Impact of leadership styles on creative deviance: mediating roles of feedback-seeking and psychological availability, with moderating effects of achievement motivation and learning climate

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Abstract: Innovation becomes vital to organizational competitiveness, and stimulating employees' creative deviations has emerged as a key management challenge. This study investigates the impact of dual leadership—open and closed styles—on creative deviations, focusing on the mediating roles of feedback-seeking behavior and psychological availability and the moderating effects of achievement motivation and organizational learning climate. The survey collected data from 635 employees in high-tech and creative industries; the findings reveal that open leadership promotes creative deviations by enhancing feedback-seeking behavior and psychological availability. In contrast, closed leadership has the opposite effect. Achievement motivation strengthens the positive effects of open leadership and mitigates the negative impacts of closed leadership. Additionally, an organizational learning climate enhances feedback-seeking behavior and psychological availability, further supporting creative deviations. These insights guide organizations in optimizing leadership styles and work environments to unlock employees' innovative potential.

Keywords: Achievement motivation, Ambidextrous leadership, Creative deviance, Psychological availability, Seeking Feedback.

1. Introduction

Innovative behavior is a key driver of organizational development. In innovation-driven environments, not all ideas are immediately supported due to resource or time constraints. It leads some employees to experiment privately with new ideas, a creative deviation [1]. In global business development, much innovation stems from employees' deviant behaviors, which have disrupted organizations, for example as seen with the Sogou browser, 3M's transparent tape, and HP's new display monitors. In the innovation-driven era, organizations focus more on outcomes than innovation methods, intensifying the conflict between innovation pursuit and organizational constraints, leading to increased creative deviation [2]. While creative deviation may appear to violate norms, when guided effectively, its positive impact can be amplified, helping organizations maximize resources and overcome innovation bottlenecks. Thus, creative deviation is an effective means of organizational innovation Weipeng, et al. [3]. Christensen, et al. [4] introduced disruptive innovation as a concept describing innovations that challenge incumbents' dominance in mainstream markets. Both disruptive innovation and creative deviation, rooted in social psychology, drive employee innovation by breaking organizational norms to create value. While creative deviation focuses on the process driven by incentives that motivate employees to align with organizational goals and enhance performance [1].

Leader's attitudes influence employee's engagement in creative deviation, including reward, punishment, neglect, forgiveness, and control [5]. Consistent leadership, balancing authority with

autonomy, fosters risk-taking in creative deviation among highly flexible employees [6]. Moreover, Rosing and Zacher [7] highlight that dual leadership impacts employees' creative behaviors through combined and individual effects. Open leadership promotes innovation by encouraging rule-breaking and novel problem-solving, while closed leadership emphasizes rule adherence and standardized practices [8]. These distinct styles influence behavior differently depending on situational demands: open leadership enhances innovation performance under high creative demands, whereas closed leadership supports performance when implementation demands are higher [7, 9].

When multiple leadership behaviors occur, employees align their actions with their perception of situational demands. The study of Rosing and Zacher [7]; Kim, et al. [10] examine how open and closed leadership independently influence creative deviation. Open leadership fosters autonomy and task ownership, encouraging proactive behaviors under "weak" external conditions. In contrast, closed leadership seeks to preserve the status quo and minimize risk, and employees may exhibit more passive behavior when initiating or considering changes and future outcomes. In other words, employees may have little reason to assume broad roles and responsibilities. The study of [8] and Crans, et al. [11] explores feedback seeking and psychological availability as mediators between open and closed leadership and creative deviation. Open leadership fosters open communication, values employee ideas, and encourages feedback, boosting motivation and confidence to explore new approaches. Feedback seeking, where employees gather and process external information, enhances innovative thinking and problem-solving [12, 13].

Creative deviance among employees is influenced by leadership style, with positive leadership encouraging it Wu, et al. [2]. The effect of additional mechanisms is still unknown, though. Contradictions in the process of invention and integration can give rise to creative deviance, which calls for various leadership philosophies to be resolved. Combining open and closed styles, Ambidextrous leadership may better manage these contradictions [7]. Employees act with initiative and spontaneity, not seeking rewards, so the study explores how open and closed leadership styles affect their intrinsic motivation, using cognitive appraisal theory to examine underlying mechanisms.

This research considers the dual impact of leadership styles on employees' creative deviation. In previous studies, dual leadership has been regarded as a combination of leadership behaviors, exploring the effects of open and closed behaviors on employee actions. For example, Kousina and Voudouris [14] found that organizations can maintain flexibility and innovation while ensuring stability and control when both open and closed behaviors are high. This balanced state helps employees fully realize their potential during innovation, maximizing innovation performance. This study explores how open and closed leadership styles influence employee creative deviance. It examines the role of feedback-seeking and psychological availability as mediators and the impact of achievement motivation and organizational learning atmosphere. The research addresses these questions:

1. How do open and closed leadership affect creative deviance?
2. Does feedback-seeking mediate the relationship between open/closed leadership and creative deviance?
3. Does psychological availability mediate this relationship?
4. Can achievement motivation enhance the impact of leadership on creative deviance?
5. Does the organizational learning atmosphere promote feedback seeking and psychological availability, fostering creative deviance?

By analyzing the effects of dual-leadership and concentrating on how open and closed leadership affect its mechanisms and boundary conditions, this study contributes to a better understanding of employee creative deviance. It combines cognitive assessment theory, individual (achievement) motivation, and external factors (organizational learning environment) to provide fresh insights into how leadership style influences creative deviance. The study focused on the importance of inclusive leadership in fostering innovation. It recommends that organizations choose leadership styles suited to their development stage and industry needs by highlighting the significance of innovation incentives,

achievement motivation, and a supportive learning environment to encourage creative deviance. Organizations can foster sustained innovation and development by managing creative deviance flexibly and supporting employees' innovative behaviors.

2. Literature Review

2.1. Cognitive Evaluation Theory

Cognitive Evaluation Theory (CET), a branch of Self-Determination Theory, highlights how external events like rewards, feedback, and choices impact intrinsic motivation by influencing autonomy and competence [15, 16]. It posited that inherent motivation, interest, and enjoyment in a task are shaped by how these events affect one's sense of self-efficacy and autonomy. Cognitive Evaluation Theory (CET) postulates that external events influence intrinsic motivation by (1) Enhancing autonomy, where providing choices increases interest and enjoyment in tasks, and (2) Enhancing competence, where positive feedback boosts confidence in task success [15]. However, CET highlights that controlling external factors, such as monetary rewards or excessive supervision, can undermine autonomy and diminish intrinsic motivation [17].

Based on CET, it suggests that open leadership fosters creativity by encouraging employees to express opinions and challenge norms [8]. Open leadership enhances the refinement of employee innovations by offering constructive comments and actively listening to their ideas [13]. It emphasizes collaboration over control, offering guidance and resources to stimulate intrinsic motivation and creativity, thereby promoting creative deviation [7, 14].

Additionally, CET suggests intrinsic motivation is shaped by individual traits and the external environment [17]. Achievement motivation can amplify open leadership's impact on creative deviation, as employees with strong achievement motivation focus on performance and success, responding more positively to open leadership's support and feedback [18]. Conversely, high achievement motivation may reduce the adverse effects of closed leadership, as employees with long-term goals may interpret strict rules and error avoidance as motivational tools.

2.2. Dual Leadership and Creative Deviation

Dual leadership is defined as the ability to foster subordinates' exploration and exploitation behaviors by increasing or decreasing the variability of their actions and flexibly switching between these behaviors. Such as open leadership encourages employees to explore, promotes alternative ways to complete tasks and cultivates independent thinking.

Additionally, it has found that dual leadership is superior to traditional leadership styles in terms of innovation [8] as it satisfies the needs of creativity: by motivating employees to work in different, unique ways with diverse ideas, it enhances their divergent thinking, which helps them to meet the creative demands of the innovation process [19]. According to Ding, et al. [20] open leadership motivated employees to internalize innovation as a goal, generate ideas, and request additional resources, potentially creating structural tension due to limited availability. Even when ideas are rejected, open leadership sustains innovation enthusiasm by promoting confidence, independent thinking, and belief in the value of ideas [13]. Positive feedback and trust from leaders provide psychological support, driving employees to refine and pursue their ideas through informal channels [21]. Closed leadership prioritizes efficiency by focusing on task execution and error avoidance [19]. The study of Babu, et al. [22] indicated that closed leadership within dual leadership may reduce employees' creative tendencies due to strict control and regulation, creating a strong external condition that discourages proactive behaviors. Personal independence and self-direction are restricted under such leadership due to strict expectations and clear instructions [10].

2.3. Dual Leadership and Feedback Seeking

Feedback seeking is a proactive behavior where employees gather information about others' expectations and evaluations [23]. It stated that factors such as a high learning orientation and reliance on external feedback, as well as reliable feedback sources, increase feedback-seeking behaviors along managerial encouragement, inspiration, and support motivate employees to seek feedback [24].

