

A Study on the Mechanisms Underlying Employees' Deviant Innovation Behavior within the AMO Framework: Based on the QCA Method

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Abstract

Deviant innovation is becoming increasingly important for corporate development and has emerged as a focal point for scholars both domestically and internationally. Previous research has examined the antecedents of deviant innovation primarily from a single perspective, lacking investigations into the synergistic interactions among multiple variables. Drawing on AMO theory and employing the QCA method, this study explores the mechanisms that drive employees to engage in either high or non-high deviant innovation behavior. The findings reveal that: (1) No single condition—whether Sense of responsibility, Job autonomy, Role Breadth Self-Efficacy, Organizational Innovation Climate, or Transformational Leadership—constitutes a necessary prerequisite for employees' high or non-high deviant innovation; rather, such behavior requires the synergistic interplay of multiple factors. (2) Six pathways lead to high deviant innovation behavior, which can be categorized into three types: deviant innovation driven by Transformational Leadership and Role Breadth Self-Efficacy, deviant innovation driven by Job autonomy, and deviant innovation driven by Sense of responsibility. (3) Four pathways are found to result in non-high deviant innovation, which fall into two main types: lack of opportunity and lack of individual ability or motivation. These findings contribute to a deeper understanding of the mechanisms underlying employees' deviant innovation behavior under the influence of multiple factors, thereby providing a theoretical basis for organizations seeking to encourage deviant innovation.

Keywords

Deviant innovation; AMO theory; QCA method

1. Introduction

In the age of artificial intelligence, innovation has become a focal point for both businesses and society. However, in the face of rapidly evolving changes and challenges, companies cannot achieve high-quality development through formal innovation alone (Cui, M.J., 2023). On the one hand, management often discourages

employee innovation to avoid potential failures; on the other hand, employees themselves may engage in unofficial innovation endeavors to impress their leaders. As a result, deviant innovation behaviors occur frequently. Research has found that deviant innovation aligned with company goals can enhance both individual and organizational performance (Criscuolo et al., 2014). Compared with traditional innovation, deviant innovation can help enterprises achieve breakthrough technological advancements, thereby enabling "pioneering" innovation in unconventional fields (Huang, W. et al., 2017). Deviant innovation not only drives high-quality corporate development but also equips companies with better mastery of innovation methodologies. Consequently, its value has garnered widespread attention from both academia and business practitioners.

Regarding how to incentivize employees' deviant innovative behavior, existing research has explored the underlying mechanisms primarily from individual, leadership, and organizational perspectives. At the individual level, such behavior largely depends on employees' psychological cognition and personal resources, with relevant variables including "innovative self-efficacy" (Liu, L.J. et al., 2024), among others. At the leadership level, key factors include leadership style and behaviors, such as transformational leadership (Wang, H.Y., 2019; Chen, X.T., 2022). At the organizational level, the main influencing factors encompass organizational culture and resources, such as the organizational innovation climate (Wang Hongyu, 2019). However, existing research on the mechanisms of deviant innovation remains fragmented, making it difficult to establish a systematic pathway for enhancing employees' deviant innovation. As a complex social system, an organization is subject to the interaction of multiple factors; the stimulation of employee deviant innovation does not occur in isolation but rather through the interplay of these factors. Different employees possess varying psychological cognitions and personal resources, and their perceptions of and needs for the organizational innovation climate are not uniform. Moreover, traditional quantitative studies tend to focus solely on the impact of individual variables on employee deviant innovation, failing to account for interactions among three or more variables. Given the complexity of deviant innovation behavior, previous research has lacked sufficiently persuasive theoretical explanations and has overlooked the influence of synergistic effects across different levels on employees' deviant innovation behavior.

AMO is a theory grounded in individual behavior and outcomes, linking individual behavior to factors such as ability, motivation, and opportunity (Blumberg et al., 1982). By employing mechanisms such as conjunction, substitution, and attenuation to influence employee behavior, it lays a solid theoretical foundation for exploring the mechanisms through which multiple factors influence deviant innovative behavior. This project intends to adopt the qualitative comparative analysis (QCA) method, treating the relationships between variables as independent combinations dependent on other variables. This approach aims to better reveal the interactions

among multiple factors and identify complex problems caused by multiple concurrent causes at a holistic level (Du, Y.Z. & Jia, L.D., 2017), applying it to the study of deviant innovation under multi-factor configurations.

