



Job insecurity and employee innovative behavior: The mediating role of work engagement

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ABSTRACT

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Rapid technological change and evolving employment conditions have intensified perceptions of job insecurity among employees, which in turn may weaken the discretionary effort and psychological readiness needed for innovative behavior. Drawing on the cognitive appraisal theory of stress, Maslow's hierarchy of needs, and leadership style theory, this study examines the relationship between job insecurity and employee innovative behavior in Chinese companies, while also investigating the mediating roles of work engagement and transformational leadership. Survey data were collected from 252 Chinese employees and analyzed using SPSS and the PROCESS macro. The findings show that job insecurity is a significant negative predictor of innovative behavior, suggesting that employees who feel uncertain about the continuity or stability of their jobs are less likely to invest effort in generating, promoting, or implementing new ideas. Job insecurity also negatively predicts work engagement, and work engagement was found to mediate the relationship between job insecurity and innovative behavior. This result indicates that insecurity undermines employees' levels of vigor, dedication, and absorption, which subsequently reduces their innovative contribution at work. In contrast, transformational leadership did not mediate the relationship between job insecurity and innovative behavior. However, it exerted a significant positive direct effect on innovative behavior. These findings imply that sustaining innovation requires organizations to reduce insecurity through supportive employment practices, clear communication, and resource provision, as leadership development alone may not be sufficient to neutralize the adverse innovation-related consequences of job insecurity.

Contribution/Originality: This study examines how job insecurity influences employees' innovative behavior in Chinese organizations and whether work engagement mediates this relationship. Using survey data and PROCESS analysis, it shows a significant indirect effect through engagement. Transformational leadership has a direct positive effect on innovation but does not buffer insecurity's overall impact.

1. INTRODUCTION

The high rate of technological revolution and flexibility of employment terms have increased the possibility of employee insecurity, especially during organizational restructuring, work downsizing, job redesign, and workload intensification. In the wake of the Covid-19 outbreak, many organizations faced turbulent situations requiring shifts, and previous studies show that organizational change and environmental volatility may heighten employees' psychological and behavioral responses. Job insecurity has become a central problem in organizational management (Yüce-Selvi, Sümer, Toker-Gültaş, Låstad, & Sverke, 2023). Work-related events perceived to introduce novelty and

disruption to employees could make them more job insecure and cultivate negative work-related judgments; hence, undermining proactive work behaviors (Niesen, Van Hootegem, Vander Elst, Battistelli, & De Witte, 2018).

The available literature has also determined that job insecurity is correlated with various negative effects, which indicate overall work attitudes and psychological conditions. In a state of insecurity, employees might lose their confidence and commitment, and they can become more vulnerable to ambiguity and pressure caused by shifts in communication patterns, managerial procedures, and role expectations (Al-Abdallah, Helal, Dandis, & Wright, 2023; Van Niekerk, 2023). The practicality of these reactions is that it potentially diminishes enthusiasm and prolonged effort that, at times, are necessitated in the process of a positive organizational functioning in circumstances of change.

However, in this light, the existing evidence is still more focused on how job insecurity impacts general attitudes like satisfaction, commitment, and performance, and relatively little empirical research has been done on employee innovative behavior. This innovative behavior is discretionary, risk-bearing performance and is particularly susceptible in insecure environments where employees tend to concentrate more on job maintenance rather than creation and execution of ideas. Moreover, the study that simultaneously addresses the mediating factor connecting insecurity with innovative behavior, as well as the contextual situation of leadership, is not extensive. Specifically, those that combine work engagement as an explanatory mechanism and transformational leadership as a situational factor are few, particularly involving the Chinese organizational context.

In filling these gaps, the present study relies on cognitive appraisal theory of stress, Maslow's hierarchy of needs, and leadership style theory to develop and test an integrated model. Job insecurity is identified as an independent variable, while employees' innovative behavior is the outcome variable. Work engagement is analyzed as a mediating variable, and transformational leadership is examined as a moderating condition. Based on survey data collected from Chinese employees and analyzed using SPSS and PROCESS, this research highlights the constraint of job insecurity on innovative behavior through lower engagement. It also investigates whether transformational leadership mitigates this relationship and explores the direct association between transformational leadership and innovative behavior. The findings provide evidence applicable to organizational practice, contributing to employee well-being and maintaining innovation during times of uncertainty.

This analysis addresses research questions regarding job insecurity's impact on employee innovative behavior in Chinese organizations. It examines whether work engagement mediates this relationship, whether transformational leadership moderates the link between job insecurity and innovative behavior, and the direct relationship between transformational leadership and innovation. By answering these questions, the study clarifies how insecurity influences innovation and offers practical implications for organizations. These include strategies to maintain employee well-being and enhance their innovative capacity.

2. LITERATURE REVIEW

2.1. *Job Insecurities in Employees*

Job insecurity has also been conceptualized on varying grounds, although academics have emphasized that it is a multi-dimensional judgment linked to the threat of job continuity and quality of the job. Niesen et al. (2018) state that perceived risk of involuntary job loss due to restructuring and downsizing, which subjectively includes placing workers between work and non-work, is its cause. De Angelis, Mazzetti, and Guglielmi (2021) extend this view by introducing the idea of job insecurity as a broad informational provision that relates to future job continuity, financial stability, and career opportunities in the context of organizational change. Nawrocka, De Witte, Brondino, and Pasini (2021) differentiate between quantitative insecurity (fear of losing the job itself) and qualitative insecurity (fear of losing valued job characteristics, such as compensation and promotion), with both types potentially occurring over time.

In earlier research, job insecurity is not described as a situation where one loses the job but instead, job insecurity entails failure to provide an assurance that one desires that the job exists, and job insecurity is further described as

threats of promotion, terms, and relations of the job Reisel and Banai (2016). They used their labor to focus on the insecurity cognitive-emotional complexity. The insecure points of view of perception of the entire workplaces or workplaces of a certain type have been determined to be the insecure ones, and insecurity has been observed to be a structural feature of labor conditions, not merely an expectative form of subjectivity (Corazza, 2020). Job insecurity has also been operationalized based on macroeconomic variables, including the rate of unemployment, and it has postulated a multi-level conceptualization, where the predicament of job insecurity has been addressed on the modes of macro to individual insecurities (Sora, Höge, Caballer, & Peiró, 2023).

The five-factor model has been established in China, and it entails job-loss insecurity, interpersonal insecurity, task execution insecurity, excessive competition insecurity and pay promotion insecurity and perceived insecurity along an extensive range of continua, including objective versus subjective and global versus multifaceted (Ghezzi et al., 2022). These transformations and person-at-risk were applied as a subjective perception of a person of the risky environmental conditions, and job-at-risk was the term that indicated the subjective perception of a person of inadequacy (Carusone, Pittman, & Shoss, 2021). This definition means interaction between the contextual and individual susceptibility.

