

# The Impact of Organizational Citizenship Behaviour on Innovation Performance of Employees in Chinese Small and Medium-Sized Enterprises

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## Abstract

In China's rapidly evolving economic landscape, small and medium-sized enterprises (SMEs) have emerged as pivotal players, driving growth and fostering innovation. However, the dynamics of Organizational Citizenship Behaviour (OCB) and job satisfaction within these enterprises, and their subsequent influence on an employee's innovative performance, remain underexplored. By focusing on the interplay between OCB, job satisfaction, and innovative performance within Chinese SMEs, This study aims to fill the existing knowledge gaps and provide insights for both academia and industry. A total of 412 questionnaires were disseminated to respondents of SMEs. Using PLS-SEM as an instrument to analyze statistics, the result showed that organizational citizenship behaviour has a significant influence on SMEs employees' innovation performance. This study implies that SMEs in China can enhance their innovative performance by prioritizing and fostering positive employee behaviors.

## 1. Introduction

In China, SMEs have become an essential engine of social and economic development, a significant channel for entrepreneurship, it's also a necessary source of innovation. SMEs are a public undertaking as the important carrier of all innovation; according to the latest data, the total quantity of all kinds of the market main body in China is more than 100 million users, the number 32.315 million households, small and medium-sized enterprises accounted for about 95% of the above, the small and medium-sized enterprises above designated size implementation primary business income are 35.1 trillion yuan, the total profits of 2 trillion yuan. In China, the technological innovation capability and innovation performance of small and medium-sized enterprises are the source of vitality for industry innovation, and there are significant obstacles in the current fierce market competition. Tang, Liu, Shi, & Wu (2020) discussed the internal and external challenges Chinese SMEs face, such as resource constraints, market competition, and regulatory barriers, particularly in the post-pandemic environment. Du, Leten, & Vanhaverbeke (2019) study highlighted the challenges Chinese SMEs face in innovation performance, such as limited resources, talent shortages, and difficulties in accessing external knowledge and market information, all of which affect their ability to innovate effectively. The main internal factors are that SMEs in China generally face common problems such as small scale, lack of resources, shortage of talents, weak anti-risk ability, insufficient internal R&D investment, and limited financing channels. The main external factors are that small and medium-sized enterprises usually have difficulty obtaining enough technical information, raw materials, and financial support, cannot fully understand market requirements and risks of innovation, it's also face various problems of low legitimacy, government regulation, and monopoly. Moreover, in recent years, the market competition has become more and more fierce, the complexity of technology is getting higher and higher,

the speed of product production and technological innovation is getting faster and faster, the speed of knowledge updating is gradually accelerating, and the uncertainty of innovation is getting bigger and bigger. Under such a background, it is becoming increasingly difficult for small and medium-sized enterprises to innovate. Faced with such a situation, when external environmental factors cannot be changed, it is necessary to start with internal changes actively. The existing research about innovation performance is mainly carried out from the aspects of shareholder interests, organizational structure, external support, and the relationship between leaders and subordinates, as well as how to motivate employees to take more positive organizational citizenship behaviours to promote innovation performance. This study aims to measure the dynamics of Organizational Citizenship Behaviour (OCB) and job satisfaction within small and medium-sized enterprises (SMEs) and their subsequent influence on employees' innovative performance. Specifically, it seeks to answer the following research questions: (1) What is the relationship between Organizational Citizenship Behaviour and job satisfaction among employees in SMEs? (2) How do Organizational Citizenship Behaviour and job satisfaction influence employees' innovative performance within these enterprises? The achievement of the above research objectives can better help China's small and medium-sized enterprises focus on employees' positive behaviors, thereby enhancing the organization's innovative performance.

## 2. Literature Review

This section will summarize the related concepts and the relationships between them, and propose a research framework based on existing studies.

### 2.1 Organizational Citizenship Behaviour (OCB) and Innovation Performance

Organizational Citizenship Behaviour (OCB) was originally Organ (1988). In an analysis of organizational citizenship, he thinks that there is no perfect organization system, in the role of the individual employee within depends only on the organization's work behavior, there is no guarantee that a certain organization established goals can be accomplished, finish the task, need to use the outside role to make up for the defects. This kind of behavior is not restricted by the system of organization; it is spontaneous, active employee behavior, and outraged behavior is defined as organizational citizenship behavior.