Therefore, based on AMO and employing the QCA methodology, this project investigates the following questions: What types of deviant innovative behaviors do employees exhibit? What factors trigger highly deviant innovative behaviors? What configurations can constrain employees' deviant innovative behaviors ?

2. Theoretical Framework and Assumptions

2.1. Competency factors

Unlike general self-efficacy, role breadth self-efficacy refers to an individual's perception of work tasks, encompassing both the various role-related competencies possessed in the workplace and the ability to respond positively to the work environment (Park, 1998). Role breadth self-efficacy provides individuals with positive psychological resources, thereby fostering greater self-confidence, optimism, and perseverance. Employees with high role breadth self-efficacy believe they are capable of proposing and implementing new ideas at work (Chen, 2013), and they exhibit greater initiative and self-confidence, making them willing to take risks. Furthermore, Yang, J. (2011) indicated that individuals with high role breadth self-efficacy are more likely to adopt a proactive attitude when facing challenging tasks. They maintain a positive mindset, possess high psychological resilience, and are better able to accept and complete tasks. Based on this, this paper selects role breadth self-efficacy as a variable to explore its impact on individuals' deviant innovative behavior.

2.2. Motivational factors

A sense of responsibility is a positive psychological state that significantly influences an individual's behavior and attitudes. Eisenberger et al. (2001) proposed that a sense of responsibility refers to employees' belief that they can help the organization achieve its goals and care about its well-being. Wang, H.Y. (2019) notes that this not only reflects the organization's responsibility toward its employees but also motivates employees to actively explore new approaches and become more involved in the organization's development and growth. Employees with a high sense of responsibility often demonstrate greater initiative and constructive behavior; they tend to take innovative actions to support the organization's development and progress (Yang, H. et al, 2016) Through a sense of responsibility, employees gain a clearer understanding of their importance to the organization, thereby better leveraging their strengths and talents. They proactively and independently engage in deviant innovation in pursuit of breakthrough results. This not only helps improve organizational operational efficiency and promote organizational development but also enables employees to realize their self-worth

and contribute to the organization's success. Therefore, this study identifies a sense of responsibility as a motivational factor influencing employees' deviant innovation.

2.3. Opportunity Factors

2.3.1. At the working level

Job autonomy can be defined as the degree of freedom and decision-making authority employees have in performing their duties (Cordery et al., 2010), including the ability to make independent decisions regarding work pace, sequence, and execution strategies (Morgeson et al., 2005). Job autonomy plays a crucial role in fostering employees' innovative capabilities, a point that is particularly evident when dealing with complex tasks (Wang & Cheng, 2010). Research findings indicate that in workplaces lacking autonomy, employees' creativity may be stifled (Hornung & Rousseau, 2007). Excessively strict management systems and approval procedures can deter employees from challenging the status quo or engaging in creative endeavors, causing them to adhere to established work practices. In contrast, Volmer et al. (2012) found that in organizations with high levels of job autonomy, employees can independently choose their work methods and processes. This freedom allows them to break free from conventional constraints, explore new ideas and approaches, and demonstrate an innovative spirit. Consequently, this paper argues that employees with high job autonomy are more likely to exercise creativity in their work and engage in deviant innovative behavior.

2.3.2. At the leadership level

Transformational leadership is primarily characterized by leaders motivating and inspiring employees through personal charisma, visionary inspiration, and genuine care, thereby enhancing organizational efficiency. Such leaders excel at unlocking employees' innovative potential, are eager to paint a positive future for the team, and are willing to provide personalized guidance tailored to their subordinates' individual characteristics (Zhu, 2012). Transformational leadership focuses on individual needs and provides emotional support, thereby effectively enhancing employees' work motivation and performance. By strengthening employees' sense of participation and belonging within the organization, it motivates them to exert greater effort toward achieving organizational goals, fostering innovative thinking and goal-setting, which in turn drives innovative behavior. In the process of driving organizational change, transformational leadership emphasizes the shaping of values, encourages employees to break with convention, and challenges them to complete tasks in innovative ways (Oldham, 2012). It also encourages employees to take risks, prompting them to engage in deviant innovative behaviors. Consequently, this paper argues that transformational leadership is more likely to help employees implement deviant innovative behaviors.