The study of Rosing and Zacher [7] and Babu, et al. [22] suggested that open leadership positively influenced employees' feedback-seeking behavior. Open leaders foster a trust-based culture and prioritize clear, transparent communication, enabling employees better to understand their roles, goals, and expectations. Such an environment enhances psychological safety, encouraging employees to seek feedback by weighing its benefits (e.g., valuable guidance and improved performance) against potential costs (e.g., effort or embarrassment) [24]. Positive leadership behaviors foster feedback seeking by making employees feel respected and comfortable, viewing feedback as a valuable growth opportunity [11]. Conversely, closed leadership behaviors emphasize authority, suppress employee initiative, and create tension [25]. In such environments, employees may fear that seeking or providing feedback could challenge authority, risking criticism or embarrassment [24]. Closed leadership enforces strict adherence to rules and tasks [8] fostering insecurity and silent behavior due to high expectations and demands [2]. According to Zhang, et al. [26] these fears impair initiative, restrict speech, and harm behavior related to seeking feedback.

2.4. Feedback Seeking and Creative Bias

Feedback seeking is a proactive behavior of individuals used to achieve organizational goals [23, 27]. Employees engaging in such behaviors often outperform others, as feedback-seeking drives self-regulation and goal pursuit [28]. It also fulfils psychological needs, promotes workplace thriving, and fosters creativity as a self-motivational mechanism [13]. By seeking feedback, employees can discover innovative approaches to advancing tasks and enhancing the creative process, even when initial ideas are rejected by leadership [29].

Sung, et al. [30] posited that feedback-seeking positively influences creative bias because of proactive behavior, feedback-seeking equips employees with valuable knowledge and insights. By seeking feedback, employees identify strengths and weaknesses in their work and gain suggestions to refine their innovative ideas, even if initially rejected by management [2]. According to [28] a strong commitment reflected feedback-seeking for personal growth and work goals and fostered persistence and initiative to pursue and adapt their ideas. These qualities are considered to be critical drivers of creative bias.

2.5. Mediating Effect of Feedback Seeking

Feedback seeking reflects employees' cognitive engagement with their external environment, involving proactive efforts to obtain valuable information from leaders and colleagues to address organizational and personal development needs [12]. Such a reflective habit helps individuals to evaluate risks associated with creative bias, leveraging their abilities and control to optimize innovative solutions [31]. When employees feel valued and see timely responses to their input, they are more likely to seek feedback [32].

Employee feedback seeking helps to identify shortcomings, clarify improvement paths, and stimulate innovative thinking [13]. Positive responses to feedback-seeking behavior encourage creative bias, such as exploring non-traditional problem-solving approaches [29]. By seeking feedback, employees enhance their work abilities, gain recognition, and foster innovative ideas and it reflect the habits from feedback seek to enable deep decision-making and practical risk evaluation of creative bias [13]. This positive reflection and practice enhance individual abilities and performance and injects new vitality and energy into the organization's innovative capabilities [33].

Closed leadership is a controlling management style emphasizing clear instructions, task regulation, and limited employee autonomy Rosing and Zacher [7]. It prioritizes execution and adherence to rules over innovation or independent decision-making [10]. However, closed leadership's restrictive nature diminishes employees' motivation to seek feedback, prompting reliance on leader directives instead [24, 26] . It shifts the purpose of feedback seeking from enhancing competence to ensuring conformity, limiting its potential to stimulate innovative thinking [13].

2.6. Dual Leadership and Psychological Availability

Psychological availability refers to employees' perception of the physical, emotional, and cognitive resources they can utilize for their work, shaped by individual traits and workplace conditions [34, 35]. It reflects their readiness and willingness to engage in tasks [36].

Open leadership fosters risk-taking and exploratory activities, particularly in resource acquisition and external interactions [37]. Open leaders enhance psychological availability by providing resources and encouraging employees to challenge conventions and pursue innovation [8]. According to cognitive evaluation theory, external conditions that offer autonomy and support strengthen intrinsic motivation, influencing employee behavior. Open leadership grants autonomy foster proactive change, boosts inherent motivation, and promotes proactive organizational behavior [15].

Long-term hostility from management undermines employees' confidence in utilizing resources due to increased psychological stress, ambiguity, and insecurity [38]. Moreover [25, 39] characterized closed leadership as rigid adherence to procedures and excessive control, limiting autonomy in task execution and resource allocation, and reducing perceived resource availability. Such environments heighten stress and tension, depleting emotional resources [40] and eroding self-efficacy and task competence [41]. Closed leadership further restricts feedback and interaction, diminishing cognitive readiness and access to timely guidance [8, 24].

2.7. Psychological Availability and Creative Deviance

Psychological availability refers to an individual's perception of having sufficient emotional, cognitive, and personal resources to complete work tasks [42]. It reflects readiness to engage in complex social environments and is critical for task performance [34]. Reduced psychological availability, marked by diminished resources and energy, negatively affects work engagement and performance [43] and limits active participation and expression [6]. Conversely, high psychological availability fosters resilience, proactive problem-solving, and creativity, enhancing efficiency and innovation [44].

Higher psychological availability fosters employees' pursuit of self-actualization by enhancing their access to resources and encouraging autonomous behavior [45]. Employees with greater psychological availability feel valued, actively seek organizational support, and persist in pursuing creative goals even when their ideas are rejected [39].

2.8. Mediating Effect of Psychological Availability

Open leadership emphasizes unlocking employees' potential and fostering bold thinking and action, creating a free and supportive work environment that significantly influences their psychology and behavior [7, 14]. It encourages employees to challenge the status quo, propose innovative solutions [37] and take calculated risks, fostering a sense of value and respect Rosing, et al. [8]. Cheng [46] suggested that providing space for independent thinking and exploration as open leadership inspires trust, enthusiasm, and interest in work, empowering employees to engage profoundly and innovate freely.

Open leadership encourages employees to view mistakes as opportunities for growth, emphasizing that repeated attempts and failures build experience, skills, and judgment [47]. Open leaders foster continuous improvement by providing constructive feedback on errors or rejected ideas [14]. This

approach promotes independent thinking and learning, enhancing employees' skills and psychological availability [46]. High psychological availability strengthens emotional commitment to the organization. It encourages pro-organizational behavior [45] with creative deviance as a notable example that drives organizational success and development [48]. Psychological availability, reflecting confidence in meeting work's physical, emotional, and cognitive demands, drives proactive behaviors [35]. High psychological availability enhances engagement and sustains a positive work state [49]. According to Wang, et al. [50] people who are highly psychologically available exhibit sustained focus, a learning mentality, and clarity of thought, which encourages task engagement and proactive inquiry. Conversely, inclusive leadership increases psychological availability even more, inspiring staff members to strive for improved performance through innovative deviation.

2.9. Moderating Effect of Achievement Motivation

Employees with high achievement motivation set ambitious goals, exert more significant effort, and strive for excellence, often developing their standards of work [51]. The study of Li, et al. [6] stated that challenge the status quo, propose suggestions, and seek personal development. It showed that such employees focus on positive outcomes, embrace risk, and are more likely to innovate. While employees with low achievement motivation tend to pursue lower performance and fear the consequences of failure, making them less likely to engage in proactive behaviors like feedback-seeking.

Bob [52] suggested that employees with high achievement motivation actively fulfil their responsibilities, driven by specific goals that enhance their effort and work performance. Ogunleye and Osekita [53] also suggest that organizations should provide the necessary conditions and motivation to foster achievement motivation, which is central to performance. High-achievement employees seek challenges and set learning and performance goals, while those with low achievement motivation avoid challenges and refrain from setting goals [5].

Employees with high achievement motivation set higher goals at work, actively pursue excellence and perfection, and pay close attention to their own capabilities and performance. This makes them value leaders' feedback and support, viewing it as a crucial resource for enhancing their abilities and achieving higher goals [54]. Their intrinsic motivation and drive make them more proactive in their work, willing to invest additional effort and energy [44]. Additionally [40] stated that employees with high achievement motivation experience more positive emotions and job engagement in pursuing their goals making them feel more comfortable and satisfied at work, further enhancing psychological availability.

Achievement motivation drives individuals to pursue excellence and significant accomplishments in tasks, reflecting a desire to showcase their abilities and fulfil life aspirations [53]. High-achievement motivation employees are less constrained by closed leadership and focus on achieving excellence through personal effort [55].

2.10. Moderating Effect of Organizational Learning Climate

Frese and Keith [56] indicated that a learning climate is vital for organizational outcomes. When employees experience failures or mistakes, negative emotions like self-doubt and anxiety can hinder performance. However, Akgün, et al. [57] proposed that a learning-oriented climate helps employees shift focus from errors to learning, maintaining their attention and improving work performance.

According to Li, et al. [58] organizational learning climates promote open communication, encouraging employees to seek feedback, enhance performance and develop skills. Whereas Akgün, et al. [57] foster such a culture of innovation by supporting and sharing ideas and actions among colleagues, leaders, and teams. Employees are more willing to embrace challenges and try innovative approaches, knowing experimentation is valued [59]. A learning climate supports continuous improvement, helping employees learn from failures and adjust quickly. This environment enables employees to correct risks associated with creative deviance through feedback-seeking [60].

In a positive learning climate, employees enhance their skills and self-confidence through active learning and training [58]. Engaging in learning activities and achieving success boosts their recognition of growth [56]. This culture encourages continuous cognitive adjustment by providing challenging tasks requiring employees to apply existing knowledge while integrating new insights to solve real-world problems [61]. This process refines their problem-solving and innovative thinking skills in practice [58, 62].