Based on existing research, research on OCB is also constantly innovative and developing, and new divisions of OCB have begun to appear. Among them, the most representative divisions are Williams & Anderson (1991) and LePine & Erez & Johnson (2002), which divided OCB into organization-oriented OOCB and individual-oriented (JOCB). Chinese scholar Zong (2020) pointed out that although organizational citizenship behavior makes employees have nothing to do with others but can help other people in the organization, when the organization's employees feel the organization managers specially take care of them, feel valued and can also satisfy their spiritual needs, will improve the organization's identity, In this way, they show more favorable organizational citizenship behaviors. In numerous studies, although different scholars have different definitions of OCB and different dimensions, there is one thing in common: they all believe that OCB is a significant factor in promoting organizational performance.

H1: OCB has a positive effect on Innovation performance.

### 2.2 Job Satisfaction and Innovation Performance

Job satisfaction typically refers to the positive psychological state experienced by individuals in their work within an organization. Research in this area is extensive. Hoppock (1935) was among the first to study job satisfaction, identifying factors like fatigue, monotony, working conditions, and leadership style as significant influences. Initially, job satisfaction was defined mainly in terms of material aspects such as job content and conditions. However, this definition faced criticism as societal contexts changed. Friedlander expanded the concept to include social and psychological factors, highlighting elements such as social and technical environments, self-realization, and recognition in job satisfaction surveys. In manufacturing, job satisfaction surveys can profoundly impact individual performance (Robbins & Judge, 2013). Studies also indicate a positive link between job satisfaction, emotional well-being, and performance (Ostroff, 1992).

Chinese scholars Chen and Shi (2021) define job satisfaction as employees' emotional and attitudinal response to their work environment, where satisfaction is determined by comparing achievements to expectations based on job characteristics. Wang (2013) views job satisfaction as an employee's overall attitude toward work, which can be positive or negative. Yang (2016) argues that job satisfaction encompasses a broad spectrum and reflects employees' overall work experience rather than focusing on specific aspects. These varying perspectives highlight how scholars emphasize different aspects based on their research goals and focal points.

However, while research on the relationship between job satisfaction and innovation performance is extensive among large enterprises in China, there remains a notable gap in research for small and medium-sized enterprises in significant economies, warranting further scholarly attention

H2: Job Satisfaction is positively related to innovation performance.

### 2.3 Job Satisfaction and OCB

Job satisfaction, as a driver of creativity, constitutes a crucial element of enterprise management. Employees' enthusiasm and creativity significantly contribute to an enterprise's core competitiveness. Research by both domestic and international scholars underscores that employee satisfaction directly influences individuals' work attitudes and, consequently, their performance. Emotions play a pivotal role in linking job satisfaction to organizational citizenship behavior (Brief & Roberson, 1989), with job satisfaction serving as a predictor of such behavior (Moorman, 1998). Scholars such as Hu (2014), Kamel (2015), Troena & Noermijati (2013), and Zeinabadi & Salehi (2011) have highlighted the strong impact of job satisfaction on organizational citizenship behavior (OCB). Therefore, it is hypothesized:

H3: Job satisfaction positively correlates with OCB.