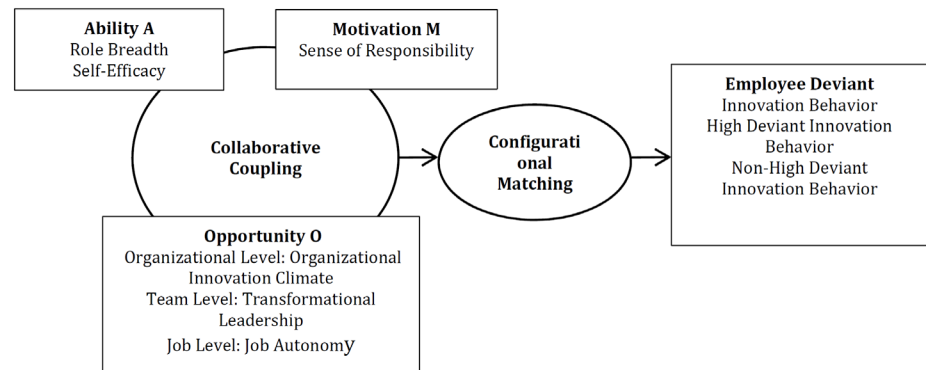
2.3.3. Organizational level

The level of support for innovation that employees perceive within an organization is referred to as the "organizational innovation climate" (Liu, Y., 2009). Research has shown that when employees perceive a positive innovation climate in their organization, they are more likely to demonstrate strong motivation to innovate and put their ideas into practice (Qu, 2015). In organizations with a strong innovation climate, employees' passion for innovation is ignited. However, limited resources and rigid procedural norms still pose challenges during the innovation process, making employees more likely to adopt unconventional methods to overcome obstacles and realize their creative ideas—namely, deviant innovation. Furthermore, a strong innovation climate reduces employees' fear of failure and enhances their willingness to try new approaches, thereby further facilitating deviant innovation behavior. Consequently, this study concludes that in environments characterized by a high organizational innovation climate, employees' deviant innovation behavior is more likely to occur.

2.3.4. Construction of the Configuration Model

The linear effects of single factors on deviant innovation, as discussed above, help to understand deviant innovation. However, deviant innovation is the result of the interaction between individuals and their environment, and thus the outcome of multiple interacting factors. While single-factor analysis can reveal the independent effects of each variable, it struggles to capture the complex synergistic and interactive relationships among multiple factors. Configurational theory emphasizes the logical connections between multiple conditions and outcomes, effectively addressing the interdependence of multiple elements and demonstrating inherent causal asymmetry (Du Y.Z. et al., 2022). It thus enables an exploration of how interactions among multiple antecedent variables influence employees' deviant innovation behavior. This study, based on AMO theory, uses online questionnaire surveys as the data source and adopts the QCA method. Five conditions—ability (Role Breadth Self-Efficacy), motivation (Sense of responsibility), and opportunity (Job autonomy, Organizational Innovation Climate, Transformational Leadership)—are incorporated into the analytical framework to systematically explore the combined mechanism through which the three dimensions of "ability-opportunity-motivation" affect deviant innovation behavior. The model is shown in Figure 1.

Figure 1. Model



3. Research Design

3.1. Data Collection

The data for this study was collected via the Wenjuanxing platform. The survey period lasted two weeks, during which 285 questionnaires were distributed and 232 were returned. To ensure data quality, duplicate responses and invalid questionnaires were excluded, resulting in a final sample of 222 valid responses, with a response rate of 77.89%. The characteristics of the valid sample are as follows: In terms of gender distribution, males accounted for 52.7% and females for 47.3%, with males slightly outnumbering females. In terms of age structure, the sample distribution was relatively balanced: 44.7% were under 25 years old, 36.0% were between 26 and 35 years old, and 20.3% were 36 years old or older. In terms of educational attainment, the respondents' overall level of education was high, with 95.5% holding a bachelor's degree or higher. Regarding years of work experience, 43.2% had less than 3 years, 25.7% had 3 – 5 years, 22.5% had 5 – 10 years, and 8.6% had 10 or more years.