This study, grounded in cognitive appraisal theory, examines how open and closed leadership impacts employees' creative deviations. It focuses on the roles of feedback-seeking, psychological availability, achievement motivation, and organizational learning climate. The research framework is shown in Figure 1.
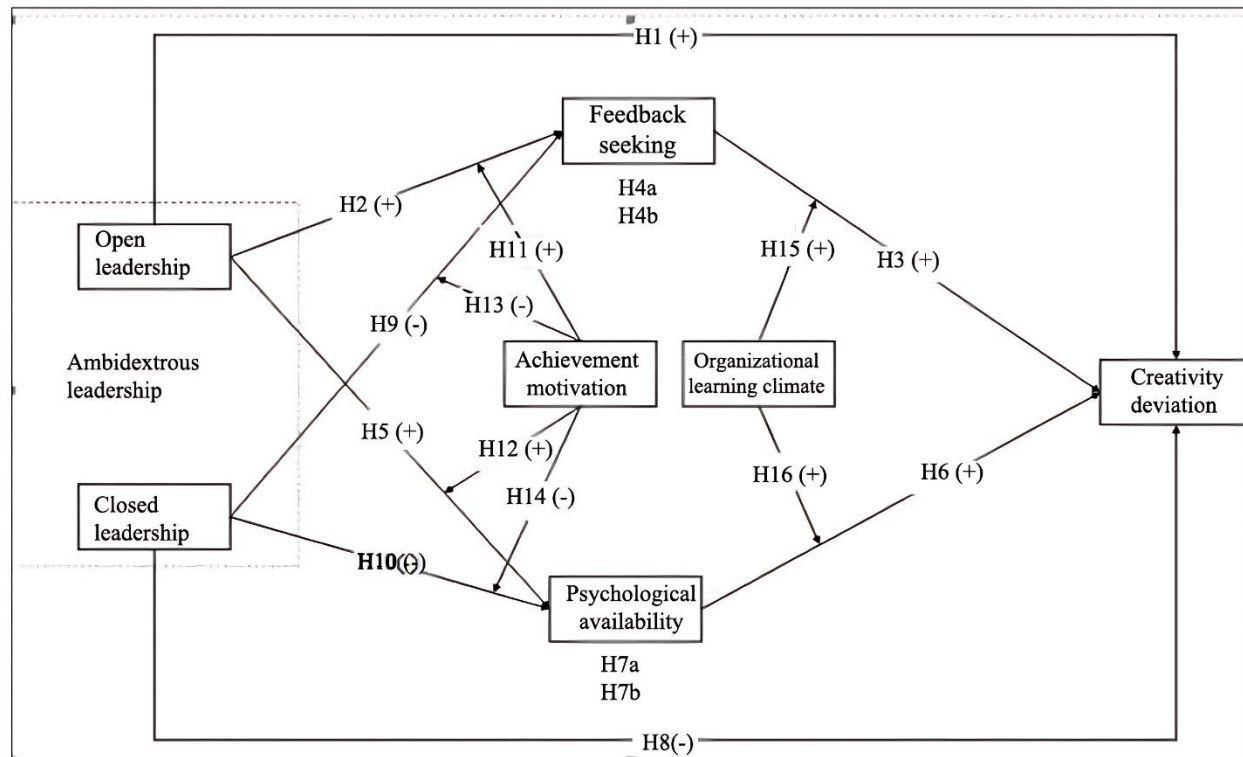
Figure 1.
Research framework diagram.

3. Research Methods

3.1. Research Design and Data Collection

The survey targets high-tech and creative enterprises in cities like Beijing, Shanghai, Guangzhou, and Shenzhen, focusing on innovative design and project development departments. Companies such as ByteDance and Tencent are known for their innovation-driven cultures and encouragement of employee creativity. Data collection uses industrial collaborations, HR connections, and graduate associations to maintain academic integrity and confidentiality. Using Dillman [63] method, the sample size aims for a 5% sampling error at a 95% confidence level, requiring at least 384 valid responses. Five hundred questionnaires will be distributed to enhance reliability, meet statistical requirements, and ensure robustness in factor analysis.

Respondents were consented after comprehending the study's aims and completed the online questionnaire. They also ensured a high response rate after consistent notifications for outstanding

submissions. The survey was conducted from November 30 to December 13, 2024, and collected 973 responses. Data cleaning excluded respondents under 18, those with less than 3 months of work experience, senior management, inconsistent answers, or identical responses to reverse and positive questions. This process yielded 635 valid responses, achieving a 65.3% effective response rate.

3.2. Measurements of Variables

3.2.1. Dual Leadership

This study adopts the scale developed by Rosing, et al. [8] which consists of two dimensions: open leadership fosters innovation, adaptability, and independent thinking, leveraging employees' creativity, and closed leadership emphasizes strict monitoring, procedural adherence, and standardized processes. The dual leadership scale consists of 14 items, listed in Table 1. This study measures open and closed leadership separately based on employees' perceptions. A five-point Likert scale is employed, ranging from "Strongly Disagree" to "Strongly Agree," with values assigned from 1 to 5.

Table 1.
Dual leadership scale.

Dimension	Questions
Open leadership	1. My leader allows us to complete tasks in different ways, not necessarily following a fixed process.
	2. My leader frequently encourages us to try various different ideas and explore new possibilities.
	3. My leader motivates us to take risks and not fear failure, as long as we have innovative ideas.
	4. My leader gives us a lot of space for independent thinking and action, without intervening in everything.
	5. My leader values listening to our opinions and always gives us the opportunity to share our ideas.
	6. My leader allows us to make some mistakes at work.
	7. My leader encourages us to learn from our mistakes and improve ourselves.
Closed leadership	1. My leader is very strict in supervising and controlling the achievement of goals, ensuring that we complete tasks.
	2. My leader emphasizes the establishment of work processes to ensure the orderly progress of tasks.
	3. If a problem arises, my leader will quickly take corrective actions to prevent the issue from escalating.
	4. My leader places great emphasis on the execution of work processes, ensuring that everyone follows the rules.
	5. My leader requires everyone to focus on completing the current tasks and ensures that each person's work meets the standards.
	6. If I make a mistake in a work task, my leader will impose appropriate punishment and does not allow repeated mistakes.
	7. My leader tends to stick to the established plan to advance work tasks and rarely makes arbitrary changes.

3.2.2. Creative Deviance

This study employs the Employee Creative Deviance Scale developed by Lin, et al. [5] comprising nine items. The scale uses a five-point Likert scoring method, ranging from Strongly Disagree to Agree Strongly. The specific items are listed in Table 2.

Table 2.
Creative deviance scale.

Source	Items
Lin, et al. [5]	1. Even without my boss's approval, I continued to improve on some new ideas.
	2. During work hours, I often think about how to improve the ideas that were rejected.
	3. Even though my supervisor asked me to stop developing certain new ideas, I continued working on them.
	4. In addition to executing ideas approved by my supervisor, I also strive to improve the ideas that were rejected by gathering information and reattempting them.
	5. I spend part of my work time researching the ideas that were rejected by my boss
	6. Until now, I have still not given up on some of the rejected ideas
	7. I improved some rejected ideas during work hours
	8. Even though some ideas were stopped by my boss, I still continue to work on improved versions of those ideas
	9. I use some of my work time or resources to continue promoting the ideas that were rejected

3.2.3. Feedback Seeking

This study used the feedback-seeking scale developed by Gong, et al. [64] which consists of 12 items and primarily focuses on the employee's desire to know how well they are doing, whether they have made progress, or if there are areas where they can improve. The scale is filled out from the perspective of the employee's subjective evaluation. Specific items are shown in Table 3.

Table 3.
Feedback Seeking Scale

Source	Items
Gong, et al. [64]	1. I often indirectly ask for information about the areas where I have not performed well.
	2. I often gather information about my poor performance by observing my leaders or colleagues.
	3. I often seek feedback on tasks I have not performed well in.
	4. I often ask my leader for feedback on areas where my performance did not meet expectations.
	5. I often seek negative feedback on areas where I haven't performed well during tasks.
	6. I frequently ask my colleagues for negative feedback to understand areas where I can improve my performance.
	7. I often indirectly ask for information about the areas where I perform well.
	8. I often pay attention to whether my work style is being imitated by others.
	9. I frequently seek feedback on the aspects of my performance that are outstanding after completing a task.
	10. I frequently ask my leader for feedback on areas where I am performing well.
	11. I often seek feedback on my good performance during tasks.
	12. I frequently ask my colleagues for feedback on my strengths.

3.2.4. Psychological Availability

The 7-item measurement method developed by Byrne, et al. [65] was selected to assess employees' self-assessment of their ability to cope with work and their confidence in having the physiological, emotional, and cognitive resources to complete their tasks. The scoring method ranges from strongly disagree to agree strongly, corresponding to scores from 1 to 5, with higher scores indicating a higher sense of psychological availability. Specific items are shown in Table 4.

Table 4.
Psychological availability scale.

Source	Items	
Byrne et al., (2016)	1.	I am emotionally prepared to cope with the demands of my job.
	2.	I have emotional resources to invest in my work role.
	3.	I am emotionally prepared to experience what happens at work.
	4.	I can mentally focus on my work freely.
	5.	I am able to engage in the thinking required for my work.
	6.	My body is ready to get back to work.
	7.	I don't have to worry about life outside of work.

3.2.5. Achievement Motivation

This study adopts the achievement motivation scale developed by Lang and Fries [66]. An example item is: "When I encounter a problem that I may be able to solve, I immediately start working on it." Specific items are shown in Table 5.