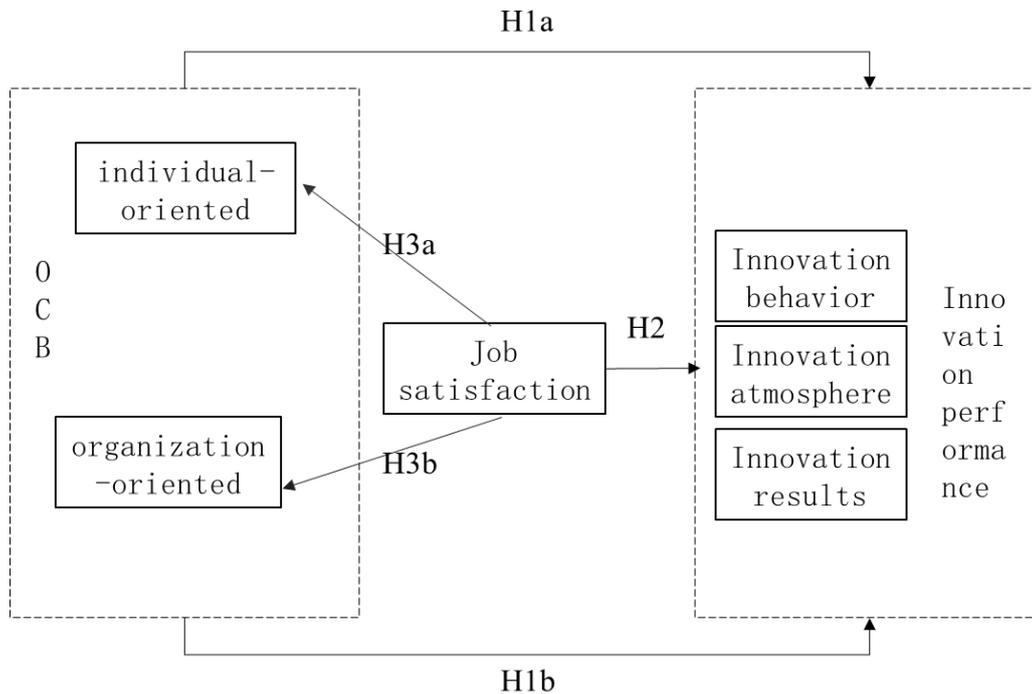


Fig. 1 Research framework

In the research framework model (Fig. 1), it is proposed that job satisfaction influences employee performance and organizational citizenship behavior (OCB), and that OCB, in turn, can be influenced by job satisfaction.

## 3. Research Methods

The research focused on employees of SMEs in Zhejiang Province. It employed purposive sampling to select research objects. According to G\*Power calculations, a minimum sample size of 138 was determined for the research model. To ensure both a sufficient questionnaire return rate and sample representativeness, 500 questionnaires were distributed in the survey. Ultimately, 412 responses were received from the employees surveyed.

### 3.1 Basic Characteristics of Samples

This study took employees as the questionnaire survey object, and 412 questionnaires were collected. Invalid questionnaires were eliminated: (1) Questionnaires with missing questions; (2) Questionnaires with entire pages unfilled; (3) Questions not answered in accordance with the regulations. Multiple choice or some options were not filled in; (4) Questionnaires with obvious logical errors, 367 were finally recovered, with an effective rate of 89.08%. From the Table 1, it can be seen that from the age point of view, there are slightly more male employees (55.3%) than women (44.7%); from the age point of view, most employees are concentrated in Those aged 26-35 (49.3%), followed by those aged 36-45 (34.3%), which reflects that employees are mainly young and middle-aged people; in terms of academic qualifications, those with a bachelor's degree account for the highest proportion,

accounting for approximately 51.2% of the total number of employees, followed by college students (28.9%); from the perspective of industry conditions, the construction and industry have the highest proportions, accounting for approximately 26.7% and 24.8% of the total number of people respectively, followed by the accommodation industry (16.9%) and the education and training industry (10.4 %); from the perspective of working years, Those with less than 3 years of experience accounted for the highest proportion, accounting for approximately 52.9% of the total number of employees, followed by employees with 3-5 years and 6-10 years of experience, accounting for approximately 30.8% and 14.4% of the total number of employees respectively; in terms of positions, ordinary employees accounted for the highest proportion, accounting for approximately 79.8% of the total number, followed by grassroots management/junior technicians (11.2%), middle management/intermediate technicians (7.1%), and senior management/senior technicians (1.9%). Overall, the samples in this survey conform to the basic situation and are representative to a certain extent.

**Table 1** Basic characteristics of samples

Basic information		Frequency	Percent
Gender	Male	203	55.3
	Female	164	44.7
Age	18-25 years old	47	12.8
	26-35 years old	181	49.3
	36-45 years old	126	34.3
	above 46 years old	13	3.5
Education	High school and below	56	15.3
	College	106	28.9
	Undergraduate course	188	51.2
	Postgraduate and above	17	4.6
Industry	Agriculture, forestry, animal husbandry, fishing, industry	6	1.6
	industrial	91	24.8
	The construction industry	98	26.7
	wholesaling	12	3.3
	retail	7	1.9
	Transportation industry	18	4.9
	warehousing	8	2.2
	The postal service	6	1.6
	The lodging industry	62	16.9
	The restaurant industry	21	5.7
Education and training	38	10.4	
Years of working	The following three years	194	52.9
	three to five years	113	30.8
	six-ten years	53	14.4
	More than ten years	7	1.9
Occupation	Ordinary employees	293	79.8
	Junior Management/Junior Technician	41	11.2
	Middle management/Intermediate Technician	26	7.1
	Top management/Senior Technician	7	1.9
	Total	367	100.0

### 3.2 Descriptive Statistics of the Variable

Table 2 presents the descriptive statistics for each measurement item of the variable among the surveyed employees. From the table, it can be found that the average value of each measurement item ranges from 3.16 to 4.13, and the standard deviation is all greater than 0.5, indicating that there are no extreme means in the respondents' outcome on organizational citizenship behavior, job satisfaction, and innovation performance, and these items exhibit strong discrimination ability, effectively capturing a wide range of variation in the data.