3.2. Variable Measurement

All scales used in this study have been published in international journals and were appropriately modified to meet the needs of this research. To validate the applicability of the scales in a Chinese context, we strictly followed the forward-backward translation procedure to translate and repeatedly revise the original scales. This study directly adopted existing, well-established scales. All constructs were measured using a five-point Likert scale, where 1 – 5 indicates the degree of agreement, with 1 representing "strongly disagree" and 5 representing "strongly agree."

1. Deviant Innovation Behavior: The Deviant Innovation Behavior Scale designed by Criscuolo et al. (2014) was adopted. The questionnaire comprises five items, including: "Outside of my primary work duties, I enjoy coming up with new ideas," "Even if some ideas are not endorsed by my supervisor, I will continue to refine

them," and "I will devote more time to projects unrelated to the organization to enrich future organizational plans." The Cronbach's α value for this scale is 0.913.

2. Work Autonomy: A 4-item scale designed by Langfred (2000) was adopted, including items such as "At work, I have a high degree of control over my own work pace" and "At work, I can independently execute the tasks I need to handle." The Cronbach's α value is 0.885.

3. Role-Wide Self-Efficacy: A 7-item scale designed by Parker (2006) was used, including items such as "I can communicate and discuss issues with people outside the company (e.g., clients)" and "I can visit other departments and offer suggestions for their reference." The Cronbach's α value is 0.927.

4. Sense of Responsibility: The scale developed by Eisenberger (2001) was adopted, with the item "I believe I have only one obligation to the company, and that is to complete my work" removed. Finally, the six items with the highest factor loadings were selected, resulting in a Cronbach's α of 0.911.

5. Organizational Innovation Climate: Based on the questionnaire developed by Liu Y (2009), this study created a 15-item questionnaire. Key items include: "Employees do not feel threatened by others' learning abilities or skills," "Employees use their free time to explore new ideas or seek new methods," and "Supervisors frequently support and encourage subordinates to express their own new insights." The Cronbach's α value for this scale is 0.965.

6. Transformational Leadership: A 7-item questionnaire designed by Bolino and Grant (2016) was adopted, including items such as "My leader helps employees clearly understand a positive future vision for the unit/department," "My leader is perceived as highly capable, admired and respected by others, and often motivates me as a result," and "My leader fosters trust, participation, and cooperation among team members." The Cronbach's α value for this scale is 0.925.

3.3. Data Analysis and Hypothesis Testing

In this study, SPSS 26.0 was used to calculate the Cronbach's α coefficients for deviant innovation behavior, sense of responsibility, role breadth self-efficacy, transformational leadership, and organizational innovation climate. All coefficients were greater than 0.8, indicating that the questionnaire possesses good reliability. As shown in Table 1, the factor loadings ranged between 0.75 and 0.85, exceeding the standard threshold of 0.5. The average variance extracted for all variables was greater than 0.5, and the composite reliability was above 0.8, indicating that the questionnaire possesses good composite reliability and structural validity. Moreover, the scales used in this study were established, well-validated instruments, and the items were optimized based on the research content, ensuring good content validity. In addition, based on the confirmatory factor analysis results presented in Table 2, the six-factor model exhibits the best fit indices compared to other competing models, indicating good discriminant validity among the scales used in this study. Finally, common method bias was tested using Harman's single-factor

method, revealing that the variance of the first factor was 28.7%, which is significantly below the 40% threshold. Thus, common method bias is not a serious concern in this study.