With such conceptualizations, the subjective approach to job insecurity concerning environmental hazards, introduced by Carusone et al. (2021), will be applied to define job insecurity in the current investigations. The independent variable, based on which the research examines the impact of job insecurity on innovative behavior and related processes, is assumed to be job insecurity itself. As a key variable in organizational behavior, job insecurity has been shown to influence workers' moods, psychology, and behavior. Overall, the preliminary literature links job insecurity to adverse outcomes regarding job satisfaction, organizational commitment, and a favorable turnover intention (Chirumbolo, Urbini, Callea, Lo Presti, & Talamo, 2017; Yao, Li, & Zhang, 2021). Ismail (2015) also concluded that the longer security is compromised, the higher the emotional depletion and loss of pleasure. Creative action has intricate repercussions. Niesen et al. (2018) did not find a direct correlation but an indirect one due to the violation of the psychological contract, concluding that low levels of trust and perceived violations diminish innovation. Elst, Griep, Sverke, and Witte (2024) believed that context was important, and good organizational relations mitigate negative effects, while workplaces associated with downsizing and conflicts do not support resourcefulness.

Overall, it can be concluded that the stressful factors influencing psychological resources that can be exhausted include job insecurity, the imbalance of a social exchange providing the feeling of obligation to the employer, and the driving factor, which is also connected to job maintenance. The overall result of these processes is the mood of employees, the level of engagement, and their innovative behavior.

2.2. *Employee Innovative Behavior*

The innovation attitude of staff is often cited as a core driver of organizational sustainability and competitive advantage. Tajeddini, Martin, and Altinay (2020) describe it as the process through which employees generate new ideas or approaches and employ them to enhance individual or organizational performance. Their distinction lies in differentiating between creativity, which gives rise to ideas, and innovative behavior, which involves feasible implementation. Referring to Ahriansyah and Martdianty (2024), innovative behavior is a non-regular behavior that cannot be thought of in a conventional manner; in certain instances, it may require shaking up the status quo to promote change. Innovative behavior is an iterative, dynamic process involving the creation, evolution, use, sharing, and improvement of ideas (Pigola, Paiva, & Costa, 2023). Moghimi and Subramaniam (2013) emphasize its multidimensional and individual character, stating that employees identify problems, propose solutions, and implement ideas that lead to performance improvement and long-term organizational sustainability.

The literature review concludes that innovative behavior is influenced by both individual and organizational factors. Based on the Conservation of Resources Theory, this behavior is viewed as a resource, emphasizing the

importance of being active in accessing psychological and contextual resources among employees (Wang, Chen, & Zhu, 2021).

Having identified the personal definition of work engagement, Mazzetti et al. (2023) differentiate the three concepts: vigor, dedication, and absorption, which are crucial in the manifestation of energy, meaning, and absorption of workers. A meta-analysis of Mazzetti et al. (2023) has found that there is a moderate or large correlation between work engagement and innovative behavior. Nevertheless, on a long-term basis, job insecurity is expected to decrease innovative competence since staff will experience emotional burnout (Sari, Christian, & Yudianto, 2021). Shoss (2017) suggests that resource-conserving strategies that can lower the amount of work done must be initiated when job insecurity is believed to be an uncontrollable threat, according to the cognitive appraisal theory. Pap, Virgă, Notelaers, and Maricuțoiu (2020) indicate that work engagement results in increased energy, concentration, and mental presence, and thus, the plan to act and implement. Work de-engagement, therefore, decreases innovative behavior, demonstrating a mediation effect between job insecurity and innovativeness.

QLM relationships serve to create opportunities to implement innovations at the organizational level because such relationships lead to trust, information exchange, and emotional support (Sekerdil & Gunes, 2022). Transformational leadership also sustains self-efficacy and work engagement and promotes innovative behavior (Saif et al., 2024). Additionally, according to Liu and Zainal (2024), direct leadership attention and resource provision strongly support employees' innovative behavior. Based on these results, the current research can address how the three variables job insecurity, work engagement, and transformational leadership influence employee innovative behavior at both personal and organizational levels.

2.3. Work Engagement

To demonstrate the level of physical, emotional, and cognitive resource mobilization used at work, (Gayatri & Supartha, 2023) introduced work engagement. It involves personal self-concept conglomeration and the role of working positions as visualized in behavioral performance work and participation in recognizing both emotional and psychological aspects (Kahn, 1990). According to Indrayani, Supartha, Dewi, and Piartrini (2023), work engagement was defined as a motivation state in which employees have some levels of commitment when they can dedicate personal resources to work. They applied this construct in three aspects: vigor, dedication, and absorption.

The research has highlighted the importance of understanding the concept of work engagement in managerial practice. As Mazzetti et al. (2023) noted, it is crucial to investigate its antecedents and outcomes to help organizations identify gaps in employee experiences. Dalal, Baysinger, Brummel, and LeBreton (2012) demonstrated that engagement significantly predicts task performance and healthy performance, even when considering other variables such as job satisfaction, commitment, and involvement, which also show high discriminant validity. Their findings further suggest that heterogeneity in job characteristics, particularly task variety and task significance, has a greater predictive ability compared to autonomy or feedback in a control group.

Blanch, Ochoa, and Caballero (2018) highlighted that vigor is one of the major properties of engagement, comprising energy, the ability to sustain emotions, and intellectual energy. The article by Mazzetti et al. (2023) reveals further empirical evidence that interventions such as personal resource development, leadership training, and work resource enhancement may result in engagement, with personal resource development having the most significant effect. The procedural justice within the organization, as defined by Sari et al. (2021), promotes work engagement as well as innovative behavior. The strong mediating effect of engagement shows that higher engagement levels increase employees' willingness to develop and implement new ideas.

2.4. Transformational Leadership

According to the study, the innovative behavior of employees is not affected by leadership styles to the same extent. The impact of leadership style on innovative behavior, both in direct and indirect development, is through job

satisfaction, as Nguon (2022) discovered. Another finding by Hong, Kim, and Sohn (2023) suggests that ethical leadership minimized the negative effects of job insecurity by mitigating the negative relationship between job insecurity and meaningful work. The study also found that various aspects of transformational leadership positively impacted employees' emotional commitment and innovative behavior, as shown by Hamza, Alshaabani, & Rudnak (2024). Novitasari, Kumoro, Yuwono, and Asbary (2020) implemented a two-way interaction of authentic leadership and innovative behavior, establishing that innovation could be triggered by empowering leadership. It has been proven that ethical leadership promotes innovative behavior and contributes to psychological safety, supported by empirical evidence, as shown by Liu, Huang, Kim, and Na (2023).

