# The Impact of Organizational Innovation Atmosphere on Employees' Innovative Behavior——Knowledge Sharing as the Intermediary

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**Abstract:** Innovation promotes the development of enterprises. With the increasingly complex market environment and increasingly fierce market competition, innovation has become a key chip for enterprises. The innovation ability of employees is an important cornerstone of enterprise innovation. Therefore, how to improve the innovation ability of employees has become an important factor to stimulate the innovation vitality of enterprises and enhance the market competitiveness of enterprises. This paper studies the reaction mechanism between organizational innovation atmosphere and employee innovation behaviour, and from the perspective of knowledge sharing, discusses how to enhance the transmission efficiency between them and stimulate innovation vitality.

### **1. Introduction**

With the advent of information age, the global economic development has entered a new stage, the market environment is becoming more and more complex, the technology iteration is faster and faster, and the market competition is becoming fiercer. Especially in the Internet and financial industries, the success of an enterprise is closely related to its innovation ability. Innovation has a profound impact on the survival and development of enterprises, which helps enterprises maintain a stable development. Employees are the "cells" of enterprises. The innovation behaviour of employees can help enterprises realize their innovation, and it can promote the continuous updating and progress of enterprises in technology, management, system and other aspects, so as to help enterprises not be eliminated by the market. Therefore, more and more researchers pay attention to the importance of improving the innovation behaviour of employees.

In addition to subjective factors, objective factors can't be ignored about the emergence of employee innovation behaviour, such as leadership support, personnel allocation, etc., and more importantly, the innovation of enterprises provides "soft environment". Innovation is a process of continuous development, and it is complicated and risky to feel the stone crossing the river. When the organization creates an atmosphere of inclusiveness, openness and encouragement of innovation, the enthusiasm and confidence of employees will be greatly stimulated, which makes them dare to try, test and error, and dare to innovate, which fully reflects the importance of organizational innovation atmosphere.

Therefore, this paper will try to study the relationship between organizational innovation atmosphere and employee innovation behaviour.

Firstly, according to the relevant literature of organizational innovation atmosphere, employee innovation behaviour and knowledge sharing, the independent variables, dependent variables and mediating variables of this paper are defined. Then, according to the variables, the theoretical model is established and reasonable research hypotheses are put forward. This paper uses the questionnaire survey method to verify the research, and designs the questionnaire with reference to the domestic and foreign authoritative scales which have been verified and more mature, and tests the reliability

and validity at the same time. Finally, we use statistical analysis software to test whether organizational innovation atmosphere can cause changes in employee innovation behaviour, introduce knowledge sharing, build regression model to test its role in the impact of organizational innovation atmosphere on employee innovation behaviour, draw experimental conclusions and put forward feasible suggestions.

#### 2. Theoretical background and research hypothesis

Previous scholars have found that a variety of factors can change employees' innovative behaviour, such as work characteristics [1], employees' intrinsic motivation, team virtue, etc. The atmosphere of organizational innovation is also gradually concerned. At present, although some scholars have studied from the organizational and team level, the focus of most studies is still on the individual level. Therefore, this paper attempts to study the impact of organizational innovation atmosphere on employees' innovation behaviour from the organizational and team level, and explore the role of knowledge sharing in it.

### 2.1 Organizational innovation atmosphere

West [2] defined the organizational innovation atmosphere from the perspective of cognition. He believed that the organizational innovation atmosphere is the work atmosphere that affects the innovative ability and innovative thinking of employees. Bharadwaj [3] starts from the level of organizational environment, and thinks that the organization transmits the innovation information to employees through the use of appropriate ways, which affects the individual confidence and innovation intention of employees, and makes employees produce innovative behaviour. Malcolm [4] believes that organizational innovation atmosphere is usually regarded as an important factor to explore the influence of organizational background, organizational environment and organizational management on individual behaviour change, and it is a cognitive explanation for the internal innovation environment of enterprises.