Table 1

Variable	Estimate	AVE	CR
Sense of responsibility	0.758-0.816	0.629	0.911
Job autonomy	0.795-0.834	0.658	0.885
Role Breadth Self-Efficacy	0.77-0.821	0.64	0.927
Organizational Innovation Climate	0.786-0.838	0.649	0.965
Transformational Leadership	0.78-0.817	0.638	0.924
Deviant Innovation Behavior	0.783-0.859	0.678	0.913

Table 2. Confirmatory Factor Analysis

Model	χ^2	df	χ^2/df	RESMA	IFI	TLI	CFI
Six-Factor Model	1011.82	887	1.14	0.25	0.984	0.983	0.984
Five-Factor Model	1151.564	892	1.29	0.48	0.885	0.872	0.863
Four-factor model	1323.97	896	1.47	0.61	0.832	0.842	0.851
Three-factor model	1704	899	2.03	0.77	0.785	0.751	0.782
Two-factor model	2012	912	2.21	0.78	0.775	0.74	0.772
Single-factor model	2313	953	2.42	0.88	0.715	0.674	0.711

4. Results

4.1. Requirements Analysis

According to the results of the necessary condition analysis presented in Table 3, the consistency of each antecedent condition—sense of responsibility, job autonomy, role breadth self-efficacy, organizational innovation climate, and transformational leadership—with both high and non-high deviant innovative behavior among employees is below 0.9. This threshold indicates that no single condition constitutes a necessary condition for employees to engage in high deviant innovative behavior. It is worth noting that although the consistency of some conditions approaches 0.8 (e.g., sense of responsibility at 0.82 and role breadth self-efficacy at 0.80), they still fall short of the level required for a necessary condition. Thus, employees' deviant innovative behavior is not determined by any single factor but rather results from the synergistic interaction of multiple complex factors. Therefore, it is necessary to further adopt a configurational approach to investigate how multiple antecedent conditions combine to jointly lead to employees' high deviant innovative behavior.

Table 3. Analysis of Necessary Conditions

Conditional variable	Employees' High-Risk Innovative Behavior		Non-high-risk innovative behavior by employees	
	Consistency	Coverage	Consistency	Coverage
Sense of responsibility	0.82	0.75	0.57	0.56
~Sense of responsibility	0.52	0.54	0.74	0.81
Job autonomy	0.76	0.73	0.57	0.57
~Job autonomy	0.55	0.55	0.73	0.77

Role Breadth Self-Efficacy	0.80	0.76	0.58	0.58
~Role Breadth Self-Efficacy	0.56	0.56	0.77	0.80
Organizational Innovation Climate	0.78	0.73	0.59	0.59
~Organizational Innovation Climate	0.56	0.57	0.73	0.77
Transformational Leadership	0.78	0.74	0.57	0.58
~Transformational Leadership	0.56	0.56	0.74	0.78

4.2. Analysis of the Sufficiency of High-Deviation Innovative Behavior

This study employed QCA (Qualitative Comparative Analysis) software to conduct a configurational analysis, categorizing deviant innovative behavior into two types: "high deviant innovative behavior" and "non-high deviant innovative behavior." Given the sample size (N = 221), frequency, consistency, and PRI thresholds were set at 1, 0.8, and 0.7, respectively, in accordance with existing research, in order to obtain multiple, reduced, and intermediate solutions. Drawing on the methodological approach of Fiss (2011), this study explores the mechanisms through which different combinations of antecedent conditions influence employees' deviant innovative behavior. The detailed results are presented in Table 4. Based on these different antecedent condition combinations, this paper will discuss the characteristics of each configuration and its underlying mechanism of action on deviant innovative behavior.

Table 4. Configuration Analysis Results

Conditional variable	High deviant innovative behavior						Non-High Deviant Innovation Behavior			
	Ea		Eb		Ec		EA		EB	
	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10
Sense of responsibility			●		●	●	⊗		⊗	⊗
Job autonomy	●		●	●			⊗	⊗	⊗	
Role Breadth Self-Efficacy	●	●			●				⊗	⊗
Organizational Innovation Climate		●		●		●		⊗		
Transformational Leadership	●	●					⊗	⊗		⊗
Consistency	0.87	0.83	0.82	0.86	0.84	0.92	0.91	0.89	0.87	0.82
Original coverage	0.67	0.69	0.69	0.70	0.67	0.44	0.55	0.53	0.51	0.56
Unique coverage	0.03	0.03	0.01	0.02	0.04	0.01	0.03	0.07	0.09	0.05
Total coverage	0.88						0.85			
Overall consistency	0.75						0.77			

Note: "●" indicates that the "core condition is present"; "●" indicates that the "peripheral condition is present"; "⊗" indicates that the "core condition is absent"; "⊗" indicates that the "peripheral condition is absent".