It has led leadership theory through its ability to influence whether and how employees behave. One fact that Tan, Van Dun, and Wilderom (2024) developed is that the degree of innovative self-efficacy among employees can be positively influenced by transformational leadership, which increases employees' psychological preparedness to be innovative. The postulates of Xu, Yaacob, and Cao (2024) revealed that transformational leadership had established intrinsic motivation by providing conducive environments and encouraging thinking and participation by employees. This helped develop employees' sense of worthiness and increased their creativity. Based on these findings, transformational leadership is included as a moderator in the paper to investigate whether it can also mediate the relationship between job insecurity and employees' innovative behavior.

2.5. Theoretical Framework

Hierarchy of Needs Theory that Maslow proposed in Maslow (1968) is a conventional psychology theory explaining the organization of human motivation and needs. According to this theory, there are five levels of human needs, most often depicted as a pyramid, which includes the basic needs. The needs are listed in order of their arrangement, with the bottom being the first. The second needs are physiological, safety needs, social needs, esteem needs, and finally, self-actualization. These are safety needs, which encompass the need to feel secure in terms of physical security, constant jobs, and salary (Maslow, 1943). After the basic physiological needs are met, individuals begin to seek safety, belonging, and esteem needs. The highest need is self-actualization.

One of such negative emotions is job insecurity, the roots of which lie in the inability to fulfill self-actualization needs. Therefore, the higher the level of job insecurity for employees, the more likely negative emotional reactions are. The employee might experience anxiety and stress in cases of unsafe work environments, as perceived by employees, or in the absence of trust in their job. This may affect work productivity and motivation and ultimately trigger the most basic needs of survival at the bottom of the pyramid. When these needs are not addressed in situations of job insecurity, it causes discomfort for most employees. Research on job insecurity asserts that it has numerous negative impacts on employees' health, including physical and mental health, levels of life satisfaction, and others. It also affects work-related attitudes and behaviors, with one of the paramount variables being the innovative behavior of employees.

One of the studies that proposed a theory describing stress is the Cognitive Appraisal Theory of Stress, formulated by two American psychologists, Lazarus and Folkman (1984) in 1984. They reasoned that a person's coping mechanisms relative to stressors depend on how the individual perceives the stressors and whether they believe these stress factors present opportunities to achieve goals and accomplishments. According to this theory, the fear, tension, or anxiety associated with work is learned through the cognitive appraisal of stressors among individuals (Campbell, Johnson, & Zernicke, 2013). Therefore, in the example of an individual, when they can reasonably evaluate their emotional responses to stressful circumstances, it can reduce or eliminate such feelings, enabling the person to overcome stress and reach a new equilibrium. An individual is expected to employ passive coping mechanisms when they perceive a stressful event as detrimental to their interests or when they feel powerless to change the situation. In this regard, the current paper uses the Cognitive Appraisal Theory of Stress to explore how individuals respond to job insecurity in the context of their innovative behavior.

The Transformational Leadership Theory presumes that each leader who is transformational embraces the ethos of transformation and is able to be innovative, ready to change in their pre-existing environment, and capable of inspiring the prospect and inventiveness of employees to make the establishment valuable by undertaking a course of action. Although the existing literature is available, the transfer of positive values and behaviors to subordinates by transformational leadership is presupposed (Deng, Gulseren, Isola, Grocutt, & Turner, 2023). Transformational leadership influences individuals by manipulating the job insecurity of staff members, thereby affecting employee behavior, which ultimately leads to improved organizational performance. According to these views, transformational leadership is one of the moderating variables that this study considers.

Based on the Maslow hierarchy of needs and cognitive appraisal theory of stress, job insecurity may be explained as a threat to safety needs and a stressor leading to resource-conserving responses. Here, work engagement is a motivational state indicating the degree to which employees can commit cognitive, emotional, and physical resources to their job. Vision, support, and individual consideration are factors that transformational leadership is predicted to contribute toward employees' appraisal and resource perceptions. The following subsection formulates hypotheses based on these arguments in theory.

Figure 1 depicts the theoretical framework that is applied in this research.

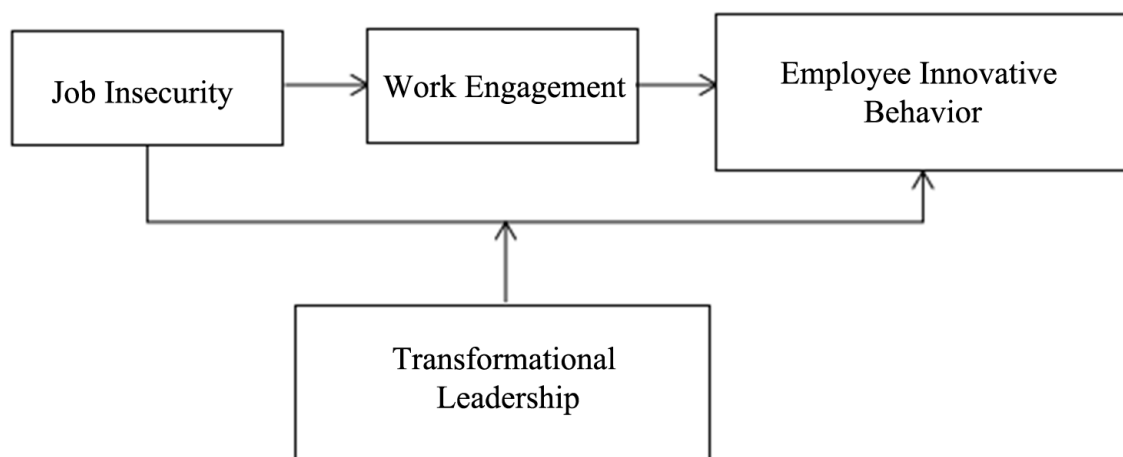


Figure 1. Theoretical framework.

2.6. Research Hypotheses

Job insecurity is usually formulated as a stressor capable of eliciting cognitive and affective responses, and meta-analytic data have shown that job insecurity is associated with an excessive number of negative attitudes and behaviors in the workplace (Jiang & Lavaysse, 2018). In line with the cognition appraisal theory, employees tend to perceive job insecurity as a threat when they experience low levels of control and inadequate resources, which foster coping strategies that conserve remaining resources (Hobfoll, 1989; Lazarus & Folkman, 1984). On the perspective of need, insecurity poses an element of danger to safety demands and can distract focus on growth and self-actualization needs, hence deterring discretionary activities like innovation. Job insecurity in the Job Demands-Resources model may be regarded as a job demand that de-motivates a worker and job resources that enhance work engagement and proactive work (Bakker & Demerouti, 2007). On these grounds, the hypotheses proposed are as follows.