Table 5.
Achievement motivation scale.

Source	Items	
Lang and Fries [66]	1.	I enjoy job opportunities that allow me to use my abilities.
	2.	When I encounter a work-related problem that I am likely to solve, I immediately start working on it.
	3.	I like situations where I can utilize my skills.
	4.	The situations that allow me to demonstrate my abilities are very attractive to me.
	5.	I am attracted to jobs that allow me to test my skills.
	6.	In difficult work situations, if many things depend on me, I fear failure (Reverse-coded).
	7.	If I am unsure whether I can succeed, I feel uncomfortable at work. (Reverse-coded)
	8.	Even if no one will notice my flaws at work, I still feel afraid when facing tasks that I may not be able to solve. (reverse-coded)
	9.	Even if no one is paying attention, I feel quite anxious in new situations. (Reverse-coded)
	10.	I feel anxious if I cannot understand an issue immediately. (Reverse-coded)

3.2.6. Organizational Learning Atmosphere

This study uses the organizational learning atmosphere scale based on the study of Nikolova, et al. [61]. The operational definition is reflected in three aspects: Learning Supportive Atmosphere describes the extent of learning resources and opportunities employees perceive. The Learning Appreciation Atmosphere refers to the degree to which the organization rewards employees for their learning behaviors. In contrast, the Error-Avoidance Learning Environment refers to the level of tolerance for learning-related mistakes. Although the organizational learning atmosphere is assessed from three perspectives, these aspects aim to promote, reward, and support employees' learning behaviors [61]. Consequently, this study considers the organizational learning atmosphere as an integrated construct. Specific items are shown in Table 6.

Table 6.
Organizational learning atmosphere scale.

Dimensions	Questions/Items
Learning-promoting atmosphere	My company provides excellent learning resources.
	My company provides me with sufficient resources to help me improve my skills.
	In our company, every employee receives the training they need.
Learning appreciation atmosphere	In our company, employees who continuously enhance their professional skills are rewarded.
	Here, employees who continuously learn and improve themselves can get promoted quickly.
	In our company, employees who strive to learn new things are praised and respected.
Error-avoidance learning environment	In our company, everyone is afraid to admit their mistakes (reverse-coded).
	In our company, employees are afraid to talk about the mistakes they have made (Reverse-

	coded).
	In our company, employees are eager to openly discuss work-related issues.

3.3. Data Analysis Methods

This study will utilize SPSS and AMOS to test the validity and reliability of the data. The analysis will begin with descriptive statistics to summarize data through central tendency (mean, median), dispersion (standard deviation, range), and distribution (frequency, percentage). Following the Cronbach [67], reliability analysis will assess internal consistency, with coefficients >0.80 indicating excellent reliability, 0.70–0.80 acceptable, 0.60–0.70 suggesting revision, and <0.60 requiring redesign. Validity will be analyzed using SEM for goodness-of-fit and model index analysis, with convergent validity met if AVE >0.5 and CR >0.7 and discriminant validity confirmed if the square root of AVE exceeds inter-variable correlations. Correlation analysis, using Pearson's coefficient (-1 to 1), will evaluate relationships between variables, with values ≥0.7 indicating high, 0.3–0.7 moderate, and ≤0.3 low correlation, and 0 indicating no correlation. Regression analysis will examine the effects of independent variables on the dependent variable, with a significance level below 0.05 confirming a significant relationship. Mediation analysis, following Baron and Kenny [68] four-step method, will determine whether significant effects indicate partial mediation and non-significant effects complete mediation. Using hierarchical regression [69] moderation analysis will assess moderation effects, with significance ≤0.05 confirming a significant moderation effect.

4. Results and Discussion

4.1. Descriptive Analysis of the Sample

Table 7 highlights respondent demographics. Females slightly outnumber males (53.7% vs. 46.3%). Most respondents are aged 31-40 (49.1%), followed by 18-30 (26%), with few aged 51 and above (3.1%). Educationally, most hold bachelor's (49.3%) or master's degrees (34%), while only 4.9% have doctoral qualifications. Work experience indicates 43.6% have 5-10 years, with most having at least 1 year. Regarding positions, regular employees comprise 77% of the workforce, lower management makes up 20.6%, and middle management makes up 2.4%. Most responders are experienced, well-educated, and in regular jobs.

Table 7.
Descriptive statistical results of sample demographics.

Variable	Attribute	Frequency	Percentage (%)
Gender	Male	294	46.3
	Female	341	53.7
Age	18-30 years old	165	26.0
	31-40 years old	312	49.1
	41-50 years old	138	21.8
	51 years old and above	20	3.1
Education	High school or below	0	0
	Associate degree	75	11.8
	Bachelor's degree	315	49.3
	Master's degree	216	34.0
	Doctorate	31	4.9
Current position work experience	More than 3 months to 1 year	35	5.5
	More than 1 year to 5 years	238	37.5
	More than 5 years to 10 years	277	43.6
	More than 10 years	85	13.4
Job Title	Ordinary employee	489	77.0
	Frontline manager	131	20.6
	Middle manager	15	2.4

4.2. Common Method Bias

Table 8 shows standard method bias, a systematic error, occurs when artificial covariance arises between predictor and criterion variables due to similarities in the data source, rater, measurement environment, or item context, potentially confounding research results. It is prevalent in self-reported survey research and is influenced by respondents' subjectivity, consistency motivation, implicit biases, and social desirability. This study applies Harman's single-factor test, where all variables undergo exploratory factor analysis. Significant bias is indicated if a single factor explains over 40% of the variance. In this case, the first principal component accounts for 27.427% of the variance, below the 50% threshold, confirming the absence of significant bias.

Table 8.
Common method bias test.

Component	Initial eigenvalue			Extracted sum of squared loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	16.730	27.427	27.427	16.730	27.427	27.427
2	5.574	9.137	36.564	5.574	9.137	36.564
3	5.446	8.927	45.491	5.446	8.927	45.491
4	3.538	5.800	51.292	3.538	5.800	51.292
5	2.886	4.731	56.023	2.886	4.731	56.023
6	2.753	4.513	60.537	2.753	4.513	60.537
7	2.353	3.857	64.393	2.353	3.857	64.393

4.3. Reliability Analysis

Table 9 shows the reliability analysis evaluates measurement tools or questionnaires' consistency, stability, and reliability for a specific construct. Internal consistency, measured using Cronbach's Alpha, assesses the coherence among items within a tool, with values closer to 1 indicating better reliability. In this study, the Cronbach α values for all seven variables exceed 0.8, confirming strong internal consistency and suitability for further analysis.

Table 9.
Reliability analysis.

Measured variables	Number of items	Cronbach's α
Open leadership	7	0.925
Closed leadership	7	0.932
Creative deviation	9	0.928
Feedback seeking	12	0.926
Psychological availability	7	0.917
Achievement motivation	10	0.940
Organizational learning atmosphere	9	0.928

4.4. Validity Analysis

Figure 2 shows the confirmatory factor analysis (CFA), based on Structural Equation Modeling (SEM), evaluates the relationship between observed variables and latent factors to test whether a hypothesized factor structure aligns with sample data. Key fit indices include Chi-square/df (X^2/df), RMSEA, GFI, AGFI, CFI, NFI, and TLI, with values closer to 1 or lower thresholds indicating better fit. (Fornell, 1981) criteria assess convergent validity: standardized factor loadings > 0.5, composite reliability (CR) > 0.6, and average variance extracted (AVE) > 0.5. Discriminant validity is confirmed if the square root of AVE exceeds correlations with other constructs.
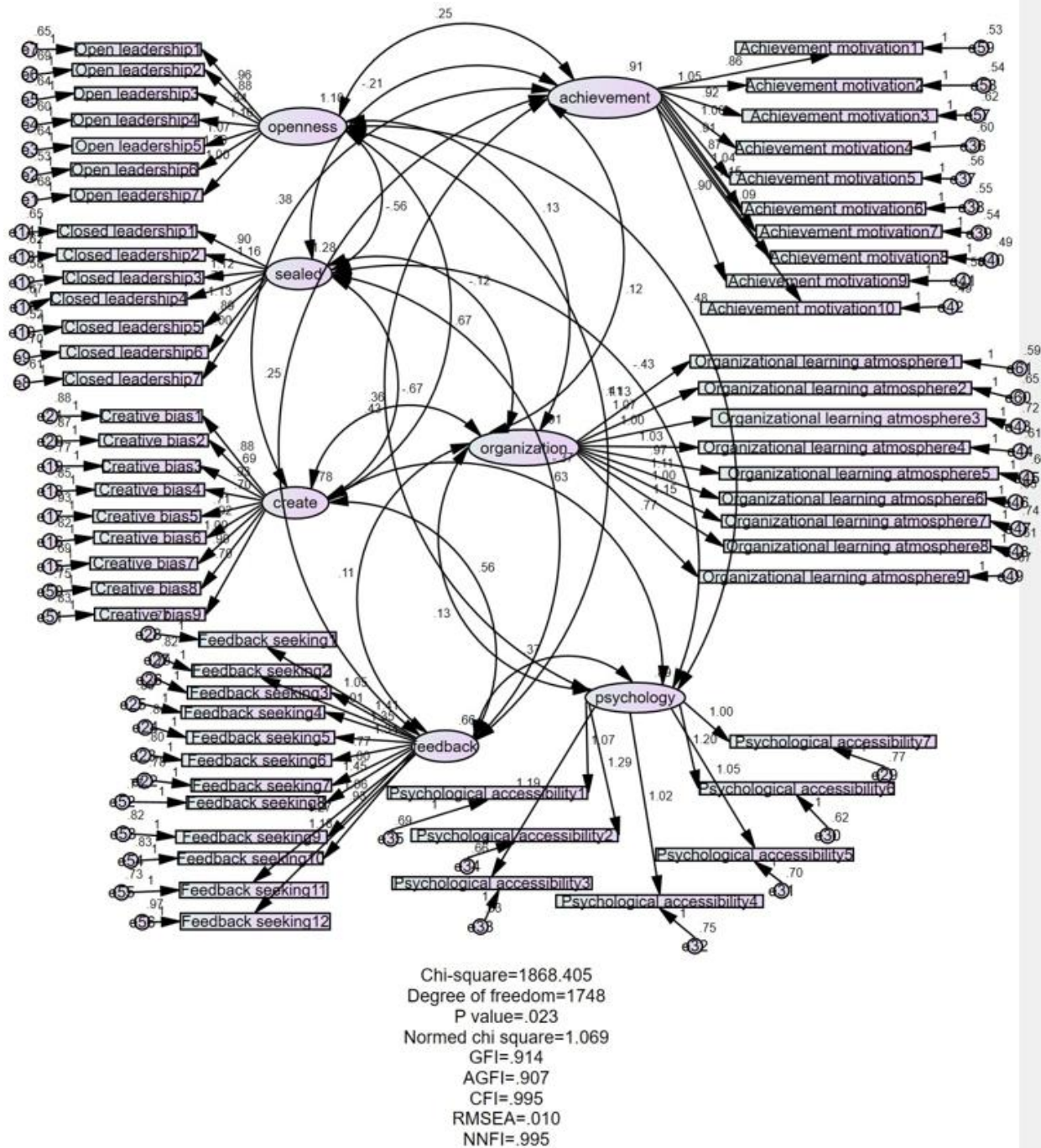
Figure 2.
The confirmatory factor analysis (CFA).