4.2.1. Transformational leadership and role breadth self-efficacy drive disruptive innovation

In the first scenario, the configurations that facilitate high deviant innovation behavior all center on high role breadth self-efficacy and high transformational leadership, and can be further distinguished into two pathways: E1 and E2. In Path E1, high job autonomy serves as the boundary condition. Regardless of whether individuals possess a sense of responsibility or the level of organizational

innovation climate, as long as employees have high role breadth self-efficacy and high job autonomy under a high transformational leadership style, high deviant innovation behavior can occur. In Path E2, the boundary condition shifts to a high organizational innovation climate. In other words, regardless of the levels of sense of responsibility and job autonomy, as long as employees possess high role breadth self-efficacy, leaders exhibit high transformational leadership traits, and the organization fosters a strong innovation climate, employees will demonstrate high deviant innovation behavior.

4.2.2. Job Autonomy Drives Deviant Innovation

The second type of configurations driving employees' high deviant innovation behavior all take high job autonomy as the core condition and are further divided into two paths: E3 and E4. Among them, E3 takes high sense of responsibility as the boundary condition. Under this configuration, regardless of whether an individual possesses high role breadth self-efficacy, whether they are in a high organizational innovation climate, or whether their team leader exhibits transformational leadership, as long as the individual has a high sense of responsibility and high job autonomy, high deviant innovation behavior can occur. This suggests that when employees are granted sufficient autonomy and also feel a strong personal obligation to contribute to the organization, they are likely to engage in deviant innovation even in the absence of other supportive conditions. In contrast, E4 takes high organizational innovation climate as the boundary condition. Specifically, when the organizational innovation climate is strong and the individual has high job autonomy, employees can exhibit high deviant innovation behavior, regardless of whether they possess high role breadth self-efficacy or whether the leader is transformational. This indicates that an innovation-supportive organizational climate can compensate for a lack of individual ability or directive leadership, allowing autonomous employees to take unconventional paths to innovate. Together, E3 and E4 highlight two distinct mechanisms—one driven by individual responsibility and the other by contextual climate—through which job autonomy fosters deviant innovation.

4.2.3. Sense of Responsibility Drives Deviant Innovation

The third type of configurations driving employees' high deviant innovation behavior all take high sense of responsibility as the core condition and are further divided into two paths: E5 and E6. Under Path E5, regardless of whether an individual possesses job autonomy, whether the organization has an innovative climate, or whether the team leader exhibits a transformational leadership style, as long as the individual has high role breadth self-efficacy and a high sense of responsibility, high deviant innovation behavior can occur. In contrast, Path E6 takes high organizational innovation climate as the boundary condition. This indicates that regardless of whether the individual has job autonomy or role breadth

self-efficacy, and regardless of whether the leader is transformational, as long as the organizational innovation climate is strong and the individual has a high sense of responsibility, employees can exhibit high deviant innovation behavior.

4.3. Sufficiency Analysis of Non-High Deviant Innovation Behavior

On this basis, this study further analyzes the paths leading to employees' non-high deviant innovation behavior. A total of four configurations exhibit employees' non-high deviant innovation behavior, which are classified into two types for naming and elaboration: the opportunity-deficit type and the individual ability-motivation deficit type.

4.3.1. Opportunity-Deficit Type

This type of configuration takes non-high job autonomy and non-high transformational leadership as the core conditions. According to the AMO theory, both job autonomy and transformational leadership belong to the "opportunity" dimension. Therefore, this study names this type as the "opportunity-deficit type". This type includes two paths: E7 and E8. Path E7: takes non-high sense of responsibility as the peripheral condition. This path indicates that regardless of whether an individual possesses high role breadth self-efficacy or whether the organization has a high innovation climate, once job autonomy and transformational leadership are both absent, coupled with a low sense of responsibility, non-high deviant innovation behavior will result. Path E8: takes non-high organizational innovation climate as the peripheral condition. This path indicates that regardless of whether an individual has a high sense of responsibility and high role breadth self-efficacy, as long as job autonomy and transformational leadership are absent and the organizational innovation climate is low, non-high deviant innovation behavior will also occur.

