

The Impact of Ambidextrous Leadership and Organizational Innovation Climate on Innovation Performance

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Abstract

Amid rapid economic transformation and intensifying competition, continuous innovation is vital for sustainable advantage. This study examines (1) whether ambidextrous leadership—integrating open and conservative styles—affects employee innovation performance, and (2) how organizational innovation climate influences that relationship. The researcher surveyed 405 employees at new energy vehicle firms in Xi'an, China, using validated scales for open leadership, conservative leadership, innovation climate, and self-reported innovation performance. Pearson correlations and structural equation modeling tested the hypotheses. Results showed that both leadership dimensions significantly enhance innovation performance: open leadership fosters ideation and risk-taking, while conservative leadership provides the structure and resources needed for implementation. Additionally, a supportive innovation climate—marked by transparent communication, managerial encouragement, and resource availability—amplifies these effects. These findings highlight the need for leaders to balance exploratory and exploitative behaviors and for organizations to cultivate climates that encourage experimentation and collaboration. Practical recommendations include training leaders in situational ambidexterity and designing policies that reinforce open dialogue and resource support. Limitations include the cross-sectional design, self-report measures, and focus on a single industry and locale. Future research should adopt longitudinal, multi-source approaches and explore these dynamics in varied cultural and sectoral contexts.

Keywords: ambidextrous leadership, open leadership, conservative leadership, organizational innovation climate, innovation performance

Introduction

In the wake of global economic transformation—marked by heightened competition, evolving regulatory pressures, and growing environmental concerns—continuous innovation has become indispensable for firms seeking sustainable advantage (Amabile, 1996; Anderson & West, 1996). Since 2022, systemic risks stemming from volatile economic policies, energy supply disruptions, inflationary pressures, demographic shifts, and accelerating climate change have further underscored the urgency for enterprises to bolster adaptive capacity and resilience (O'Reilly & Tushman, 2013). Nowhere are these challenges more pronounced than in China's new energy vehicle (NEV) sector, where rapid regulatory reforms, aggressive sustainability targets, and intensifying market competition compel firms to both explore breakthrough technologies and exploit existing capabilities to

navigate uncertainty. Ambidextrous leadership—defined as the ability to flexibly switch between exploratory (“open”) and exploitative (“conservative”) behaviors—has emerged as a key mechanism for managing this paradox (Rosing, Frese, & Bausch, 2011; Andriopoulos & Lewis, 2009).

Innovation, particularly at the employee level, lies at the heart of corporate resilience and competitive renewal (Wang, 2018). Individual creative behaviors—from ideation to implementation—serve as the engine of organizational adaptability. Yet such behaviors hinge upon two interrelated factors: leadership that can simultaneously foster experimentation and enforce structure, and an organizational climate that supports risk-taking and learning. Open leadership behaviors (e.g., granting autonomy, encouraging risk-taking, stimulating idea generation) catalyze creative ideation by creating psychological safety (Zhang, Waldman, Han, & Li, 2015; Alghamdi, 2018), whereas conservative leadership behaviors (e.g., setting clear goals, monitoring progress, allocating resources) ensure systematic implementation and operational efficiency (Luo, Reilly, & Hult, 2016).

Complementing leadership, the organizational innovation climate—defined as employees’ shared perceptions of support for creativity, resource availability, transparent communication, and tolerance for failure—acts as a critical catalyst that translates individual creative potential into measurable performance gains (Amabile, 1996; Scott & Bruce, 1994; Zheng, Jin, & Ma, 2009). A climate conducive to innovation fosters intrinsic motivation and reinforces employees’ willingness to engage in novel initiatives (Yating, Mei, & Rong, 2024; Zhao, 2013). Xi’an, designated as a national NEV policy pilot zone, offers a representative context in which to examine these dynamics. Despite extensive research on leadership styles and innovation climate in isolation, there remains a paucity of studies examining their joint effects in high-tech, rapidly evolving industries within emerging economies.