**Table 2** Variable descriptive statistical analysis results

Items	N	Mean	Std. Deviation
A1	367	3.54	0.960
A2	367	3.97	1.099
A3	367	3.79	1.025
A4	367	3.54	1.023
A5	367	3.74	0.976
A6	367	3.24	1.086
A7	367	3.26	0.998
A8	367	3.34	1.050
A9	367	3.23	1.007
A10	367	3.55	1.082
A11	367	3.45	1.080
A12	367	3.85	1.206
A13	367	3.16	1.056
B1	367	3.56	1.092
B2	367	3.52	1.182
B3	367	3.69	1.177
B4	367	3.54	1.205
B5	367	3.68	1.183
B6	367	3.67	1.125
B7	367	3.70	1.159
C1	367	3.78	1.011
C2	367	3.71	0.946
C3	367	3.70	0.934
C4	367	3.65	1.058
C5	367	3.91	1.080
D1	367	4.04	1.057
D2	367	4.13	1.104
D3	367	4.12	1.117
D4	367	4.09	1.037
D5	367	4.11	1.052
E1	367	3.89	1.102
E2	367	3.81	1.125
E3	367	3.71	1.113
E4	367	3.88	1.128
E5	367	3.79	1.150

### 3.3 Reliability Analysis of Organizational Citizenship Behavior Scale

From Table 3, it can be found that Cronbach's  $\alpha$  of the formal survey data of IOCB and OOCB are 0.854 and 0.919, respectively, and the CITC of each item is more than 0.5. After deleting the items, Cronbach's  $\alpha$  reliability coefficients are all smaller than Cronbach's  $\alpha$  of each dimension, indicating that the reliability of the formal survey of the Organizational Citizenship Behavior Scale meets the requirements and the overall reliability is good.

**Table 3** Reliability analysis of organizational citizenship behavior

Organizational citizenship behavior	Items	CITC	Cronbach's Alpha if Item Deleted	Cronbach's $\alpha$
Individual-oriented organizational citizenship behavior	A1	0.710	0.812	0.854
	A2	0.616	0.838	
	A3	0.668	0.822	
	A4	0.679	0.819	
	A5	0.662	0.824	
Organization-oriented organizational citizenship behavior	A6	0.785	0.904	0.919
	A7	0.822	0.902	
	A8	0.810	0.902	
	A9	0.750	0.907	
	A10	0.666	0.914	
	A11	0.640	0.916	
	A12	0.704	0.912	
	A13	0.693	0.912	

### 3.4 Reliability Analysis of the Job Satisfaction Scale

Reliability analysis was conducted on the formal survey data of the job satisfaction scale. The results are shown in Table 4. The overall Cronbach's  $\alpha$  reliability coefficient of the formal survey data of the job satisfaction scale is 0.913. The corrected item-total correlations (CITC) are all above 0.5, and Cronbach's  $\alpha$  reliability coefficients after deleting items are all less than 0.913, indicating that the reliability of each item of job satisfaction meets the requirements, and the overall reliability is also good.

**Table 4** Reliability analysis of job satisfaction

Job satisfaction	Items	CITC	Cronbach's $\alpha$ if Item Deleted	Cronbach's $\alpha$
Job satisfaction	B1	0.701	0.904	0.913
	B2	0.633	0.911	
	B3	0.711	0.903	
	B4	0.766	0.897	
	B5	0.814	0.891	
	B6	0.759	0.898	
	B7	0.768	0.897	

### 3.5 Reliability Analysis of Innovation Performance Scale

Reliability analysis was conducted on the formal survey data of the innovation performance scale. The results are shown in Table 5; it can be found that the overall Cronbach's  $\alpha$  reliability coefficients of the formal survey data of innovation results, innovative behavior, and innovation atmosphere in the innovation performance scale are respectively: 0.855, 0.935 and 0.881. The CITC of each item is above 0.5. The Cronbach's  $\alpha$  reliability coefficient after deleting the item is smaller than the Cronbach's  $\alpha$  before deletion, indicating that the items of each dimension of innovation performance are formal. The reliability of the survey meets the requirements, and the overall reliability is also good.