4.4. Robustness Test

In this study, two approaches were adopted to conduct the robustness test of configurations. First, the consistency threshold was adjusted from 0.80 to 0.85, and on this basis, the fsQCA analysis was rerun to examine whether the generated configurations—in terms of structure, number, and core conditions—remained consistent with the original results. Second, the PRI consistency threshold was lowered by 0.05 (Du Yunzhou, 2022), i.e., from 0.70 to 0.65, to again test whether the configurations aligned with the existing findings. The results of both tests showed that no substantial changes occurred in the core composition or the number of paths among the configurations after adjusting the thresholds, and the original conclusions still held. Therefore, the findings indicate that the data have good robustness, and the analytical results are reliable and credible.

5. Conclusion

5.1. Research Findings

Grounded in AMO theory, this study adopts a configurational perspective to systematically explore how employees' ability, motivation, and opportunity factors jointly drive their deviant innovation behavior. The main conclusions are as follows. First, none of the individual conditions—Sense of responsibility, Job autonomy, Role Breadth Self-Efficacy, Organizational Innovation Climate, and Transformational Leadership—constitutes a necessary condition for either high or non-high deviant innovation behavior, indicating that deviant innovation results from the interplay of multiple factors. Second, through QCA analysis, six configurations are identified as leading to employees' high deviant innovation behavior, which can be categorized into three types: the Transformational Leadership and Role Breadth Self-Efficacy driven type, the Job autonomy driven type, and the Sense of responsibility driven type. These three types correspond respectively to the opportunity-ability, opportunity, and motivation dimensions in AMO theory, revealing diverse realization mechanisms under different combinations of conditions. Finally, four configurations are found to lead to employees' non-high deviant innovation behavior, which fall into two types: the opportunity-deficit type (characterized by the absence of Job autonomy and Transformational Leadership) and the individual ability-motivation deficit type (characterized by the absence of Sense of responsibility and Role Breadth Self-Efficacy). These findings help to deepen the understanding of the inducing and inhibiting mechanisms of deviant innovation from a configurational perspective, offering theoretical guidance for organizational management practices.

5.2. Theoretical Contributions

First, based on AMO theory, this study systematically explores the synergistic effects of multiple factors from the three dimensions of individual ability, motivation, and opportunity on employees' deviant innovation behavior, contributing to a deeper understanding of the underlying driving mechanisms. Second, most previous studies have been limited to linear analyses of single or dual variables. However, as a complex individual behavior, employees' deviant innovation is actually shaped by the interplay of multiple factors. Therefore, adopting a configurational perspective to analyze its driving factors not only reveals the formation mechanisms of deviant innovation more comprehensively but also provides more targeted guidance for organizations seeking to effectively stimulate employees' deviant innovation in practice. Finally, through QCA analysis, this study identifies three types of configurations leading to employees' high deviant innovation behavior and two types leading to non-high deviant innovation behavior. Among them, the three high-deviant-innovation configurations effectively address the proposition of interdependence among multiple factors and clarify the relative importance of each antecedent condition. Furthermore, the two non-high deviant innovation

configurations can be further distinguished as the "opportunity-deficit type" and the "ability-motivation deficit type." This indicates that, for employees, role breadth self-efficacy and sense of responsibility play critical roles in deviant innovation behavior. For organizations, the lack of necessary job autonomy among employees and the failure of team leaders to exhibit a transformational leadership style are important organizational constraints leading to non-high deviant innovation behavior.

5.3. Management Insights

First, in employee training, organizations should not focus solely on individual factors to promote deviant innovation behavior. Instead, they should systematically stimulate employees' deviant innovation through synergistic combinations of multiple factors. The findings of this study show that no single condition constitutes a necessary condition for high deviant innovation behavior; rather, it results from the interplay of multiple factors. Therefore, organizations need to design management interventions holistically, integrating the three dimensions of ability, motivation, and opportunity.

Second, in talent recruitment, emphasis should be placed on assessing individuals' ability and motivation, with a focus on selecting employees who possess a high sense of responsibility and high role breadth self-efficacy. At the same time, organizations can enhance employees' professional knowledge and practical skills through systematic work guidance and skills training, helping them clearly understand internal policies and the benefits offered. For employees with a low sense of responsibility and low role breadth self-efficacy, organizations can foster a strong innovation climate and purposefully cultivate a transformational leadership style. Through leaders' role modeling and influence, employees' growth can be facilitated, their sense of belonging strengthened, and their deviant innovation behavior stimulated.