Job insecurity is the uncertainty surrounding the continuity and desired job characteristics, and it poses a threat appraisal that prevents risk-taking and reduces discretionary effort. Since innovative behavior is characterized by the necessity to be innovative, persistent, and tolerant of uncertainty, job insecurity could make employees less inclined to take innovative actions to conserve resources and prevent possible failures. Thus, the hypothesis suggested in this research is as follows.

H₁: Job insecurity is a negative predictor of employee innovative behavior.

Work engagement is a motivational state of energy, commitment, and preoccupation, and it relies on the accessibility of resources permitting employees to devote energy to work. The higher the job insecurity, the more employees feel that their safety needs are at risk, and there is no control over the outcomes, thus demotivating employees from investing heavily in their jobs in the long run. According to resource-based views of stress as well as motivation, insecurity would drain resources within the psyche and diminish engagement in the long term (Hobfoll, 1989; Lazarus & Folkman, 1984), and the Job Demands-Resources model also implies that as job demands are not countered by resources, engagement will be reduced (Bakker & Demerouti, 2007). In such a way, the next hypothesis is put forward.

H₂: Job insecurity is a negative predictor of work engagement.

The engagement in work helps reinforce proactive behaviors, as employees who are engaged put energy, attention, and persistence into work. The more passionate and committed employees are, the better their chances of detecting problems, generating ideas, and introducing improvements, which are key elements of innovative behavior. This positive correlation is supported by meta-analytic evidence between work engagement and innovative behavior (Mazzetti et al., 2023). Consequently, the next hypothesis is presented.

H₃: Work engagement is a positive predictor of innovation among employees.

A combination of the two arguments above implies that job insecurity can sustain innovative behavior to some extent due to a decrease in work engagement. When threat appraisal and resource-conserving responses are caused by insecurity, it is unlikely that employees will be vigorous and remain dedicated, and decreased engagement at that stage limits the prolonged effort needed to create and introduce ideas. As such, the proposed study hypothesizes that work engagement conveys a section of the impact of job insecurity on innovative behavior.

H₄: Work engagement acts as an intermediate between job insecurity and innovative action of employees.

Transformational leadership is often associated with motivation, meaning, and support, and it can also serve as a situational aid that influences how employees perceive stressful work environments. Socially, by offering personalized consideration and support, leaders can motivate employees to respond with discretionary behaviors such as innovation (Blau, 1964). Additionally, transformational leaders can enhance group identification through shared objectives, encouraging employees to maintain effort and readiness to contribute, even during uncertainties (Tajfel & Turner, 1979). It is also possible that transformational leadership increases psychological safety, facilitating learning and experimentation necessary for innovation (Edmondson, 1999). Consequently, one can expect an improvement in the negative relationship between job insecurity and innovative behavior with transformational leadership, which redefines insecurity and promotes further investment in innovation.

H₅: Transformational leadership undermines the adverse association that exists between job insecurity and innovative behavior by the employee.

3. METHODOLOGY

3.1. Questionnaire Design

This study designed a questionnaire with five sections. Question 1 gathers general demographic and professional data of employees, such as gender, age bracket, education level, years of work, current role, and organizational category. Section 2 measures job insecurity, while section 3 determines the level of work engagement. Section 4 assesses employees' innovative behavior, and section 5 evaluates transformational leadership.

All information is gathered anonymously using a Likert scale based on a five-point system where 1 means strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. Respondents select the option most relevant to their perceptions. Reverse scoring items are adjusted during data processing to ensure accurate analysis and interpretation of the results.

3.2. Measurement Scale Design

The level of job insecurity measure to be utilized is the one created by Hellgren, Sverke, and Isaksson (1999), i.e., the seven-item scale. It is among the most used scales, which have shown to provide a high degree of reliability and validity when applied in past research to abide by job insecurity research.

The second scale used in the quantification of work engagement is the Utrecht Work Engagement Scale (UWES-9), revised by Schaufeli, Bakker, and Salanova (2006). It is a nine-item scale extensively used by scholars worldwide and is perceived as highly precise in determining work engagement. The Chinese version, verified and validated by local researchers, has been found to be reliable and valid after translation. Higher scores indicate higher work engagement.

The transformational leadership scale combines items from Bass (1985) and Waldman, Siegel, and Javidan (2006). It contains eight items, primarily focusing on transformational leadership aspects such as charisma and inspirational motivation. The scale's internal consistency coefficient is 0.87, indicating high reliability.

The scale created by Ma, Han, and Ma (2023) and Wang et al. (2021) is used to evaluate employees' innovative behavior. The rationale for creating this eight-item scale is based on the works of Ma et al. (2023) and Wang et al. (2021) and is narrowed and adjusted to the context of Chinese organizations. The scale has been found to be very reliable and valid in previous literature.

3.3. Data Collection

This study questionnaire was developed with the help of Wenjuanxing, and all measures were taken using validated scales with established reliability and validity. The questionnaire was also distributed via WeChat group, WeChat Moments, and Web participation by colleagues. To ensure the validity of the questionnaire and enhance the reliability and accuracy of the research findings, data were collected in two phases: a pilot survey and a formal survey.

The pilot stage involved creating the questionnaire on the Wenjuanxing platform and sharing it via social media. A preliminary test on reliability and validity was conducted after collecting 50 responses. The results were as follows:

- Job Insecurity Scale: Cronbach's $\alpha = 0.880$; KMO = 0.853.
- Work Engagement Scale: Cronbach's $\alpha = 0.805$; KMO = 0.904.
- Employee Innovative Behavior Scale: Cronbach's $\alpha = 0.740$; KMO = 0.708.
- Transformational Leadership Scale: Cronbach's $\alpha = 0.940$; KMO = 0.934.

The findings showed that all the scales had good reliability and validity and could be used in the formal survey. The formal data collection phase was launched after confirming the reliability and validity of the scales. The questionnaire was still administered online via Wenjuanxing. The number of valid responses amounted to 252, which were used in the empirical analysis.

The subject population of the study is the employees who work in Chinese companies. There are interviewees representing several types of organizations, among which are: state-owned enterprises, private enterprises, foreign-owned enterprises, government agencies, and government institutions. This diversity in employment environments facilitates the applicability of the results to various organizational setups. Simultaneously, the distribution of the questionnaire was based on online social networks and acquaintances, so the sample can be regarded as a non-probability sample, and the results should not be generalized to the entire population studied.

