such workshops, as they provide opportunities for personalized reflections.

Limitations and future research directions

To fully appreciate the theoretical and practical implications of this study, it is important to consider its limitations, which also highlight avenues for future research. First, the sample of firms studied only represents four cities in Taiwan and therefore may not be representative of the wider population of Taiwanese SMEs, or beyond the Taiwanese SME context. While our findings may hold some degree of generalizability as the study context aligns with global SME characteristics (Taipei Times, 2020), cultural variations (e.g., leadership styles, power distance) can influence the potency of the relationships. Thus, collecting data from other regions, examining firms in different cultural or economic settings, or including other types of organizations, such as publicly traded firms, could offer valuable insights into the applicability of the study’s conclusions. Second, it is worth noting that while we focused on corporate entrepreneurship as a relevant outcome, CEO vision articulation could potentially drive other important strategic outcomes such as ambidexterity (Kortmann, 2015), or entrepreneurial orientation (Covin & Wales, 2012). We encourage further exploration of this topic in future research. Third, while we theorize and find TMT relational

attachment as a key mechanism underlying the strategic impact of CEO vision articulation, our results show a partial mediation. Thus, the influence of CEO vision articulation might be channeled through additional pathways, and we encourage future research to explore other potential TMT mechanisms (such as team identification) to provide a more complete picture of the strategic influence of CEO vision articulation. Fourth and similarly, our examination of TMT gender diversity as a CEO vision articulation boundary condition is just one piece of the puzzle. To gain a more complete understanding of the CEO vision articulation effect through TMT relational attachment, it would be valuable for future research to investigate how this relationship is moderated by other internal or external environmental factors such as organizational cultures. Finally, although our methodology possessed certain strengths—the collection of data over time from multiple sources—which allowed us to circumvent the inflated correlations often observed in same-source data (Podsakoff, et al., 2003), our data is not without limitations. For example, while we have employed multiple approaches (e.g., statistical controls, instrumental variables) to address endogeneity concerns, the structure of our data precludes us from making strict causal inferences. To address this limitation, future studies could employ other research methods, such as longitudinal research design with archival data and field experiments, if feasible, to strengthen the causal inferences.

Conclusion

Leveraging insights from the CEO-TMT interface research and attachment theory, we developed and investigated a model that explores the mechanism and conditions under which CEO vision articulation influences corporate entrepreneurship. The results demonstrate that CEO vision articulation exerts an indirect impact on corporate entrepreneurship through TMT relational attachment, with this indirect effect being more pronounced when TMT gender diversity is high. With these findings, we encourage future research into the strategic implications of CEO vision articulation through TMTs' relational processes, such as relational attachment, and related boundary conditions. We believe that the field of upper-echelon research will likely develop a stronger micro-foundation by incorporating the relational aspects of TMT dynamics and processes that have been traditionally overlooked in the literature.

CRedit authorship contribution statement

Samuel Adomako: Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Nadia Zahoor:** Methodology, Formal analysis, Data curation, Conceptualization. **Shi Tang:** Writing – review & editing, Writing – original draft, Conceptualization. **Irene Chu:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Stephen X. Zhang:** Writing – review & editing, Writing – original draft, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.leaqua.2025.101881>.

Data availability

Data will be made available on request.

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