**Table 5** Reliability analysis of innovation performance

Innovation performance	Items	CITC	Cronbach's $\alpha$ if Item Deleted	Cronbach's $\alpha$
Innovation results	C1	0.705	0.811	0.855
	C2	0.716	0.810	
	C3	0.646	0.827	
	C4	0.586	0.844	
	C5	0.682	0.818	
Innovative behavior	D1	0.819	0.921	0.935
	D2	0.863	0.913	
	D3	0.850	0.915	
	D4	0.780	0.928	
	D5	0.819	0.921	
Innovation atmosphere	E1	0.786	0.839	0.881
	E2	0.737	0.850	
	E3	0.606	0.880	
	E4	0.707	0.857	
	E5	0.744	0.848	

### 3.6 Convergent Validity

Factor loading assesses how well-observed indicators explain latent variables, with higher values indicating better consistency. AVE indicates the proportion of variance in observed variables explained by the latent construct. CR reflects the reliability of all observed indicators in explaining the construct's characteristics. Generally, values above 0.5 for factor loading, above 0.7 for CR, and 0.5 or above for AVE suggest good convergent validity. Using SmartPLS 3.0 software, Table 6 presents the results of convergent validity analysis, showing factor loadings exceeding 0.5 and CR values exceeding 0.7, indicating strong reliability among observed variables within the same dimension. AVE values above 0.5 suggest an effective reflection of common factor dimensions by observed variables, confirming good convergent validity (see Table 6).

**Table 6** Convergent validity

Construct	Items	Loading	CR	AVE
Individual-oriented organizational citizenship behavior	A1	0.822	0.896	0.632
	A2	0.770		
	A3	0.794		
	A4	0.794		
	A5	0.796		
Organization-oriented organizational citizenship behavior	A6	0.847	0.935	0.646
	A7	0.877		
	A8	0.870		
	A9	0.820		
	A10	0.737		
	A11	0.723		
	A12	0.774		
Job satisfaction	A13	0.764	0.931	0.660
	B1	0.779		
	B2	0.724		
	B3	0.792		
	B4	0.830		
	B5	0.872		
	B6	0.836		

	B7	0.842		
Innovation results	C1	0.824		
	C2	0.841		
	C3	0.776	0.898	0.637
	C4	0.728		
	C5	0.818		
Innovative behavior	D1	0.887		
	D2	0.914		
	D3	0.905	0.950	0.793
	D4	0.863		
	D5	0.9884		
Innovation atmosphere	E1	0.876		
	E2	0.839		
	E3	0.740	0.91	0.680
	E4	0.822		
	E5	0.840		

### 3.7 Discriminant Validity

This study uses the Fennell-Lak criterion, cross-factor loading, and HTMT to test the discriminant validity among variables. The specific process and results are as follows:

#### 3.7.1 Fornell Lacker Criterion

The Fornell-Larcker criterion is used to assess the discriminant validity of variables. Typically, this is done by comparing the square root of the Average Variance Extracted (AVE) with the correlation coefficients. When the square root of a variable's AVE is greater than the correlation coefficient between that variable and other variables, it indicates that the internal correlation of the variable is greater than its external correlation. This means that the variables have good discriminant validity. The test results in Table 7 show that the square root of the AVE for each variable in the research model is greater than the correlation coefficient between that variable and other variables, indicating that the variables in this study have good discriminant validity.

**Table 7** Fornell-Larcker criterion

	IOCB	OOCB	JS	IR	IB	IA
IOCB	(0.795)					
OOCB	0.566	(0.803)				
JS	0.410	0.481	(0.812)			
IR	0.379	0.438	0.411	(0.798)		
IB	0.352	0.407	0.406	0.679	(0.891)	
IA	0.294	0.293	0.323	0.515	0.497	(0.824)

#### 3.7.2 Cross Factor Loadings

Cross-factor loadings are used to explain the expression ability of items for a certain latent variable, and they express the degree of expression for different latent variables through comparison. In this model, the loading coefficients of the constituent factors for each latent variable are all greater than 0.7, and the explanatory power of these factors is stronger than that of other factor combinations in the model. This indicates that the factors from the same latent variable have a strong correlation, and there is good discriminant validity between factors from different latent variables (see Table 8).