3.4. Common Method Bias

Since the research is based on a cross-sectional and self-administered survey, common method bias can also be a possible issue. Several procedural remedies were used in designing and administering the questionnaire, such as anonymous data collection, clear wording of the items, and the separation of measurement of the key constructs in different sections to minimize evaluation apprehension and consistency motives.

Also, a statistical diagnostic may be applied to determine the likelihood of common method bias, meaning that it is significant. To perform a Harman single-factor test, items of measurements can be loaded into an exploratory factor analysis to test whether a single factor explains most of the variance. In this analysis, the initial unrotated item explained the amount of [insert percentage] percent of the overall variance, which is not enough to come up with the majority value used in most analyses. This finding indicates that common method bias is not likely the only explanation for existing relationships but cannot be entirely excluded.

4. RESULTS

4.1. Descriptive Statistical Analysis

The responses to the valid questionnaires were analyzed using SPSS 20.0, and the sample characteristics are summarized in Table 1. The descriptive results show an equal gender distribution, with 116 men and 136 women. The work experience sample was evenly spread: 38 respondents had less than a year of experience, 80 fell within 1-3 years, 81 within 3-5 years, and 53 had over 5 years of multiple work experiences. Regarding position levels, there were 164 general employees, 57 frontline supervisors, 20 middle managers, and 11 senior managers, indicating that general employees were the majority. In terms of organization type, 95 respondents worked in state-owned enterprises, 94 in private enterprises, 29 in foreign-funded enterprises, 14 in government agencies, and 20 in public institutions. The highest participation rates were observed in state-owned and private businesses.

Table 1. Descriptive statistics of sample characteristics.

Attribute	Descriptive statistics of sample characteristics	Frequency	Percentage
Gender	Male	116	46.0%
	Female	136	54.0%
Age Group	18-25	98	38.9%
	26-30	54	21.4%
	31-40	53	21.0%
	41-50	27	10.7%
	51-60	13	5.2%
	Above 60	7	2.8%
Education	Associate degree or below	87	34.5%
	Bachelor's degree	154	61.1%
	Master's degree or above	11	4.4%
Attribute	Sample information	Frequency	Percentage
Work experience	Less than 1 year	38	15.1%
	1-3 years	80	31.7%
	3-5 years	81	32.1%
	Above 5 years	53	21.0%
Position	General employee	164	65.1%
	Entry-level manager	57	22.6%
	Mid-level manager	20	7.9%
	Senior manage	11	4.4%
Type of organization	State-owned enterprise	95	37.7%
	Private enterprise	94	37.3%
	Foreign-funded enterprise	29	11.5%
	Government agency	14	5.6%
	Public institution	20	7.9

4.2. Reliability Analysis

Reliability analysis can be defined as gauging the authenticity of data completed by respondents, which may be used to establish the genuineness and soundness of data collected through the survey. The entire sample size of the study was 252, and reliability testing of the variables on the questionnaire was carried out using SPSS 26.0. The findings revealed that the Cronbach's α coefficients for job insecurity, work engagement, employee innovative

behavior, and transformational leadership are 0.881, 0.907, 0.690, and 0.934, respectively, which are very high. The results of the analysis are presented in Table 2.

It is noted that Cronbach's α in employee innovative behavior is 0.690, slightly below the universally accepted 0.70 threshold. Since the innovative behavior items were modified from previously validated scales, and the pilot test showed increased internal consistency, this value in the formal sample may indicate heterogeneity among respondents and organizations. Therefore, the innovative behavior results should be interpreted with caution, and further research should examine the measurement's reliability through additional factors and alternative scales.

Table 2. Summary of reliability analysis for questionnaire scales.

Variables	Number of items	Cronbach's α value
Job insecurity	7	0.881
Work engagement	9	0.907
Employee innovative behavior	8	0.690
Transformational leadership	8	0.934

4.3. Validity Analysis

Kaiser–Meyer–Olkin (KMO) and Bartlett's Test of Sphericity were conducted for all measurement items to evaluate whether the data were suitable for factor analysis. The test results are presented in Table 3.

Table 3. KMO and Bartlett's test for overall variables.

KMO and Bartlett's test		
KMO Value		0.914
Bartlett's Test	Approximate Chi-Square	4143.708
	Degrees of Freedom	496
	Significance	0.000

It can be seen that the KMO value is 0.914, and Bartlett's test of sphericity has a significance of $p = 0.000 < 0.05$. Since $KMO > 0.5$ and $p < 0.05$, the conditions for factor analysis are met, indicating that the data is suitable for factor analysis.

4.4. KMO and Bartlett's Test for Each Variable

Next, KMO and Bartlett's tests were conducted on the items of the job insecurity, work engagement, employee innovative behavior, and transformational leadership scales to verify whether they are suitable for factor analysis. The test results are shown in Table 4.

Table 4. Summary of KMO and Bartlett's test coefficients for each variable.

Variables	KMO	Bartlett's Test	Approximate Chi-Square	df	Sig
Job insecurity	0.879	892.838	21	0.000	< 0.05
Work engagement	0.939	1138.921	36	0.000	< 0.05
Employee innovative behavior	0.708	370.014	28	0.000	< 0.05
Transformational leadership	0.921	863.109	28	0.000	< 0.05

***Note:** Significance value of < 0.05 denotes significant impact of the variable.

One can observe that the KMO value for job insecurity is 0.879, which is higher than 0.7. The chi-square value is 892.838, and Bartlett's test of sphericity is 21, with a significance level of 0.000, which is lower than 0.05. For the work engagement scale, the KMO of 0.939 exceeds 0.7. The significance level is $36.000/0.05 = 0.000$, and the chi-square value is approximately 1138.921, with Bartlett's test of sphericity around 36. Based on the magnitude of innovative behavior, the KMO value is 0.708, which is slightly below 0.7. Bartlett's test of sphericity yields a chi-

square of 370.014, with a significance level of 0.000, indicating significance below 0.05. For the transformational leadership scale, the KMO is 0.921, greater than 0.7. Its estimated chi-square value is 863.109, and Bartlett's test of sphericity is 28, with a significance level of 0.000, which is less than 0.05.

The conclusions are that the KMO scores for each dimension exceed the excellent threshold of 0.7, and the significance of each score is 0.000, indicating high significance. Therefore, the significant risks can be addressed through factor analysis of job insecurity, engagement at work, creative behavior of employees, and transformational leadership.