4.4.1. Confirmatory Factor Analysis Model Fit Indices

Fit validity analysis evaluates the goodness of fit between the sample and the model. A χ^2/df value below 3, along with RMSEA, SRMR, IFI, and TLI meeting criteria, indicates a good fit. The

confirmatory factor analysis in this study shows excellent model fit (χ^2/df = 1.069; RMSEA = 0.010; SRMR = 0.030; GFI = 0.914; AGFI = 0.907; NFI = 0.930; TLI = 0.995; CFI = 0.995), confirmation of the measurement model's adequacy is shown in Table 10.

Table 10.
Confirmatory factor analysis model fit indices.

Indicator	χ^2/df	RMSEA	SRMR	GFI	AGFI	NFI	TLI	CFI
Judgment indicator	<3	<0.08	<0.08	>0.8	>0.8	>0.8	>0.8	>0.8
Model results	1.069	0.010	0.030	0.914	0.907	0.930	0.995	0.995

4.4.2. Convergent Validity

Convergent validity measures the interrelation among items representing the same latent variable, with high correlations indicating strong validity [70]. Factor loadings should typically exceed 0.7, though thresholds like 0.4 or 0.5 are sometimes acceptable [71]. Key indicators include Average Variance Extracted (AVE), reflecting the proportion of explained variance, and Composite Reliability (CR), assessing item consistency. In this study, all seven variables show AVE > 0.5 and CR > 0.7, confirming strong internal consistency and validity. The model meets the requirements for further testing, as shown in Table 11 and Table 12.

Table 11.
Convergent validity.

Variable	Path	Estimate	AVE	CR
Open Leadership	OL1	0.783	.640	.925
	OL2	0.745		
	OL3	0.741		
	OL4	0.843		
	OL5	0.815		
	OL6	0.877		
	OL7	0.787		
Closed Leadership	CL1	0.783	.664	.932
	CL2	0.856		
	CL3	0.856		
	CL4	0.734		
	CL5	0.872		
	CL6	0.768		
	CL7	0.823		
Creative Deviation	CD1	0.780	.859	.928
	CD2	0.704		
	CD3	0.815		
	CD4	0.713		
	CD5	0.698		
	CD6	0.803		
	CD7	0.849		
	CD8	0.812		
	CD9	0.716		
Feedback Seeking	FS1	0.696	.512	.926
	FS2	0.671		
	FS3	0.789		
	FS4	0.775		
	FS5	0.766		
	FS6	0.575		
	FS7	0.678		
	FS8	0.801		
	FS9	0.689		
	FS10	0.639		
	FS11	0.771		
	FS12	0.696		

Note: The factor loadings in the table are standardized factor loadings.
OL stands for Open Leadership; CL stands for Closed Leadership; CD stands for Creative Bias;
FS stands for Feedback Seeking; PA stands for Psychological Availability; AM stands for Achievement Motivation; OLC stands for Organizational Learning Climate.

Table 12.
Convergent validity (Continued).

Variable	Path	Estimate	AVE	CR
Psychological Availability	PA1	0.772	.614	.918
	PA2	0.832		
	PA3	0.816		
	PA4	0.743		
	PA5	0.763		
	PA6	0.821		
	PA7	0.733		
Achievement Motivation	AM1	0.749	.611	.940
	AM2	0.808		
	AM3	0.743		
	AM4	0.777		
	AM5	0.760		
	AM6	0.747		
	AM7	0.804		
	AM8	0.844		
	AM9	0.748		
	AM10	0.831		
Organizational Learning Environment	OLC1	0.813	.590	.928
	OLC2	0.784		
	OLC3	0.747		
	OLC4	0.782		
	OLC5	0.752		
	OLC6	0.799		
	OLC7	0.742		
	OLC8	0.815		
	OLC9	0.669		

Note: The factor loadings in the table are standardized factor loadings.
OL stands for Open Leadership; CL stands for Closed Leadership; CD stands for Creative Bias; FS stands for Feedback Seeking; PA stands for Psychological Availability; AM stands for Achievement Motivation; OLC stands for Organizational Learning Climate.

4.4.3. Discriminant Validity

Discriminant validity is confirmed when the square roots of the AVE for all variables exceed their correlation coefficients with other variables. In this study, the square roots of the AVE for all seven variables are more significant than the corresponding correlation coefficients, indicating strong discriminant validity, as shown in Table 13.

Table 13.
Discriminant validity analysis table.

Variable	OL	CL	CD	FS	PA	AM	OLC
	0.800						
CL	−0.439***	0.815					
CD	0.448***	−0.416***	0.768				
FS	0.451***	−0.385***	0.490***	0.715			
PA	0.450***	−0.375***	0.468***	0.449***	0.784		
AM	0.232***	−0.182***	0.281***	0.302***	0.444***	0.782	
OLC	0.117**	−0.104**	0.262***	0.124**	0.132**	0.115**	0.768

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$
The diagonal represents the square root of the AVE for each variable
OL stands for Open Leadership; CL stands for Closed Leadership; CD stands for Creative Bias; FS stands for Feedback Seeking; PA stands for Psychological Availability; AM stands for Achievement Motivation; OLC stands for Organizational Learning Climate.

4.5. Mean, Standard Deviation, and Correlation Coefficients

This study calculated the mean, standard deviation, and correlations for seven variables: Open Leadership, Closed Leadership, Creative Bias, Feedback Seeking, Psychological Availability, Achievement Motivation, and Organizational Learning Climate, as shown in Table 14. The sample means for these variables range from 2.967 to 3.287, indicating a relatively high correlation with Open Leadership. Standard deviations, ranging from 0.965 to 1.166, are close to 1, suggesting consistent data dispersion. The observed correlations among variables support further hypothesis testing.

Table 14.
Mean, standard deviation, and correlation analysis table.

Variable	M	SD	OL	CL	CD	FS	PA	AM
OL	3.172	1.120	-					
CL	2.947	1.166	-0.439***	-				
CD	3.091	1.142	0.448***	-0.416***	-			
FS	2.979	0.972	0.451***	-0.385***	0.490***	-		
PA	3.001	1.100	0.450***	-0.375***	0.468***	0.449***	-	
AM	3.144	0.965	0.232***	-0.182***	0.281***	0.302***	0.444***	-
OLC	3.287	1.014	0.117**	-0.104**	0.262***	0.124**	0.132**	0.115**

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

OL represents Open Leadership; CL represents Closed Leadership; CD represents Creative Bias; FS represents Feedback Seeking; PA represents Psychological Availability; AM represents Achievement Motivation; OLC represents Organizational Learning Climate.

4.6. Direct Hypothesis Testing

This section tests the direct relationship hypotheses between variable pairs using regression analysis, which examines dependencies between independent and dependent variables. The analysis also controls for demographic factors, such as gender and age, to account for their influence on the dependent variable.

4.6.1. Regression Analysis of Open Leadership and Closed Leadership on Creative Bias

Table 15 shows that in M2, open leadership positively affects creative bias ($\beta = 0.449***$, Adj-$R^2 = 0.200$), confirming Hypothesis H1. Similarly, in M3, closed leadership negatively affects creative bias ($\beta = -0.421***$, Adj-$R^2 = 0.176$).

Table 15.
Regression analysis of open leadership and closed leadership on creative bias.