**Table 8** Cross-factor loadings results

Items	IOCB	OOCB	JS	IR	IB	IA
A1	0.822	0.485	0.337	0.328	0.259	0.251
A2	0.770	0.462	0.372	0.297	0.272	0.239

A3	0.793	0.470	0.322	0.293	0.279	0.207
A4	0.794	0.417	0.274	0.278	0.258	0.231
A5	0.796	0.412	0.316	0.307	0.328	0.239
A6	0.450	0.847	0.380	0.353	0.313	0.248
A7	0.452	0.877	0.381	0.383	0.355	0.236
A8	0.482	0.870	0.422	0.414	0.357	0.247
A9	0.459	0.820	0.397	0.373	0.317	0.249
A10	0.466	0.737	0.348	0.295	0.316	0.200
A11	0.478	0.723	0.392	0.344	0.353	0.227
A12	0.490	0.774	0.384	0.325	0.324	0.271
A13	0.352	0.764	0.379	0.317	0.272	0.196
B1	0.367	0.377	0.779	0.320	0.299	0.258
B2	0.306	0.361	0.724	0.303	0.267	0.268
B3	0.345	0.402	0.792	0.371	0.330	0.284
B4	0.285	0.345	0.830	0.301	0.362	0.239
B5	0.324	0.402	0.872	0.352	0.376	0.288
B6	0.364	0.429	0.836	0.338	0.328	0.271
B7	0.332	0.410	0.842	0.344	0.339	0.228
C1	0.341	0.340	0.304	0.824	0.606	0.421
C2	0.344	0.427	0.417	0.841	0.585	0.476
C3	0.267	0.368	0.342	0.776	0.516	0.467
C4	0.259	0.289	0.283	0.728	0.451	0.305
C5	0.292	0.316	0.285	0.818	0.539	0.367
D1	0.280	0.367	0.371	0.612	0.887	0.444
D2	0.346	0.356	0.353	0.586	0.914	0.444
D3	0.307	0.374	0.395	0.573	0.905	0.414
D4	0.324	0.335	0.349	0.654	0.863	0.492
D5	0.309	0.382	0.340	0.596	0.884	0.415
E1	0.316	0.254	0.292	0.490	0.435	0.876
E2	0.215	0.229	0.265	0.442	0.403	0.839
E3	0.279	0.278	0.294	0.378	0.432	0.740
E4	0.191	0.234	0.255	0.424	0.431	0.822
E5	0.207	0.210	0.225	0.376	0.342	0.840

Note: IOCB: Individual-oriented organizational citizenship behavior, OOCB: Organization-oriented organizational citizenship behavior, JS: Job satisfaction, IR: Innovation results, IB: Innovative behavior, IA: Innovation atmosphere

### 3.7.3 HTMT

HTMT is used to indicate the degree of distinction between variables. Table 9 shows that the HTMT values for the research variables are all less than 0.85, indicating good discriminant validity between the variables in this study.

**Table 9** HTMT results

	IOCB	OOCB	JS	IR	IB	IA
IOCB						
OOCB	0.636					
JS	0.461	0.523				
IR	0.439	0.489	0.461			
IB	0.393	0.439	0.439	0.755		
IA	0.338	0.325	0.36	0.585	0.546	

Note: IOCB: Individual-oriented organizational citizenship behavior, OOCB: Organization-oriented organizational citizenship behavior, JS: Job satisfaction, IR: Innovation results, IB: Innovative behavior, IA: Innovation atmosphere

### 3.8 Collinearity test

Multicollinearity occurs when variables in a linear regression model are highly correlated, leading to distorted estimations or reduced accuracy. This study examined multicollinearity in both the external and internal models to assess the potential high correlation among variables, as shown in Tables 10 and 11. Results in Tables 10 and 11 indicate that VIF values for both models are below the critical threshold of 5, suggesting no significant multicollinearity issues among the variables studied.

**Table 10** Outer model VIF results

Items	VIF	Items	VIF
A1	2.712	C1	2.060
A2	1.660	C2	2.301
A3	1.943	C3	1.705
A4	2.564	C4	1.670
A5	1.888	C5	2.133
A6	3.377	D1	3.192
A7	4.805	D2	4.303
A8	4.147	D3	3.706
A9	2.863	D4	2.753
A10	2.078	D5	3.410
A11	1.850	E1	3.067
A12	2.252	E2	2.287
A13	2.117	E3	1.661
B1	2.643	E4	2.234
B2	2.337	E5	2.655
B3	2.400		
B4	2.862		
B5	3.181		
B6	4.844		
B7	4.820		

**Table 11** Inner model VIF results

	IA	IB	IOCB	IP	IR	JS	OOCB
IA							
IB							
IOCB				1.526		1.471	
IP	1.000	1.000			1.000		
IR							
JS				1.350			
OOCB				1.652		1.471	

### 4. Hypothetical Test

Using SmartPLS3.0 and the Bootstrapping algorithm, a resampling test with a sample size of 5000 was conducted on the collected data. The hypothesis test results are shown in Table 12.