4.5. Correlation Analysis

The population of the correlation coefficient ranges from -1 to 1. The closer the absolute value is to 1, the stronger the correlation between variables; the closer to 0, the weaker the relationship. A positive correlation coefficient between 0 and 1 indicates a positive relationship, meaning as one variable increases, so does the other. Conversely, a coefficient between -1 and 0 signifies a negative correlation, where one variable increases while the other decreases. This study analyzed the relationships between job insecurity and work engagement, as well as transformational leadership and innovative behavior, using the Pearson correlation coefficient and SPSS 20.0 software. The results of this analysis are presented in Table 5.

Table 5. Correlation analysis among variables.

Variables		Job insecurity	Work engagement	Innovative behavior	Transformational leadership
Job insecurity	Pearson Correlation	1			
	Sig. (2-tailed)				
Work engagement	Pearson Correlation	-0.552**	1		
	Sig. (2-tailed)	0.000			
Innovative behavior	Pearson Correlation	-0.558**	0.633**	1	
	Sig. (2-tailed)	0.000	0.000		
Transformational leadership	Pearson Correlation	-0.494**	0.546**	0.559**	1
	Sig. (2-tailed)	0.000	0.000	0.000	

Note: ** denotes Significant at the 0.01 level (2-tailed).

One can test the correlation and significance of all the variables based on Table 5. Pearson correlation between job insecurity and work engagement is equal to -0.552, and the two variables are not significantly different at the 0.01 (two-tailed) level. It indicates that job insecurity and work engagement have a strong negative correlation, implying that the more insecure the job, the less employees will want to engage in their work. The Pearson correlation value used to compare job insecurity to innovative behavior is -0.558, which is quite significant at the 0.01 (two-tailed) level. This suggests a high negative correlation between job insecurity and employees' innovative behavior, meaning that less job insecurity correlates with a lower willingness to innovate. The Pearson coefficient between work engagement and employees' innovative behavior is 0.633, and this coefficient is significantly correlated at the 0.01 (two-tailed) level. This illustrates that the relationship between work engagement and innovative behavior is strongly positive; that is, the more engaged employees are in their work, the more innovative their behavior. The values of the transformational leadership absolute Pearson coefficient with both job insecurity and work engagement, as well as innovative behavior, are between 0.4 and 0.7, and the entire group of coefficients is highly significant at the 0.01 (two-tailed) level. This provisionally supports Hypotheses H1, H2, and H3. Moreover, innovative behavior could be significantly positively affected by transformational leadership, which provides a foundation for further analysis of

the moderating effect of transformational leadership on the relationship between job insecurity and employee innovative behavior in future research.

4.6. Regression Analysis and Hypothesis Testing

This study uses SPSS 26.0 to conduct regression analyses on the variables, and the results are used to verify the proposed hypotheses. The regression results for each variable are as follows. A regression analysis was conducted with employee innovative behavior as the dependent variable and job insecurity as the independent variable. The results are shown in Table 6.

Table 6. Regression analysis of job insecurity on employee innovative behavior.

Model	Unstandardized coefficients		Standardized coefficients			Collinearity Statistics	
	B	Standard Error	β	t	Sig.	Tolerance	VIF
(Constant)	4.697	0.106		44.185	0.000		
Job insecurity	-0.417	0.039	-0.558	-10.643	0.000	1.000	1.000
R ²	0.312						
Adjusted R ²	0.309						
F	113.265						
P	0.000						

The goodness of fit of the linear regression model is good, with $R^2 = 0.312$ and the adjusted $R^2 = 0.309$, both greater than 0.3. This indicates that the results can reliably and accurately reflect the impact of job insecurity on employee innovative behavior. The VIF = 1, which is less than 5, suggests no issue with multicollinearity, confirming the reliability of the results. The regression equation is significant, with $F = 113.265$ and a P-value (sig.) = 0.000 < 0.001, indicating that job insecurity has a significant impact on employee innovative behavior. Job insecurity significantly negatively affects employee innovative behavior ($B = -0.417 < 0$, $\beta = -0.558 < 0$, $P = 0.000 < 0.05$), thus Hypothesis H1 is confirmed. The regression equation derived from the variables is as follows:

$$\text{Innovative Behavior} = -0.417 * \text{Job Insecurity} + 4.697 \quad (1)$$

The explained variance of the model also demonstrates that there is no meaningful effect size. The R^2 of 0.312 represents a moderate share of variance in innovative behavior explained by job insecurity in this sample. This means that job insecurity is an effective predictor of innovative action, but the fact also points to other individual and contextual predictors as probable joint determinants of innovative behavior among employees.

Table 7. Regression analysis of job insecurity and work engagement.

Model	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
	B	Standard error	β	t	Sig.	Tolerance	VIF
(Constant)	4.859	0.136		35.835	0.000		
Job insecurity	-0.523	0.050	-0.552	-10.474	0.000	1.000	1.000
R ²	0.305						
Adjusted R ²	0.302						
F	109.698						
P	0.000						

A regression analysis was conducted with work engagement as the dependent variable and job insecurity as the independent variable. The results are shown in Table 7. The goodness of fit of the linear regression model is good, with $R^2 = 0.305$ and Adjusted $R^2 = 0.302$, both greater than 0.3. This indicates that the results can reliably and accurately reflect the impact of job insecurity on work engagement. This regression analysis has only one independent variable. The VIF = 1, which is less than 5, indicates that the results are reliable and accurate. The regression equation

is significant, with $F = 109.698$ and $P = 0.000 < 0.001$, meaning that job insecurity significantly impacts work engagement. Job insecurity significantly negatively affects work engagement ($B = -0.523 < 0$, $\beta = -0.552 < 0$, $P = 0.000 < 0.05$), thus Hypothesis H2 is confirmed. The regression equation derived from the variables is as follows:

$$\text{Work Engagement} = -0.523 * \text{Job Insecurity} + 4.859 \quad (2)$$

Table 8. Regression analysis of work engagement and employee innovative behavior.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity Statistics	
	β	Standard error	β			Tolerance	VIF
(Constant)	1.874	0.139		13.445	0.000		
Job insecurity	0.499	0.039	0.633	12.924	0.000	1.000	1.000
R^2	0.401						
Adjusted R^2	0.398						
F	167.021						
P	0.000						

A regression analysis was conducted with employee innovative behavior as the dependent variable and work engagement as the independent variable. The results are shown in Table 8. The goodness of fit of the linear regression model is good, with $R^2 = 0.401$ and Adjusted $R^2 = 0.398$, both greater than 0.3. This indicates that the results can reliably and accurately reflect the impact of work engagement on employee innovative behavior. The $VIF = 1$, which is less than 5, suggests no issue with multicollinearity, confirming the reliability of the results. The regression equation is significant, with $F = 167.021$ and $P = 0.000 < 0.001$, indicating that work engagement significantly impacts employee innovative behavior. Work engagement has a significant positive impact ($B = 0.499 > 0$, $\beta = 0.633 > 0$, $P = 0.000 < 0.05$), confirming Hypothesis H3. The regression equation derived from the variables is as follows:

$$\text{Innovative Behavior} = 0.499 * \text{Work Engagement} + 1.874 \quad (3)$$

4.7. Mediation and Moderation Model Effects

To test the mediation model with moderating effects, we first conducted a mediation effect test. Data analysis was performed using SPSS 26.0. Initially, stepwise regression was employed, and as shown in Table 6, work engagement became an independent variable. Table 9 presents the preliminary validation of the effect, incorporating work engagement as an independent variable.