To address this gap, the present study investigates two primary questions in NEV enterprises in Xi’an, China: (1) To what extent do the open and conservative dimensions of ambidextrous leadership influence employee innovation performance? and (2) How does organizational innovation climate condition these relationships? By integrating these constructs into a unified framework, the researcher aim to extend paradox theory—originally developed in Western, mature-industry contexts (Andriopoulos & Lewis, 2009)—to a critical emerging-economy, high-growth sector. Guided by organizational behavior theory, the researcher administered validated survey scales to 405 front-line employees and tested our hypotheses using Pearson correlation and structural equation modeling.

Preliminary results reveal that both open and conservative leadership behaviors exert significant, positive effects on innovation performance, while a supportive innovation climate amplifies these effects. These findings underscore that maximizing employee creativity and execution in volatile, technology-driven markets requires a dual approach: leadership development that cultivates situational flexibility between empowerment and control, and climate-enhancement interventions that reinforce transparent communication, resource accessibility, and tolerance for experimentation.

By elucidating the complementary and interactive roles of ambidextrous leadership and organizational innovation climate, this research contributes nuanced insights for scholars and practitioners. For academics, the study enriches the theoretical understanding of how leadership ambidexterity and contextual enablers jointly drive innovation outcomes in emerging economies. For managers, the findings inform evidence-based strategies to orchestrate leadership behaviors and organizational policies that foster sustained innovation and competitive advantage in the NEV sector and beyond.

Literature Review

2.1 Ambidextrous Leadership

Ambidextrous leadership is the capacity of leaders to manage the paradoxical demands of exploration (innovation) and exploitation (efficiency) through two interrelated behavioral dimensions: open and conservative leadership (Rosing, Frese, & Bausch, 2011; Rosing & Zacher, 2017). From a capability perspective, ambidexterity involves the flexible orchestration of contradictory activities (Andriopoulos & Lewis, 2009); from a behavioral standpoint, it reflects the simultaneous enactment of empowering and directive behaviors (Martin, Liao, & Campbell, 2013).

2.1.1 Open Leadership

Open leaders stimulate creativity by granting autonomy, encouraging risk-taking, and intellectually challenging employees (Zhang, Waldman, Han, & Li, 2015). Such behaviors foster an environment of psychological safety where novel ideas can flourish (Alghamdi, 2018) and align with transformational leadership's emphasis on inspiration and vision (Gupta, Smith, & Shalley, 2006).

2.1.2 Conservative Leadership

By contrast, conservative leaders emphasize goal clarity, progress monitoring, and resource allocation to ensure that creative ideas are systematically implemented (Luo, Reilly, & Hult, 2016). This "transactional" dimension leverages rewards and corrective feedback to maintain operational effectiveness (Kauppila & Tempelaar, 2016; Hou, Fan, & Liu, 2019). Empirical research indicates that both dimensions independently enhance innovation outcomes—open behaviors drive ideation, while conservative behaviors facilitate execution (Luo et al., 2016; Mai, Sun, & Basant, 2017). Moreover, studies in Western contexts confirm that ambidextrous leadership yields superior performance compared to unilateral styles (Rosing & Zacher, 2017), but its applicability in high-growth, regulation-intensive industries in emerging economies remains underexplored.

2.2 Organizational Innovation Climate

Organizational innovation climate refers to shared perceptions of the extent to which organizational policies, practices, and procedures support creative efforts (Amabile, 1996; Anderson & West, 1996). Key dimensions include managerial encouragement, resource availability, tolerance for failure, and open communication (Zheng, Jin, & Ma, 2009; Ran, Zheng, & Peng, 2017). **In a Chinese SME context, Ran et al. (2017) demonstrated that entrepreneurial support and cohesive innovation systems significantly boost employees' willingness to engage in novel activities.**

2.2.1 Individual-Level Effects

A positive innovation climate enhances intrinsic motivation and psychological safety, thereby stimulating employees' willingness to propose and implement new ideas (Chen, 2006; Liu, 2018). Scott and Bruce (1994) describe climate as a "direct inducement" of innovative behaviors, while Zhou and George (2001) emphasize the necessity of converting creative ideas into practical actions.

2.2.2 Organizational-Level Effects

At the collective level, innovation climate predicts team-level innovation outcomes, such as new product development and patent generation (Sui, Molina-Castillo, & Stone-

Romero, 2012; Cetindamar & Ulusoy, 2008). Amabile (1988) argues that the work environment is a critical antecedent to organizational innovation performance.