Finally, great importance should be attached to the role of transformational leadership. Although transformational leadership appears in only two of the high deviant innovation paths, the analysis of non-high deviant innovation paths reveals that the absence of transformational leadership can easily trigger non-high deviant innovation behavior. Therefore, enterprises should strengthen leader training by creating an open communication atmosphere and encouraging team members to proactively propose new ideas and suggestions. This can effectively reduce employees' resistance to innovation. Meanwhile, regular feedback and recognition of employees' contributions help build trust and drive the team toward shared goals. In summary, organizations should systematically integrate transformational leadership principles into leadership development programs, ensuring that leaders can effectively guide teams to cope with change and actively promote the formation and implementation of an innovation culture.

5.4. Limitations of the Study and Future Directions

5.4.1. Sample limitations

The sample of this study was mainly collected through online questionnaires, which may introduce selection bias, as respondents are often individuals who actively participate in online surveys, limiting the representativeness of the sample. Moreover, the relatively small sample size may affect the stability of statistical analyses and the generalizability of the conclusions. These factors warrant caution when extrapolating the findings to broader organizational contexts. Future research should consider adopting more diverse sample sources, including different industries (e.g., manufacturing, services, high-tech), different ownership types (state-owned, private, foreign-invested), and different organizational sizes (small and medium-sized enterprises vs. large corporations), so as to enhance the representativeness and reliability of the findings. In addition, combining offline questionnaires with field interviews can further verify the robustness of the conclusions.

5.4.2. In-depth exploration of variables

Although this study systematically examines the influence of multiple factors on employees' deviant innovation behavior from the three dimensions of ability, motivation, and opportunity based on AMO theory, the mechanisms through which specific factors within each dimension affect deviant innovation remain unclear. For instance, within the motivation dimension, beyond sense of responsibility, how intrinsic motivation, achievement goal orientation, and their interactions with external incentives influence deviant innovation requires further investigation. Within the opportunity dimension, the differentiated effects of various leadership styles (e.g., servant leadership, ethical leadership) and different types of organizational culture (e.g., hierarchical culture, market culture, clan culture) on deviant innovation merit deeper exploration. Future research can introduce more specific variables and adopt mediation and moderation models to clarify the pathways and boundary conditions among these variables, thereby revealing the formation process of deviant innovation with greater precision.

5.4.3. Consideration of Dynamic Changes

This study adopts a static configurational analysis approach, mainly revealing the impact of combinations of antecedent conditions on employees' deviant innovation behavior at a specific point in time. However, it fails to capture the dynamic evolution of such behavior. In fact, individuals' cognition, motivation, and behavior may change over time due to work experience, organizational changes, and leadership succession, and deviant innovation itself may exhibit stage-specific characteristics. Future research can employ longitudinal designs (e.g., panel surveys, diary studies, or experience sampling methods) to collect data at multiple time points, examining the evolutionary patterns of deviant innovation across different

periods and their dynamic relationships with antecedent conditions. Moreover, combining qualitative comparative analysis with time-series analysis could help explore how configurational paths change over stages, providing richer empirical evidence for understanding the dynamic mechanisms of deviant innovation.

5.4.4. Cross-Cultural Comparison

This study uses Chinese employees as the sample, and the research context is limited to China's socio-cultural environment. Chinese cultural characteristics (e.g., high power distance, collectivism, relationship orientation) may significantly influence employees' cognition, willingness, and performance regarding deviant innovation behavior, leaving the applicability of the findings to other cultural contexts unclear. Future research can extend to cross-cultural comparisons, for example, between Eastern and Western cultures (e.g., individualism vs. collectivism), different regions (e.g., East Asia vs. Europe and America), and countries with different levels of economic development, to explore how cultural values (such as uncertainty avoidance, long-term orientation, masculinity/femininity) moderate the relationship between antecedent conditions and deviant innovation. Cross-cultural studies can not only test the external validity of this study's conclusions but also contribute to building a more generalizable theoretical framework of deviant innovation.

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