Variable	Dependent variable: Creative deviation								
	M1			M2			M3		
	B	*t*	VIF	*B*	*T*	VIF	*β*	*t*	VIF
Gender	-0.012	-0.305	1.003	0.002	0.055	1.004	-0.024	-0.661	1.004
Age	-0.090	-1.405	2.593	-0.108	-1.887	2.595	-0.117	-2.020	2.597
Education	-0.015	-0.351	1.095	-0.035	-0.929	1.097	-0.045	-1.191	1.100
Experience	-0.007	-0.105	2.603	0.029	0.511	2.610	0.027	0.456	2.609
Position	0.070	1.559	1.284	0.046	1.144	1.287	0.074	1.815	1.284
Open leadership				0.449***	12.575	1.009			
Closed Leadership							-0.421***	-11.62	1.009
R^2	.009			.208			0.184		
Adj-R^2	.001			.200			0.176		
F-value	1.094			27.493***			23.627***		

Note: The coefficients in the table above are standardized β values.

$p<0.05*$; $p<0.01**$; $p<0.001***$

4.6.2. Regression Analysis of Open Leadership and Closed Leadership on Feedback Seeking

Table 16 shows that in M2, open leadership positively impacts feedback seeking ($\beta = 0.450^{***}$, Adj-$R^2 = 0.200$), confirming H2. In M3, closed leadership negatively impacts feedback seeking ($\beta = -0.384^{***}$, Adj-$R^2 = 0.145$).

Table 16.
Regression analysis of open leadership and closed leadership on feedback seeking.

| Variable | Independent variable: Feedback seeking | | | | | | | | |
| | M1 | | | M2 | | | M3 | | |
	β	t	VIF	B	T	VIF	β	t	VIF
Gender	0.012	0.304	1.003	0.026	0.737	1.004	0.001	0.038	1.004
Age	0.031	0.491	2.593	0.013	0.231	2.595	0.006	0.107	2.597
Education	0.003	0.074	1.095	-0.017	-0.455	1.097	-0.025	-0.640	1.100
Experience	-0.109	-1.707	2.603	-0.073	-1.278	2.610	-0.079	-1.334	2.609
Position	0.042	0.927	1.284	.018	0.437	1.287	0.045	1.090	1.284
Open leadership				.450***	12.597	1.009			
Closed leadership							-.384***	-10.40	1.009
R^2	0.007			0.208			0.153		
Adj-R^2	0.000			0.200			0.145		
F-value	0.921			27.408***			18.922***		

Note: The coefficients in the table above are standardized β values.
p<0.05*; p<0.01**; p<0.001***.

4.6.3. Regression Analysis of Open Leadership and Closed Leadership on Psychological Availability

Table 17 shows that open leadership positively impacts psychological availability ($\beta = 0.450^{***}$, Adj-$R^2 = 0.198$), confirming H5. Closed leadership negatively impacts psychological availability ($\beta = -0.374^{***}$, Adj-$R^2 = 0.135$),

Table 17.
Regression analysis of open leadership and closed leadership on psychological availability.

| Variable | Independent Variable: Psychological Availability | | | | | | | | |
| | M1 | | | M2 | | | M3 | | |
	β	t	VIF	B	T	VIF	β	t	VIF
Gender	-0.022	-0.557	1.003	-0.008	-0.226	1.004	-0.033	-0.882	1.004
Age	-0.020	-0.307	2.593	-0.038	-0.661	2.595	-0.044	-0.741	2.597
Education	0.046	1.113	1.095	0.026	0.706	1.097	0.019	0.498	1.100
Experience	-0.031	-0.479	2.603	0.005	0.094	2.610	-0.001	-0.020	2.609
Position	0.000	0.001	1.284	-0.024	-0.597	1.287	0.004	0.086	1.284
Open				0.450***	12.592	1.009			
Closed							-.374***	-10.08	1.009
R^2	0.005			0.206			0.144		
Adj-R^2	0.000			0.198			0.135		
F-value	0.642			27.095***			17.556***		

Note: The coefficients in the table above are standardized β values.
p<0.05*; p<0.01**; p<0.001***.

4.6.4. Regression Analysis of Feedback Seeking and Psychological Availability on Creative Bias

Table 18 shows that feedback-seeking positively impacts creative bias ($\beta = 0.489^{***}$, Adj-$R^2 = 0.238$), confirming H3. Psychological availability also positively impacts creative bias ($\beta = 0.467^{***}$, Adj-$R^2 = 0.218$).

Table 18.
Regression analysis of feedback seeking and psychological availability on creative bias.

Variable	Dependent variable: Creative deviation								
	M1			**M2**			**M3**		
	β	t	VIF	B	T	VIF	B	t	VIF
Gender	-0.012	-0.305	1.003	-0.018	-0.520	1.003	-0.002	-0.050	1.004
Age	-0.090	-1.405	2.593	-0.105	-1.884	2.594	-0.081	-1.426	2.594
Education	-0.015	-0.351	1.095	-0.016	-0.443	1.095	-0.036	-0.984	1.097
Experience	-0.007	-0.105	2.603	0.047	0.835	2.615	0.008	0.135	2.604
Position	0.070	1.559	1.284	0.050	1.266	1.285	0.070	1.762	1.284
Feedback				.489***	14.049	1.007			
Psychology							0.467***	13.257	1.005
R^2	0.009			0.246			0.225		
Adj-R^2	0.001			0.238			0.218		
F-value	1.094			34.091***			30.454***		

Note: The coefficients in the table above are standardized β values.
p<0.05*; p<0.01**; p<0.001***.

4.7. Mediation Effect Test

4.7.1. Mediation Effect of Feedback Seeking between Open Leadership and Creative Bias

This section uses stepwise regression to test the mediation effect of feedback seeking in the relationship between open leadership and creative bias. In M2, open leadership significantly affects creative bias (β = 0.449***). In M3, open leadership significantly influences feedback seeking (β = 0.452***). In M4, the effect of open leadership on creative bias decreases (β = 0.287***), while feedback-seeking significantly affects the creative bias (β = 0.360***), as shown in Table 19.

Table 19.
Mediation Effect of Feedback Seeking between Open Leadership and Creative Bias.

	Creative Deviation			Creative Deviation			Feedback Seeking			Creative Deviation		
	M1			M2			M3			M4		
	B	*t*	VIF	*B*	*t*	VIF	*B*	*T*	VIF	*β*	*t*	VIF
Gender	-0.012	-0.305	1.003	0.002	0.055	1.004	0.026	0.737	1.004	-0.007	-0.225	1.005
Age	-0.090	-1.405	2.593	-0.108	-1.887	2.595	0.013	0.231	2.595	-0.113	-2.111	2.595
Education	-0.015	-.351	1.095	-0.035	-0.929	1.097	-0.017	-0.455	1.097	-0.028	-0.819	1.097
Experience	-0.007	-0.105	2.603	0.029	0.511	2.610	-0.073	-1.278	2.610	0.056	1.039	2.616
Position	0.070	1.559	1.284	0.046	1.144	1.287	0.018	0.437	1.287	0.040	1.057	1.287
Openness				0.449***	12.575	1.009	0.450***	12.597	1.009	0.287***	7.692	1.264
Feedback										0.360***	9.666	1.262
R^2		0.009			0.208			0.208			0.311	
Adj-R^2		0.001			0.200			0.200			0.303	
F-value		1.094			27.493***			27.408***			40.438***	

Note: $p<0.05$*; $p<0.01$**; $p<0.001$***.

Table 20.
Mediating effect of feedback seeking between closed leadership and creative deviance.

	Creative deviation			Creative deviation			Feedback seeking			Creative deviation		
	M1			M2			M3			M4		
	B	*t*	VIF	*B*	*T*	VIF	*β*	*t*	VIF	*β*	*t*	VIF
Gender	-.012	-.305	1.003	-0.024	-0.661	1.004	0.001	0.038	1.004	-0.024	-0.734	1.004
Age	-.090	-1.405	2.593	-0.117	-2.020	2.597	0.006	0.107	2.597	-0.120	-2.238	2.597
Education	-.015	-0.351	1.095	-0.045	-1.191	1.100	-0.025	-0.640	1.100	-0.036	-1.020	1.101
Experience	-.007	-0.105	2.603	0.027	0.456	2.609	-0.079	-1.334	2.609	0.057	1.060	2.617
Position	0.070	1.559	1.284	0.074	1.815	1.284	0.045	1.090	1.284	0.057	1.507	1.286
Closed (Closed leadership or closed style)				-0.421***	-11.62	1.009	-0.384***	-10.40	1.009	-0.274***	-7.578	1.183
Feedback										.384***	10.642	1.181
R^2	.009			.184			.153			.309		
Adj-R^2	.001			.176			.145			.301		
F-value	1.094			23.627***			18.922***			40.050***		

Note: $p<0.05$*; $p<0.01$**; $p<0.001$***.

4.7.2. The Mediating Effect of Feedback Seeking between Closed Leadership and Creative Deviance

This section uses stepwise regression to test the mediating role of feedback-seeking between closed leadership and creative deviance. In M2, closed leadership significantly affects creative deviance (β = -0.421***). In M3, closed leadership significantly impacts feedback seeking (β = -0.384***). In M4, the effect of closed leadership on creative deviance weakens (β = -0.274***), while feedback seeking significantly impacts creative deviance (β = 0.384***), indicating partial mediation. As shown in Table 20.