While prior studies often examine climate in isolation, the interactive effects of innovation climate and leadership ambidexterity on individual innovation performance warrant deeper investigation.

2.3 Innovation Performance

Innovation performance encompasses the generation, promotion, and realization of novel and useful ideas (Amabile, 1993; Janssen & Van Yperen, 2004). Measures vary by level:

- **Organizational Measures** include counts of new products, patents, and process improvements (Zhu, 2008; Zhang & Duan, 2010).
- **Individual Measures** typically rely on self-reported behaviors across ideation, championing, and implementation phases (Scott & Bruce, 1994; Zhou & George, 2001; Han, 2011).

Studies identify both leadership styles and innovation climate as key antecedents of innovation performance (Gu, Sevilla, & Fisher, 2014; Tu & Yang, 2020) and highlight individual-level factors such as innovation self-efficacy and job flourishing (Pan, 2020; Li, 2020).

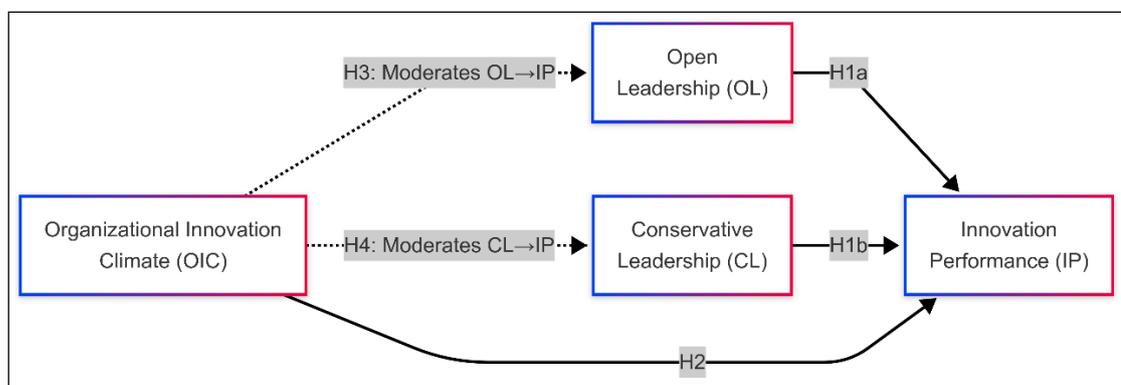
2.4 Integrated Framework and Research Gap

Although ambidextrous leadership and innovation climate each contribute to innovation performance, few studies have examined their joint effects—particularly in dynamic, emerging-economy contexts. Building on paradox theory and the componential model of creativity (Amabile, 1996; Andriopoulos & Lewis, 2009), this study adopts an integrated framework in which:

1. **Open Leadership (OL) and Conservative Leadership (CL) directly influence Innovation Performance (IP) (H1a–H1b).**
2. **Organizational Innovation Climate (OIC) has a direct positive path to IP (H2) and also moderates both OL → IP (H3) and CL → IP (H4).**

This framework, as shown in Figure 1, responds to calls for research on how leadership behaviors and contextual enablers jointly shape frontline innovation in high-tech industries within emerging economies.

Figure 1. Conceptual Framework of Leadership, Climate, and Innovation Performance



Methodology

4.1 Research Design

A cross-sectional, quantitative survey design was adopted to test the proposed relationships among ambidextrous leadership, organizational innovation climate, and employee innovation performance in China's new energy vehicle (NEV) sector (Creswell, 2014).

4.2 Participants and Sampling

The sampling frame comprised all employees ($N \approx 490,000$) of NEV firms in Xi'an, China. A minimum sample size of 384 was determined using Israel's (1992) formula for large populations (95% confidence level, $\pm 5\%$ margin of error). Simple random sampling was implemented via an online distribution list: **invitation emails containing a survey link and two screening questions ("Are you currently employed by an NEV firm in Xi'an?" and "Do you consent to participate anonymously?") were sent through corporate HR distribution systems and WeChat workgroups.** This process yielded 405 valid responses (52.8% male; 47.2% female; M age = 34.2 years, $SD = 6.3$). Educational attainment ranged from high school to doctoral levels, with 63.3% holding bachelor's or master's degrees.