Table 9. Regression analysis results before and after adding the mediator variable.

Variables	Model 1 B	SE	β	t	Sig.	Model 2 B	SE	β	t	Sig.
(Constant)	4.697	0.106	—	44.185	0.000	2.906	0.233	—	12.462	0.000
Job insecurity	-0.417	0.039	-0.558	-10.643	0.000	-0.224	0.042	-0.300	-5.397	0.000
Work engagement	—	—	—	—	—	0.368	0.044	0.467	8.395	0.000
R^2	0.312					0.463				
Adjusted R^2	0.309					0.459				

The relationship between job insecurity and innovative behavior before and after adding work engagement was compared through regression analysis as a preliminary step. In Model 1, job insecurity is a significant predictor of innovative behavior, meaning the more perceived insecurity, the less innovative behavior. Work engagement is a substantial predictor of innovative behavior following its addition in Model 2, and the coefficient of job insecurity is lowered in absolute value. This tendency provides preliminary support that job insecurity may be related, in part, to innovative behavior through work engagement.

Owing to the possibility that indirect effects are not normally distributed, an additional test of the mediation effect was conducted using the PROCESS macro (Model 4) and bootstrap confidence intervals. The cumulative impact

of job insecurity on innovative behavior is highly significant, as indicated in Table 10, and the direct impact remains significant when work engagement is considered. The indirect effect via work engagement is also substantial, since the bootstrap confidence interval does not include zero. These findings support Hypothesis H4, which states that work engagement moderates the relationship between job insecurity and employees' innovative behavior.

Table 10. Mediation effect analysis of work engagement.

Effect analysis	Effect	SE	t	p	LLCI	ULCI
Total effect	-0.4166	0.0391	-10.6426	0.000	-0.4936	-0.3395
Direct effect	-0.2242	0.0415	-5.3971	0.000	-0.3060	-0.1424
Indirect effect	-0.1923	0.0319	/	/	-0.2590	-0.1319

Note: SE: Standard error; LLCI: Lower limit of confidence interval (95%); ULCI: Upper limit of confidence interval (95%).

It can be perceived that the total effect, the direct effect, and the indirect effect do not pass through 0 in the 95 percent interval, as seen in Table 10. This indicates that all three effects are significant, with effects of -0.4166, -0.2242, and -0.1923, respectively. This means that work engagement mediates the relationship between job insecurity and employees' innovative behavior; hence, Hypothesis H4 is supported.

Due to the validation of the mediation effect of engagement in work with gender, age, education, work experience, position, and the nature of the organization as control variables, job insecurity as the independent variable, and employee innovative behavior as the dependent variable, transformational leadership was determined as the moderating variable. It was also analyzed using SPSS 26.0 with the help of PROCESS and Model 1 to ascertain the moderating effect of transformational leadership. The results are illustrated in Table 11.

Table 11. Moderating effect analysis of transformational leadership.

Variables	Coeff.	SE	t	p	LLCI	ULCI
Constant	3.7496	0.4589	8.1714	0.0000	2.8457	4.6535
X (Job insecurity)	-0.4064	0.1188	-3.4217	0.0007	-0.6403	-0.1724
W (Transformational leadership)	0.1695	0.1000	1.6958	0.0912	-0.0274	0.3665
Interaction (X × W)	0.0394	0.0329	1.1985	0.2319	-0.0254	0.1041
Gender	0.0709	0.0671	1.056	0.292	-0.0613	0.203
Age	0.0261	0.0278	0.9393	0.3485	-0.0286	0.0808
Education	-0.0397	0.06	-0.6615	0.5089	-0.1578	0.0785
Work experience	-0.0311	0.0385	-0.8063	0.4208	-0.1069	0.0448
Organization type	0.0026	0.0411	0.0626	0.9502	-0.0784	0.0836

Note: Coeff.: Regression coefficient; SE: Standard error; LLCI: Lower limit of confidence interval (95%); ULCI: Upper limit of confidence interval (95%).

As it can be seen, the values of the moderating variable W are both below 0 and the values of the interaction term X factor W are also below 0. Additionally, the moderating variable W has a significance value of 0.0912, which is greater than 0.05. This implies that W and the interaction term are not significant; that is, transformational leadership plays no role in alleviating the adverse effect of job insecurity on innovative behavior. Therefore, an alternative H5 is not supported.

Judging by the findings, the paper also compares transformational leadership and innovative behavior by employees. The regression analysis was conducted using transformational leadership as an independent variable and employees' innovative behavior as the dependent variable. Table 12 presented the results.

Table 12. Impact of transformational leadership on employee innovative behavior.

Model	Unstandardized coefficients		Standardized coefficients β	t	Sig.	Collinearity Statistics	
	B	Standard error				Tolerance	VIF
(Constant)	2.152	0.143		15.090	0.000		
Transformational leadership	0.410	0.039	0.559	10.650	0.000	1.000	1.000
R ²	0.312						
Adjusted R ²	0.309						
F	113.424						
P	0.000						

Based on the regression results, the model demonstrates a good level of fit, with $R^2 = 0.312$ and adjusted $R^2 = 0.309$. The collinearity statistics indicate that $VIF = 1$, suggesting that multicollinearity is not a concern in this model. The standardized coefficient for transformational leadership is $\beta = 0.559$ with a significance level of $p = 0.000$, indicating a strong and significant positive effect on employee innovative behavior. This finding provides further support for the theoretical implications and offers a solid foundation for subsequent discussion and managerial recommendations.

4.8. Research Findings

By using SPSS 20.0 to analyze 252 valid questionnaires collected for this study and to test the hypotheses, the results of the hypothesis verification are shown in Table 13.

Table 13. Hypothesis verification results.