4.7.3. The Mediating Effect of Psychological Availability Between Inclusive Leadership and Creative Deviance

This section employed stepwise regression to examine the mediating effect of psychological availability on the connection between inclusive leadership and creative deviance. In M2, inclusive leadership significantly impacts creative deviance (β = 0.449*). In M3, inclusive leadership significantly affects psychological availability (β = 0.450*). In M4, the effect of inclusive leadership on creative deviance weakens (β = 0.299*), while psychological availability significantly impacts creative deviance (β = 0.333*), indicating partial mediation. As shown in Table 21.

4.7.4. Mediating Effect of Psychological Availability Between Closed Leadership and Creative Deviation

This section used stepwise regression to examine the mediating role of psychological availability between closed leadership and creative deviation. In M2, closed leadership significantly impacts creative deviation (β = -0.421***). In M3, closed leadership significantly affects psychological availability (β = -0.374***). In M4, the effect of closed leadership on creative deviation weakens (β = -0.286***), while psychological availability significantly impacts creative deviation (β = 0.360***), indicating partial mediation. As shown in Table 22.

4.8. Moderation Effect Testing

4.8.1. Moderating Effect of Achievement Motivation on the Relationship Between Open Leadership and Feedback Seeking

Table 23 shows that in Model M4, the interaction between open leadership and achievement motivation significantly affects feedback seeking (β = 0.107, **), with an adjusted R^2 of 0.250, explaining 25% of the variance.

4.8.2. The Moderating Effect of Achievement Motivation Between Open Leadership and Psychological Accessibility

Table 24 shows that in Model M4, the interaction between open leadership and achievement motivation significantly impacts psychological accessibility (β = 0.264, **), with an adjusted R^2 of 0.392, explaining 39.2% of the variance.

4.8.3. The Moderating Effect of Achievement Motivation on the Relationship Between Closed Leadership and Feedback Seeking

Table 25 shows that in Model M4, the interaction between closed leadership and achievement motivation significantly affects feedback seeking (β = -0.190, **), with an adjusted R^2 of 0.234, explaining 23.4% of the variance.

4.8.4. The Moderating Effect of Achievement Motivation on the Relationship Between Closed Leadership and Psychological Availability

Table 26 shows that in Model M4, the interaction between closed leadership and achievement motivation significantly impacts psychological availability (β = 0.133, ***), with an adjusted R^2 of 0.302, explaining 30.2% of the variance.

Table 21.
Mediating Effect of Psychological Availability Between Open Leadership and Creative Deviation.

	Creative Deviance			Creative Deviation			Psychological Availability			Creative Bias		
	M1			M2			M3			M4		
	B	*T*	VIF	*B*	*t*	VIF	*B*	*t*	VIF	*β*	*T*	VIF
Gender	-0.012	-0.305	1.003	0.002	0.055	1.004	-0.008	-0.226	1.004	0.005	0.138	1.004
Age	-0.090	-1.405	2.593	-0.108	-1.88s7	2.595	-0.038	-0.661	2.595	-0.095	-1.766	2.597
Education	-0.015	-0.351	1.095	-0.035	-0.929	1.097	0.026	0.706	1.097	-0.043	-1.233	1.098
Experience	-0.007	-0.105	2.603	0.029	0.511	2.610	0.005	0.094	2.610	0.028	0.509	2.610
Position	0.070	1.559	1.284	0.046	1.144	1.287	-0.024	-0.597	1.287	0.054	1.423	1.287
Openness				0.449***	12.575	1.009	0.450***	12.592	1.009	0.299***	7.933	1.264
Feedback										0.333***	8.854	1.259
R^2	.009			.208			0.206			0.296		
Adj-R^2	.001			.200			0.198			0.288		
F-value	1.094			27.493***			27.095***			37.668***		

Note: p<0.05*; p<0.01**; p<0.001***.

Table 22.
Mediating effect of psychological availability between closed leadership and creative deviation.

	Creative deviation			Creative deviation			Psychological availability			Creative deviation		
	M1			M2			M3			M4		
	B	*T*	VIF	*B*	*t*	VIF	*B*	*t*	VIF	*β*	*t*	VIF
Gender	-0.012	-0.305	1.003	-0.024	-0.661	1.004	-0.033	-0.882	1.004	-0.012	-0.361	1.005
Age	-0.090	-1.405	2.593	-0.117	-2.020	2.597	-0.044	-0.741	2.597	-0.101	-1.877	2.600
Education	-0.015	-0.351	1.095	-0.045	-1.191	1.100	0.019	0.498	1.100	-0.052	-1.477	1.101
Experience	-0.007	-0.105	2.603	0.027	0.456	2.609	-0.001	-0.020	2.609	0.027	0.498	2.609
Position	0.070	1.559	1.284	0.074	1.815	1.284	0.004	0.086	1.284	0.073	1.918	1.284
Closedness				-0.421***	-11.62	1.009	-0.374***	-10.08	1.009	-0.286***	-7.884	1.172
Feedback										0.360***	9.941	1.168
R^2	0.009			0.184			0.144			0.295		
Adj-R^2	0.001			0.176			0.135			0.287		
F-value	1.094			23.627***			17.556***			37.526***		

Note: p<0.05*; p<0.01**; p<0.001***.

Table 23.
Testing the moderating effect of achievement motivation on the relationship between open leadership and feedback seeking.

| | Feedback seeking | | | | | | | | | | | |
| | M1 | | | M2 | | | M3 | | | M4 | | |
	B	T	VIF	B	t	VIF	B	t	VIF	β	t	VIF
Gender	0.012	0.304	1.003	0.026	0.737	1.004	0.029	0.834	1.004	0.023	0.676	1.007
Age	0.031	0.491	2.593	0.013	0.231	2.595	-0.020	-0.365	2.622	-0.009	-0.153	2.635
Education	0.003	0.074	1.095	-0.017	-0.455	1.097	-0.007	-0.202	1.099	-0.006	-0.170	1.099
Experience	-0.109	-1.707	2.603	-0.073	-1.278	2.610	-0.045	-0.794	2.630	-0.056	-1.004	2.642
Position	0.042	0.927	1.284	0.018	0.437	1.287	0.014	.353	1.287	0.022	0.553	1.292
Openness				0.450***	12.597	1.009	0.402***	11.235	1.066	0.403***	11.344	1.066
Achievement							0.209***	5.842	1.071	0.215***	6.039	1.074
Openness * Achievement										0.107**	3.070	1.020
R^2	0.007			0.208			0.248			0.260		
Adj-R^2	0.000			0.200			0.240			0.250		
F-value	0.921			27.408***			29.607***			27.433***		

Note: $p<0.05$*; $p<0.01$**; $p<0.001$***

Table 24.
The moderating effect of achievement motivation on the relationship between open leadership and psychological availability.

| | Psychological availability | | | | | | | | | | | |
| | M1 | | | M2 | | | M3 | | | M4 | | |
	B	t	VIF	B	T	VIF	B	t	VIF	β	t	VIF
Gender	-0.022	-0.557	1.003	-0.008	-0.226	1.004	-0.003	-0.101	1.004	-0.017	-0.554	1.007
Age	-0.020	-0.307	2.593	-0.038	-0.661	2.595	-0.097	-1.831	2.622	-.067	-1.339	2.635
Education	0.046	1.113	1.095	0.026	0.706	1.097	0.043	1.258	1.099	0.046	1.419	1.099
Experience	-0.031	-0.479	2.603	0.005	0.094	2.610	0.056	1.053	2.630	0.027	0.539	2.642
Position	0.000	0.001	1.284	-0.024	-0.597	1.287	-0.031	-0.827	1.287	-0.011	-0.326	1.292
Openness				0.450***	12.592	1.009	0.366***	10.850	1.066	0.369***	11.535	1.066
Achievement							0.367***	10.849	1.071	0.381***	11.879	1.074
Openness * Achievement										0.264***	8.432	1.020
R^2	0.005			0.206			0.331			0.399		
Adj-R^2	0.000			0.198			0.324			0.392		
F-value	0.642			27.095***			44.353***			52.036***		

Note: *$p<0.05$; **$p<0.01$; ***$p<0.001$

Table 25.
Test of the moderating effect of achievement motivation on the relationship between closed leadership and feedback seeking.

| | Feedback seeking | | | | | | | | | | | |
| | M1 | | | M2 | | | M3 | | | M4 | | |
	B	T	VIF	B	t	VIF	B	t	VIF	β	t	VIF
Gender	0.012	0.304	1.003	0.001	0.038	1.004	0.007	0.209	1.005	0.008	0.232	1.005
Age	0.031	0.491	2.593	0.006	0.107	2.597	-0.032	-0.550	2.624	-0.025	-0.437	2.625
Education	0.003	0.074	1.095	-0.025	-0.640	1.100	-0.013	-0.348	1.103	-0.016	-0.434	1.103
Experience	-0.109	-1.707	2.603	-0.079	-1.334	2.609	-0.045	-0.784	2.630	-0.047	-0.827	2.630
Position	0.042	0.927	1.284	.045	1.090	1.284	0.038	0.936	1.285	0.031	0.797	1.286
Closed (Leadership style)				-0.384***	-10.40	1.009	-0.340***	-9.367	1.044	-0.334***	-9.404	1.045
Achievement							0.240***	6.590	1.049	0.261***	7.292	1.062
Closed (Leadership style) * Achievement										-0.190***	-5.439	1.015
R^2	0.007			0.153			0.208			0.244		
Adj-R^2	0.000			0.145			0.199			0.234		
F-value	0.921			18.922***			23.519***			25.214***		

Note: *p<0.05; **p<0.01; ***p<0.001.