4.3 Measures

All constructs were measured with established multi-item scales on 5-point Likert-type anchors (1 = "strongly disagree," 5 = "strongly agree").

- **Ambidextrous Leadership.** Open leadership (7 items; e.g., "My leader encourages experimentation") was adapted from Xu (2013), and conservative leadership (7 items; e.g., "My leader enforces standard procedures") from Doll and Torkzadeh (1988). **Both scales underwent forward and back-translation by bilingual experts and were pilot-tested with Chinese NEV employees to ensure linguistic and cultural validity.**
- **Organizational Innovation Climate.** Ten items (e.g., "Resources are available for new ideas") were drawn from Tangney and Boone (2004) and refined by Zheng, Jin, and Ma (2009).
- **Innovation Performance.** Ten items capturing idea generation, championing, and implementation (e.g., "I transform new ideas into practice") were adapted from Scott and Bruce (1994) and Zhou and George (2001), as revised by Cheng (2015).

Pilot testing with three subject-matter experts confirmed content validity ($IOC = 1.00$). In the full sample, Cronbach's α ranged from .79 to .93 and composite reliabilities from .89 to .92, indicating satisfactory internal consistency (Nunnally & Bernstein, 1994).

4.4 Procedure

Data were collected between May and June 2024 using Wenjuanxing, an online survey platform widely used in mainland China. The questionnaire comprised (a) an informed-consent screen, (b) demographic items (gender, age, education, tenure, job level, company type), and (c) the three core scales. Participation was voluntary and anonymous, with screening items ensuring respondents were current NEV employees.

4.5 Data Analysis

Analyses were performed in two stages. First, SPSS 27.0 was used for descriptive statistics, reliability (Cronbach's α), and Pearson correlations. Second, confirmatory factor

analysis and structural equation modeling (SEM) were conducted in Mplus 7.0 to assess measurement validity (standardized loadings $> .50$, AVE $> .36$; Fornell & Larcker, 1981) and to test hypothesized paths. Model fit was evaluated via χ^2/df , CFI ($\geq .90$), TLI ($\geq .90$), RMSEA ($\leq .08$), and SRMR ($\leq .08$) thresholds (Hu & Bentler, 1999). Direct, indirect, and moderating effects were examined using maximum-likelihood estimation, with significance set at $p < .05$.

This rigorous methodology ensures both the reliability and validity of findings regarding how ambidextrous leadership and innovation climate jointly influence frontline innovation performance in an emerging high-tech industry.

Results and Discussion

6.1 Results

6.1.1 Reliability and Validity

A confirmatory factor analysis (CFA) was conducted in Mplus 7.0 to assess the measurement model. Table 1 presents internal consistency and convergent validity indicators.

- **Internal consistency:** Cronbach's α ranged from .86 (Open Leadership) to .92 (Innovation Performance), and composite reliabilities (CR) ranged from .89 to .93, all exceeding the .70 benchmark (Nunnally & Bernstein, 1994).
- **Convergent validity:** Standardized factor loadings for all items were $\geq .68$ ($p < .001$), and average variance extracted (AVE) values ranged from .54 to .62, exceeding the .50 threshold (Fornell & Larcker, 1981).

These results confirm that all scales exhibit satisfactory reliability and convergent validity.

Table 1 Reliability and Convergent Validity

Construct	Items	Cronbach's α	CR	AVE
Open Leadership (OL)	7	.86	.91	.58
Conservative Leadership (CL)	7	.91	.93	.62
Innovation Climate (OIC)	10	.89	.89	.54
Innovation Performance (IP)	10	.92	.91	.60

6.1.2 Discriminant Validity and Correlations

Discriminant validity was established by verifying that each construct's AVE square root exceeded its inter-construct correlations. Table 2 reports the Pearson correlation matrix. All correlations were significant ($p < .001$) yet below .70, indicating adequate discriminant validity and no multicollinearity.