The research on the outcome variables of organizational innovation atmosphere includes not only the investigation on the overall innovation performance of enterprises, but also the research on employees' innovation willingness and innovation behaviour. Michael et al. [5] found that organizational innovation atmosphere can significantly affect employee creativity, and time pressure plays a reverse moderating role between the two. In a high level of organizational innovation atmosphere, time pressure will reduce innovation output; but, in the low level of organizational innovation atmosphere, time pressure will increase innovation output. Roy Shanker et al. [6] interviewed 202 leaders and found that the generation of employees' innovative behaviour is inseparable from the condition of organizational innovation atmosphere, it will hinder employees' innovative behaviour. Fakhar Shahzad et al. [7] studied the effect of organizational atmosphere in specific industries, and found that organizational atmosphere that emphasizes job flexibility, flexibility and encourages innovation can improve the innovation performance of enterprises.

### 2.2 Employee innovation behavior

Moss Kanter [8] thinks that employee innovation is a process. Employees constantly improve new ideas and ideas, get support from the organization, and finally form a suitable solution, which can be practiced within the organization and bring benefits to the organization. It includes three stages: first, employees find new problems and put forward new solutions or new ideas, which may be new or an improvement on the old ones; Then, employees seek improvement programs to support the development of internal and external organizations; Finally, the employee creates a model to make the scheme be practiced and applied in the organization.

Scholars mostly take it as the result variable. Sternberg et al. [9] believed that personality traits are an important factor affecting individual creativity, and through research, it was proved that individuals are willing to persist, can accept new experience, and have strong self-confidence have higher willingness to innovate. Zhou & George [10] found that leaders' intelligence quotient and emotional quotient, leadership style and cognitive style have an impact on employees' innovation behaviour. Woodman [11] found that organizational behaviours such as improving resource supply and increasing information exchange channels can increase employees' innovation behaviour. Han Yi and Yang Baiyin [12] found that authentic leadership advocates a free, innovative and flexible working atmosphere, which will imperceptibly affect employees, thus increasing their psychological capital and promoting their innovative behaviour.

### 2.3 Knowledge sharing

Vanden hooff & DeRidder [13] believes that knowledge sharing includes two specific processes of knowledge transfer and knowledge acquisition, which are the process of mutual learning between the two. Wang & Noe [14] believes that knowledge sharing is a process in which knowledge holders provide problem-solving methods for knowledge demanders by providing information such as experience and know-how.

Scott holste J [15] pointed out that the prerequisite for knowledge sharing behaviour is that there is enough trust between employees. The more employees trust each other, the more willing they are to share their knowledge, and the more frequent their knowledge sharing behaviour is. Nonaka [16] believes that knowledge is an important resource for the development of enterprises. The more abundant the knowledge reserve is, the more helpful it will be for the realization of enterprise innovation.

### 2.4 Research hypothesis

Organizational innovation atmosphere causes the change of employees' innovation behaviour. Employees' innovative behaviour is affected by their evaluation and perception of the working atmosphere and working environment. When employees' working environment atmosphere provides innovation motivation, innovation source and sufficient support for their innovation efforts, employees will show innovative behaviour. The stronger employees perceive the organizational innovation atmosphere, the more likely they are to produce innovative behaviour [17].

Organizational innovation atmosphere will affect employees' enthusiasm of sharing and communication. Organizational innovation climate can affect employees' knowledge sharing behaviour. The higher the degree of organizational innovation atmosphere, the easier it will be for members to share knowledge [18].

The sharing of knowledge promotes the exchange of information among individuals, triggers the vitality of thinking, promotes the generation of new knowledge, and finally achieves the result of promoting innovation. Knowledge sharing can promote the transmission of knowledge in the exchange and communication of the whole organization, so as to stimulate the generation of innovative ideas. While sharing knowledge in the organization, individuals will think about their own knowledge reserves. They will more actively grasp innovation opportunities, and finally make new knowledge available in the organization, so as to improve their innovation ability. The stronger the willingness and ability of individual knowledge sharing, the more innovative behaviours they will show [19].

Based on the above conclusion, we formally predict:

H1: organizational innovation atmosphere has a positive impact on employee innovation behaviour.

H2: organizational innovation atmosphere has a positive impact on knowledge sharing.

H3: knowledge sharing has a positive impact on employee innovation behaviour.

H4: knowledge sharing plays a mediating role in the process that organizational innovation atmosphere affects employees' innovation behaviour.