Table 26.
Test of the moderating effect of achievement motivation on the relationship between closed leadership and psychological availability.

| | Psychological availability | | | | | | | | | | | |
| | M1 | | | M2 | | | M3 | | | M4 | | |
	β	t	VIF	B	T	VIF	B	t	VIF	β	t	VIF
Gender	-0.022	-0.557	1.003	-0.033	-.882	1.004	-0.023	-0.673	1.005	-0.022	-0.668	1.005
Age	-0.020	-0.307	2.593	-0.044	-0.741	2.597	-0.107	-1.963	2.624	-0.102	-1.894	2.625
Education	0.046	1.113	1.095	0.019	0.498	1.100	0.039	1.093	1.103	0.037	1.049	1.103
Experience	-0.031	-0.479	2.603	-0.001	-.020	2.609	0.055	1.007	2.630	0.054	1.000	2.630
Position	0.000	0.001	1.284	0.004	0.086	1.284	-0.009	-0.238	1.285	-0.013	-0.357	1.286
Closed (leadership)				-0.374***	-10.08	1.009	-0.302***	-8.808	1.044	-0.298***	-8.783	1.045
Achievement							0.396***	11.513	1.049	0.411***	12.011	1.062
Closed (Leadership) * Achievement										-0.133***	-3.968	1.015
R^2	0.005			0.144			0.293			0.310		
Adj-R^2	0.000			0.135			0.285			0.302		
F-value	0.642			17.556***			37.135***			35.226***		

Note: *p<0.05; **p<0.01; **p<0.001.

Table 27.
Test of the moderating effect of organizational learning climate on the relationship between feedback seeking and creative deviance.

	Creative deviation											
	M1			M2			M3			M4		
	B	t	VIF	B	T	VIF	B	t	VIF	β	t	VIF
Gender	-0.012	-0.305	1.003	-0.018	-0.520	1.003	-0.001	-0.038	1.010	-0.005	-0.155	1.011
Age	-0.090	-1.405	2.593	-0.105	-1.884	2.594	- 0.108	-1.988	2.594	-0.106	-1.994	2.594
Education	-0.015	-0.351	1.095	-0.016	- 0.443	1.095	-0.023	-0.659	1.096	-0.022	-0.624	1.096
Experience	-0.007	-0.105	2.603	0.047	0.835	2.615	0.053	0.971	2.616	0.051	0.945	2.616
Position	0.070	1.559	1.284	0.050	1.266	1.285	0.032	0.828	1.293	0.033	0.890	1.293
Seeking				0.489***	14.049	1.007	0.464***	13.595	1.023	0.458***	13.714	1.024
Organization							0.205***	5.990	1.033	0.221***	6.568	1.042
Seeking * Organization										0.176***	5.295	1.010
R^2	0.009			0.246			0.287			0.317		
Adj-R^2	0.001			0.238			0.279			0.308		
F-value	1.094			34.091***			35.969***			36.335***		

Note: *p<0.05; **p<0.01; **p<0.001

Table 28.
Test of the moderating effect of organizational learning climate on the relationship between psychological availability and creative deviance.

	Creative deviation											
	M1			M2			M3			M4		
	B	t	VIF	B	T	VIF	B	t	VIF	B	T	VIF
Gender	-0.012	-0.305	1.003	-0.002	-0.050	1.004	0.014	.410	1.010	0.012	0.370	1.010
Age	-0.090	-1.405	2.593	-0.081	-1.426	2.594	-0.085	-1.538	2.594	-0.094	-1.752	2.596
Education	-0.015	-0.351	1.095	-0.036	-0.984	1.097	-0.042	-1.178	1.098	-0.041	-1.178	1.098
Experience	-0.007	-0.105	2.603	0.008	0.135	2.604	0.016	0.286	2.606	0.027	0.505	2.609
Position	0.070	1.559	1.284	0.070	1.762	1.284	0.051	1.314	1.292	0.062	1.628	1.295
Psychological				0.467***	13.257	1.005	0.440***	12.733	1.022	0.432***	12.816	1.024
Organization							0.205***	5.890	1.035	0.211***	6.221	1.036
Psychological * organization										0.196***	5.855	1.008
R^2	0.009			0.225			0.266			0.304		
Adj-R^2	0.001			0.218			0.258			0.295		
F-value	1.094			30.454***			32.416***			34.196***		

Note: *p<0.05; **p<0.01; ***p<0.001.

4.8.5. The Moderating Effect of Organizational Learning Climate on the Relationship Between Feedback Seeking and Creative Deviance

Table 27 shows that in Model M4, the interaction between feedback-seeking and organizational learning climate significantly affects creative deviance ($\beta = 0.176$, ***), with an adjusted R^2 of 0.308, explaining 30.8% of the variance.

4.8.6. The Moderating Effect of Organizational Learning Climate on the Relationship Between Psychological Availability and Creative Deviance

Table 28 shows that in Model M4, the interaction between psychological availability and organizational learning climate significantly impacts creative deviance ($\beta = 0.196$, **), with an adjusted R^2 of 0.295, explaining 29.5% of the variance.

4.9. Discussion of the Study

The theoretical foundation incorporates measurable variables and supporting evidence from prior studies. Cognitive Evaluation Theory (CET) explains a branch of Self-Determination Theory, which explains how external factors like rewards and feedback influence intrinsic motivation by enhancing autonomy and competence. CET suggests that open leadership fosters creativity by encouraging independent thinking and collaboration, with empirical evidence showing an increase in employee innovation under open leadership compared to closed styles [15]. Employees with strong achievement motivation show a higher engagement level under open leadership, which nurtures creativity and minimizes the negative impact of control-oriented leadership [13]. Dual leadership, which combines open and closed styles, supports exploration and exploitation behaviors, leading to a balanced approach to innovation [8] found that teams led by dual leadership reported a 32% improvement in problem-solving efficiency and a 20% boost in creative outcomes. Open leadership increases motivation to generate and refine ideas, even under resource constraints, while closed leadership, focused on control and execution, can reduce creativity. Feedback-seeking, a proactive behavior, is positively influenced by open leadership and those who promote trust and transparency increase feedback-seeking behavior by 25%. Conversely, closed leadership reduces this behavior by 15%, hindering growth and innovation. Positive responses to feedback-seeking behavior promote resilience and persistence, which are critical for innovation. Employees engaging in feedback-seeking to refine ideas with a 23% higher success rate in implementation [7]. High psychological availability correlates with a 30% rise in innovative thinking and organizational success [33]. Achievement motivation moderates the effects of leadership styles on creativity. Highly motivated employees exhibit a 40% higher likelihood of generating novel solutions under supportive leadership conditions [40, 54]. A supportive organizational learning climate, characterized by open communication and feedback, fosters creativity by improving skill development by 22% and boosting self-confidence by 18%, as mentioned by Song, et al. [44]. These results demonstrate how psychological availability, achievement motivation, feedback-seeking behavior, and leadership styles interact to promote organizational creativity and innovation.

5. Conclusion

In conclusion, the study utilizes a robust research methodology to explore the impact of leadership styles on creative deviance in innovative organizations. By focusing on high-tech and creative enterprises, the research aims to quantify variables such as inclusive leadership, creative deviance, feedback seeking, psychological availability, achievement motivation, and organizational learning atmosphere through established scales. Data will be collected in major cities such as Beijing, Shanghai, Guangzhou, and Shenzhen, targeting employees in the design and project development departments of innovation-driven companies. The study employs rigorous sampling methods and ensures academic integrity while distributing 500 questionnaires to achieve a statistically reliable sample.

The research adopts validated scales to measure key variables, including dual leadership styles, creative deviance, feedback seeking, and psychological availability. The dual leadership scale examines open and closed leadership through 14 items, while creative deviance is assessed with a 9-item scale. Feedback seeking, achievement motivation, and organizational learning atmosphere are measured using scales developed by Gong, et al. [64]; Lang and Fries [66] and Nikolova, et al. [61] respectively. These scales are adapted for the study's context and employ Likert-type responses to capture employees' perceptions.

The data analysis will use comprehensive statistical techniques utilizing SPSS and AMOS. While reliability and validity analyses evaluate the internal consistency and model fit, descriptive statistics summarize the data. The associations between variables will be investigated using regression and mediation methods, and hierarchical regression will be used to evaluate the impacts of moderation. The pilot test, conducted with 139 valid samples, provides preliminary insights into the validity of the survey instrument, confirming the study's design and ensuring the reliability of the data.

6. Limitation of the Study

The study's sample bias is one of its many drawbacks; it predominantly examines the high-tech and creative industries, which restricts its applicability to other businesses. Its cross-sectional design limited the ability to conclude causality, and using self-reported data may create response bias. The geographic focus is restricted to particular Chinese cities, which might not accurately represent more extensive regional or cultural variations. Moreover, leaving out senior managers and those with less than three months of experience could omit crucial viewpoints. It is advised that future studies employ a wider range of employee positions and experience levels, use longitudinal designs to demonstrate causality and incorporate a variety of industries and geographical areas.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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