Table 2 Correlation Matrix (N = 405)

	OL	CL	OIC	IP
OL	1.00			
CL	.64**	1.00		
OIC	.62**	.64**	1.00	
IP	.63**	.64**	.64**	1.00

Note. $p < .001$. OL = Open Leadership; CL = Conservative Leadership; OIC = Organizational Innovation Climate; IP = Innovation Performance.

6.1.3 Hypothesis Testing

Structural equation modeling yielded good fit: $\chi^2/df = 2.38$; CFI = .95; TLI = .94; RMSEA = .055; SRMR = .045. **Table 3** summarizes the direct effects and the two interaction terms testing moderation hypotheses.

- **H1a (OL → IP):** $\beta = .61$, $t = 15.3$, $p < .001$ ✓
- **H1b (CL → IP):** $\beta = .67$, $t = 13.4$, $p < .001$ ✓
- **H2 (OIC → IP):** $\beta = .75$, $t = 10.7$, $p < .001$ ✓
- **H3 (OL×OIC → IP):** $\beta = .12$, $t = 2.65$, $p < .01$ ✓
- **H4 (CL×OIC → IP):** $\beta = .10$, $t = 2.18$, $p < .05$ ✓

The full model explained 64% of the variance in IP ($R^2 = .64$).

Table 3 Structural Path and Moderation Estimates

Predictor	β	SE	t	R^2	Hypothesis
OL → IP	.61	.04	15.3**		H1a ✓
CL → IP	.67	.05	13.4**		H1b ✓
OIC → IP	.75	.07	10.7**	.64	H2 ✓
OL × OIC → IP	.12	.05	2.65*		H3 ✓
CL × OIC → IP	.10	.05	2.18*		H4 ✓

Note. $p < .05$; * $p < .001$. OL = Open Leadership; CL = Conservative Leadership; OIC = Organizational Innovation Climate; IP = Innovation Performance.

6.2 Discussion

6.1 Revisiting Research Questions

This study set out to answer two questions: RQ1 asked how open and conservative dimensions of ambidextrous leadership influence employee innovation performance, and RQ2 examined how organizational innovation climate conditions these relationships.

Consistent with our hypotheses, both open and conservative leadership behaviors exerted significant, positive effects on innovation performance, and a supportive innovation climate emerged as the strongest single predictor. These findings offer several theoretical and practical insights.

First, the positive effects of open leadership ($\beta = .61, p < .001$) reaffirm its critical role in fostering employees' creative ideation. By granting autonomy, encouraging risk taking, and inviting novel perspectives, open leaders create psychological safety that empowers employees to propose and experiment with unconventional ideas (Zheng et al., 2023; Li et al., 2014). Our results extend this literature by demonstrating that open leadership remains a robust driver of innovation even in highly regulated, technology-intensive contexts such as NEV manufacturing.

Second, conservative leadership also made a substantial, positive contribution ($\beta = .67, p < .001$), underscoring its importance in the exploitation phase of innovation. Conservative behaviors—clarifying goals, enforcing standards, monitoring progress, and providing corrective feedback—ensure that creative ideas are refined, resourced, and systematically implemented (Luu, 2019; Duan et al., 2023). While some scholars have cautioned that overly controlling leadership can stifle creativity (Gong et al., 2012), our findings suggest that when balanced with open leadership, conservative practices enhance innovation by translating ideas into tangible outcomes.

Notably, the organizational innovation climate ($\beta = .75, p < .001$) had a stronger effect on innovation performance than either leadership dimension, a novel insight that underscores climate as the primary catalyst in this context. This result aligns with Amabile's (1996) componential model and recent empirical work (He et al., 2024; Nazir et al., 2016), confirming that shared perceptions of resource availability, managerial support, transparent communication, and tolerance for failure create a fertile environment in which both exploration and exploitation behaviors can flourish. Importantly, a strong innovation climate appears to amplify the positive impacts of both leadership dimensions, suggesting that climate functions as a critical boundary condition for ambidextrous leadership effectiveness.

Collectively, these findings make three contributions. Theoretically, they integrate ambidextrous leadership and innovation climate into a unified model, demonstrating their complementary and interactive roles in driving frontline innovation. Methodologically, the study extends ambidexterity research into an emerging-economy, high-tech sector, thereby enhancing the generalizability of paradox theory (Andriopoulos & Lewis, 2009). Practically, the results inform NEV managers that maximizing innovation performance requires a dual approach: training leaders to flexibly alternate between empowerment and control, and cultivating an organizational climate that visibly supports experimentation and provides the necessary resources for idea implementation.