**Table 12** Results of the direct effect hypotheses

Hypotheses	Path relationship	Path coefficient	SE	t-statistics	P Values
H1a	IOCB -> IP	0.164	0.075	2.199	0.028
H1b	OOCB -> IP	0.228	0.070	3.234	0.001
H2a	IOCB -> JS	0.203	0.061	3.337	0.001
H2b	OOCB -> JS	0.366	0.062	5.868	0.000

H3	JS -> IP	0.277	0.049	5.618	0.000
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Note: IOCB: Individual-oriented organizational citizenship behavior, OOCB: Organization-oriented organizational citizenship behavior, JS: Job satisfaction, IR: Innovation results, IB: Innovative behavior, IA: Innovation atmosphere

The overall model test results are shown in Table 12 the path coefficient of individual-oriented organizational citizenship behavior on innovation performance is 0.164 ( $t=2.199, P<0.05$ ), indicating that IOCB has a significant impact on innovation performance. has a positive impact, so H1a is established; the path coefficient of organization-oriented organizational citizenship behavior on innovation performance is 0.228 ( $t=3.234, P<0.01$ ), indicating that OOCB has a significant positive impact on innovation performance, so H1b Established; The path coefficient of individual-oriented organizational citizenship behavior to job satisfaction is 0.203 ( $t=3.337, P<0.01$ ), indicating that individual-oriented organizational citizenship behavior has a significant positive impact on job satisfaction, so H2a is established; Organization-oriented organization The path coefficient of citizenship behavior to job satisfaction is 0.366 ( $t=5.868, P<0.01$ ), indicating that organizational-oriented organizational citizenship behavior has a significant positive impact on job satisfaction, so H2b is established; the path of job satisfaction to innovation performance The coefficient is 0.277 ( $t=5.18, P<0.01$ ), indicating that job satisfaction has a significant positive impact on innovation performance, so H3 is established. The path coefficient diagram of this research model is as follows:

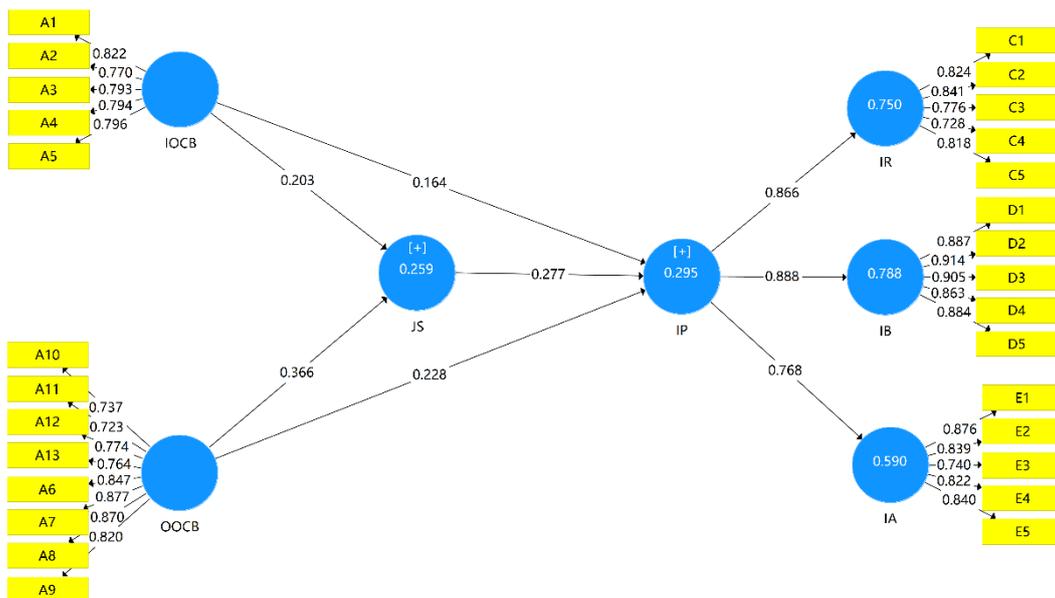


Fig. 2 The path coefficient diagram of this research model

### 4.1 Test of Mediating Effect

This study continues to verify the mediating role of job satisfaction between organizational citizenship behavior and innovation performance. The results show the indirect effect of individual-oriented organizational citizenship behavior on innovation performance through job satisfaction is 0.056, the 97.5% confidence interval [0.020, 0.099] does not include 0, indicating that job satisfaction plays a significant mediating role between personal-oriented organizational citizenship behavior and innovation performance; that is, personal-oriented organizational citizenship behavior can directly affect innovation performance, It can also have an indirect effect on innovation performance through job satisfaction; the indirect effect of organization-oriented organizational citizenship behavior on innovation performance through job satisfaction is 0.101, and the 97.5% confidence interval [0.054, 0.153] does not include 0, indicating that job satisfaction is Organization-oriented organizational citizenship behavior plays a significant mediating role in innovation performance; that is, organization-oriented organizational citizenship behavior can directly affect innovation performance, and can also have an indirect impact on innovation performance through job satisfaction (see Table 13).

**Table 13** Results of the indirect effect

Path relationship	Path coefficient	Se	t-statistics	P-level	LLCI	ULCI
IOCB -> JS -> IP	0.056	0.020	2.812	0.005	0.020	0.099
OOCB -> JS -> IP	0.101	0.025	3.984	0.000	0.054	0.153

## 5. Discussion and Conclusion

Based on the empirical data analysis results of this study, it is evident that organizational citizenship behaviors have a significant and positive influence on innovation performance. The path coefficients for these behaviors are 0.164 and 0.228, respectively, with OOCB exerting the greatest impact on innovation performance, followed by IOCB. Consequently, in the practical management of the employees, business managers should aim to enhance organizational citizenship behavior from both organizational and individual perspectives to maximize employees' innovative performance. Additionally, Job satisfaction has a significant positive impact on employee innovation performance., with a path coefficient of 0.277. The results of this study are also consistent with previous research, such as Podsakoff et al. (2000) found that OCB positively influences team effectiveness and innovation. Similarly, Organ (1990) emphasized that OCB enhances interpersonal relationships within the workplace, facilitating better communication and idea exchange, which are crucial for innovation. In addition, some researchers have demonstrated that OCB leads to increased employee engagement, which directly correlates with higher innovation performance (Bakker & Demerouti, 2008; Hu & Liden, 2011). Furthermore, George and Zhou (2007) argue that OCB contributes to a climate of psychological safety, enabling employees to voice innovative ideas without fear of negative repercussions. The evidence suggests that fostering OCB within organizations can significantly enhance innovation capabilities.

This paper also examines how job satisfaction mediates the relationship between organizational citizenship behavior (OCB) and innovation performance. Utilizing the Bootstrap method, the study finds that both individual-oriented and organization-oriented OCB significantly influence employees' innovation performance through job satisfaction. The indirect effects of these behaviors on innovation performance reach significant levels, confirming that job satisfaction is a notable mediator between OCB and innovation performance. Specifically, job satisfaction can directly enhance innovation performance. It also exerts an indirect influence on innovation performance via job satisfaction. The research findings suggest that the higher the job satisfaction of employees in Chinese SMEs, the more it contributes to achieving better innovation performance. This result aligns with previous studies, which emphasize the positive relationship between job satisfaction and innovation (Jain, 2016; Park et al., 2016).

Additionally, job satisfaction has been regarded as a key motivator for enhancing organizational efficiency and performance. (Akinloye, 2000; Judge & Klinger, 1992; Luthans, 1998). Building on the previous analysis, the study employed PLS-SEM to delve deeper into the relationships between OCB, job satisfaction, and employee innovation performance. Analysis results found that OCB significantly enhances both employee job satisfaction and innovation performance. Furthermore, job satisfaction is a significant partial mediator in the relationship between OCB and employee innovation performance. Consequently, to boost employees' innovative performance, organizational managers should focus on identifying and enhancing the factors that positively influence innovation performance and understand the extent of their impact. This approach enables managers to develop effective management strategies that promote OCB and, in turn, improve job satisfaction among employees (Podsakoff et al., 2000; Morrison, 2006; George & Bettenhausen, 1990; Van Dyne et al., 1994; Bakker et al., 2014).

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## Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

## Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Zhao L., Khaw, K. W.; **data collection:** Zhao, L., Khaw, K. W., Chew, X. Y.; **analysis and interpretation of results:** Khaw, K. W., Chew, X. Y., Cheang, P. Y. S.; **draft manuscript preparation:** Zhao, L., Khaw, K. W.. All authors reviewed the results and approved the final version of the manuscript.

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