Null hypothesis	Hypothesis verification
H1: Job insecurity negatively predicts employee innovative behavior	Supported
H2: Job insecurity negatively predicts work engagement	Supported
H3: Work engagement positively predicts employee innovative behavior	Supported
H4: Work engagement mediates the relationship between job insecurity and employee innovative behavior	Supported
H5: Transformational leadership positively moderates the relationship between job insecurity and employee innovative behavior	Not supported

5. CONCLUSION

When society develops at a rate different from the rate at which employees enhance their skills, and when external conditions induce anxiety and insecurity, employees' innovative behavior decreases. The secondary effect of insecurity is reduced work engagement, which indirectly influences employee innovation. The research results indicate that job insecurity negatively impacts employees' innovativeness. Specifically, the more insecure individuals feel at their workplace, the less involved they become in their work. Therefore, organizational management should implement practices that reduce job insecurity among employees. Regarding the relationship between job insecurity and innovative behavior, transformational leadership does not mediate this relationship but plays a very critical and positive role in employee innovative behavior.

5.1. Implications and Recommendations

The insecurity of a job leads to the loss of innovative behavior, and companies will continue to rely on the innovative capacity of their workers. Organizations should ensure that job insecurity among employees is addressed in such an environment. Job insecurity, therefore, should be a concern of organizational managers. Although it is assumed that transformational leadership mediates the connection between job insecurity and innovative behavior, the findings show that it does not significantly alter this connection. Nevertheless, the direct positive impact of

transformational leadership on employees' innovative behavior implies that developing leadership remains important to support the innovation process, alongside activities that reduce job insecurity and increase engagement. Based on the above study, the current research offers the following recommendations to managers, based on these findings.

5.1.1. Recommendations for Addressing Employee Job Insecurity

A socio-psychological phenomenon of job insecurity among employees is a complex phenomenon, and the determinants of job insecurity are diverse. This paper has reached a conclusion that the uncertainty of the employees regarding the future development of the firm and their own sense of insecurity is one of the most prominent reasons they are afraid to take more responsibility and reduce their level of innovativeness, which, in turn, affects their innovative actions. Therefore, employers should focus on the growth of job security and belonging in the employees and establish policies to encourage a higher degree of job satisfaction and innovation behavior. Using an example, the management of job insecurity should be placed at the frontline by businesses, actively develop and establish job insecurity management systems, and increase levels of trust that the workers place on the establishment through improved compensation systems and working conditions. In addition, differentiated incentive strategies should be applied by different companies, relying on the varying levels of employee needs, so that job insecurity can be reduced.

5.1.2. Recommendations from the Work Engagement Perspective

Through these findings, the research proves that work engagement is a mediator, and this follows that job insecurity can also affect work engagement, which will subsequently affect innovative behavior. This way, the employee point of view is that workers should have the right and positive attitude towards work, acquire the spirit of devotion, and practice self-management. They would also be obliged to adopt a balance between work and rest to eliminate work burnout and help them restore some energy levels in order to fully dedicate their lives to their jobs. When it comes to the approach to the organization, organizations should be more interested in the activity of their employees working. Otherwise, the company should explore the underlying causes, learn more about the employees, offer them a positive working climate, help the employees resolve workplace issues, and make them more engaged in their work, thereby helping to increase innovative behavior.

5.1.3. Recommendations from the Transformational Leadership Perspective

One of the issues that organizations must learn is leadership. The results of this research indicate that transformational leadership is applicable in the change in the innovative behavior of employees. It cannot equal the adverse influence of job insecurity on the behavior of innovation but has a positive impact on the behavior of innovations of employees, which has practical significance in the context of forming the entire organization and raising organizational identification of employees.

Companies can also inject transformational leadership with the aim of increasing employee confidence in the company. Within the framework of the charismatic leadership style, inspirational influence, and employee-focused attention, the leaders may generate a sense among employees about the importance of the tasks and duties they handle and incite higher needs, such as self-actualization. This will help employees realize their potential and perform at their best. On this, it is implied that leaders at every level of the organization ought to think more about the employees, reassure them of feelings of insecurity, enable them to acquire improved working skills, serve as role models, and provide purpose and vision.

In addition, executives are recommended to emphasize the improvement of inspirational power, intellectual employee stimulation, and individual care. These behaviors can lead to higher staff retention rates, organizational identification, work motivation, as well as an increase in positive innovative behavior. Meanwhile, businesses should critically review and select the best type of transformational leadership to enable it to positively influence the innovative behavior of workers.

5.2. Limitations and Future Research Directions

This study has made some conclusions, which have been brought about by empirical research findings, although there are some limitations on the study that are critical. To start with, this research was based on a cross-sectional research design where all the variables were measured at a single point in time; hence, the results are only able to highlight associations and not causal arguments. Furthermore, the measures were gathered using a self-report questionnaire, and this might create common method bias since the predictor, mediator, moderator, as well as the outcome variables, were elicited using the same respondents. Future research can utilize time-lagged or longitudinal design and obtain new behavioral measurements as provided by other sources, including supervisors or peers, to mitigate this issue and enhance causal inference. Since the nature of the research restricted the scale of the research, this study has focused on gathering its sample predominantly in Guangxi. The agricultural and industrial development of Guangxi is comparatively backward along with other provinces; the degree of innovative behavior is much spread, and the necessity of innovation is in a weak form. This study should have its findings further generalized based on its conclusions.

Future research can expand the scope of the sample, i.e., examine how job insecurity influences employee innovative behavior in the western regions of China, and how work engagement and transformational leadership can influence the same, to ensure that the findings become even more challenging to challenge the possibilities of the findings. The present research has a sample of 252. When a small sample is used, randomness may occur, which could undermine the strength of the research findings. Further studies could expand the sample, thereby reducing the probabilities of error and enhancing the scientific rigor of the research.

In this study, an online questionnaire was used and published through Wenjuanxing and WeChat. Since participation was voluntary and most recruitment occurred via online social networks, the sample must be described as a non-probability sample, which might be affected by self-selection, thus limiting its representativeness and generalizability. Further research is advised to augment online and offline data collection methods and to use more systematic sampling techniques in industries and regions to increase the external validity of the findings.

This work has analyzed reliability and validity with the help of SPSS 20.0, which is somewhat outdated. Additionally, the confirmatory factor analysis was not conducted in the case of KMO and Bartlett tests in the form of exploratory factor analysis, which might have impacted the results. Future research could enable a deeper and more thorough examination of the data obtained to present clearer and more accurate findings.

The other weakness is associated with the reliability of the scale of worker innovative behavior. The Cronbach's α of the innovativeness of employees on the formal survey was 0.690, which is less than the standard threshold of 0.7. This implies that measurement error could be present, and caution should be exercised with the results obtained regarding new behavior. Future studies can examine item-total correlations, improve the measuring items, and may also adopt other proven innovative work behavior scales to further confirm the strength of the findings.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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