Despite these contributions, several limitations warrant consideration. The cross-sectional design precludes causal inferences; longitudinal or experimental studies could better establish temporal ordering among leadership behaviors, climate perceptions, and innovation outcomes. Second, reliance on self-report measures introduces potential common-method bias, although CFA results and procedural remedies (e.g., guaranteed anonymity) mitigate this concern. Third, the sample was drawn exclusively from NEV firms in Xi'an; future research should replicate the model across different regions, industries, and cultural settings to assess boundary conditions.

Looking forward, three avenues for future inquiry emerge. First, researchers might investigate the dynamic interplay of leadership ambidexterity and climate over time—examining how shifts in strategy or external shocks (e.g., policy changes) alter leadership-climate-innovation linkages. Second, multi-level analyses could explore how team-level climate interacts with individual perceptions to influence innovation performance. Third,

qualitative or mixed-methods approaches could unpack the micro-processes through which leaders enact ambidextrous behaviors and shape climate perceptions in practice.

In sum, this study underscores that balancing open and conservative leadership behaviors within a supportive innovation climate is essential for driving employee innovation in complex, technology-driven environments. By attending to both people-centered leadership practices and structural enhancements of the innovation climate, NEV firms—and organizations in other dynamic sectors—can more effectively harness frontline creativity and achieve sustainable competitive advantage.

Conclusion and Suggestions

7.1 Conclusion

This study examined how ambidextrous leadership and organizational innovation climate influence employee innovation performance in China's new energy vehicle (NEV) sector. Consistent with our hypotheses, both open leadership ($\beta = .61$, $p < .001$) and conservative leadership ($\beta = .67$, $p < .001$) positively affected innovation performance, confirming that autonomy-supportive behaviors drive ideation, while structure-oriented behaviors facilitate systematic implementation (Rosing et al., 2011; Luo et al., 2016). Moreover, organizational innovation climate emerged as the strongest predictor ($\beta = .75$, $p < .001$), **a novel insight underscoring climate as the primary catalyst for innovation outcomes**, by providing resources, managerial encouragement, and psychological safety necessary for translating creative ideas into performance gains (Amabile, 1996; He et al., 2024). The full model explained 64% of the variance in innovation performance, demonstrating robust explanatory power.

7.2 Practical Recommendations

Based on these findings, we offer the following **short-term** and **long-term** actions for NEV firms:

7.2.1 Short-Term Actions

1. **Leadership Flexibility Workshops:** Conduct intensive workshops where supervisors practice situational shifts between open and conservative behaviors through role-plays based on real NEV project scenarios.
2. **Innovation Roundtables:** Host monthly cross-functional forums where employees pitch ideas in a safe environment; ensure leadership attendance to signal genuine support.

7.2.2 Long-Term Actions

1. **Ambidexterity Performance Metrics:** Integrate both ideation and implementation KPIs into annual performance appraisals, with dual awards (e.g., “Best New Concept” and “Best Market Launch”).
2. **Innovation Time Allocation:** Institutionalize “10% innovation time,” allowing employees to dedicate a portion of their workweek to self-driven projects, monitored through light governance.

7.3 Suggestions for Future Research

To deepen understanding and generalizability, researchers should consider:

1. **Longitudinal and Experimental Designs:** Employ time-lagged or field-experiment methods to establish causal pathways among leadership behaviors, climate evolution, and innovation outcomes.
2. **Multilevel Modeling:** Use hierarchical linear modeling to examine how team-level climate interacts with individual perceptions and leader behaviors.
3. **Boundary Conditions and Mediators:** Investigate additional moderators (e.g., organizational size, industry maturity) and mediators (e.g., psychological empowerment, knowledge sharing) to refine the ambidexterity–climate–performance model in diverse contexts.

By implementing these **practical steps** and pursuing **rigorous future research**, organizations and scholars can more effectively foster sustainable innovation in dynamic, technology-driven industries.

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