The theoretical model of this paper is shown in Figure 1:



Figure 1 Research model

### 3. Research methodology and analysis

### 3.1 Sample and data collection

This study investigates some employees in the Internet and financial industry. Compared with traditional industries, these industries need more innovation and faster technology change. The survey object of this paper involves the staff of all departments and levels of relevant enterprises.

This paper uses the method of questionnaire survey to collect the relevant data. A total of 200 questionnaires are distributed in China Construction Bank Jinhua Branch and Jinhua Yibo Network Technology Co., Ltd. 167 questionnaires were collected with a recovery rate of 83.5%. The specific criteria are as follows:

(1) Whether the contents of the questionnaire are complete and whether there are any missing answers;

(2) Whether the answers conform to the common sense and basic logic of life, such as whether the length of service and age of the respondents conform to the actual logic;

(3) Whether the respondents choose a certain option repeatedly or there is a certain rule in the choice of options.

According to the screening criteria, 152 valid questionnaires were obtained, accounting for 76.5% of the total.

The respondents of this questionnaire were 38.8% male and 61.2% female; The employees aged 31-40 and 26-30 accounted for the majority, accounting for 30.0% and 28.6% respectively, followed by those aged 41-50 and under 25, accounting for 19.9% and 19.1% respectively; In terms of educational background, undergraduate education accounted for the vast majority, with 112 people, accounting for 73.6%; In terms of positions, the respondents were mainly general employees, accounting for 64.5%, while the number of senior managers was the least, accounting for only 3.3%; In terms of the nature of enterprises, the respondents were mainly from state-owned enterprises, collective enterprises and private enterprises, accounting for 40.1% and 38.8% of the total respectively.

### 3.2 Varible measurement

This paper adopts the organizational innovation atmosphere scale proposed by Liu Yun 20]. The scale measures peer support, supervisor support and organizational support respectively. The Cronbach's alpha coefficient of the scale is 0.89, indicating that the scale has high reliability.

This paper refers to the scale of employee innovation behaviour proposed by Liu Yun and Scott [21], and measures it from two stages of creativity generation and implementation. The Cronbach's alpha coefficient of the scale is 0.94, indicating that the scale has high reliability.

This paper uses the knowledge sharing scale designed by Van den hooff & De Ridder [22] to measure the contribution and absorption of knowledge. The Cronbach's alpha coefficient of the scale is 0.92, indicating that the scale has high reliability.

#### 3.3 Validity test

This paper tests the validity of the questionnaire, and the results are shown in Table 1. The KMO

value of organizational innovation atmosphere scale is 0.86 and SIG is 0.000, which is significant at the level of 0.001, which is very suitable for factor analysis. The KMO value of knowledge sharing scale is 0.88 and SIG is 0.000, which is significant at the level of 0.001, which is very suitable for factor analysis. The KMO value of employee innovation behaviour scale is 0.85 and SIG is 0.000, which is significant at the level of 0.001, which is significant at the level of 0.001, which is significant at the level of 0.001, which is very suitable for factor analysis. It can be seen from Table 2 that the factor load of the item is greater than 0.4, indicating that the measurement under each factor is on the same dimension. The cumulative explanatory variance of each variable is higher than 60%, indicating that the validity of the tested scale is good.

	Kaiser-Meyer-Olkin measure of sampling adequacy		.86
Enterprise		Approx. Chi-	542.95
innovation	Doutlott's Test of Subarisity	Square	
atmosphere	Barnen's Test of Sphericity	df	66
		Sig.	.000
	Kaiser-Meyer-Olkin measure of sampling adequacy	-	.88
Knowledge		Approx. Chi-	723.41
	Doutlett's Test of Subarisity	Square	
sharing.	barnetis rest of sphericity	df	45
		Sig.	.000
	Kaiser-Meyer-Olkin measure of sampling adequacy	-	.85
Employee		Approx. Chi-	1189.58
innovation behaviour		Square	
	Bartlett's Test of Sphericity	df	28
		Sig.	.000

Table 1	KMO	and	bartlett	test
	-			

Table 2 Measurement	item	load
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Factor	Item	Load	Cumulative variance interpretation
	A1	.957	-
Peer support	A2	.746	
	A3	.870	
	A4	.869	
	B1	.888	
Sugar is an average of	B2	.878	72.020/
Supervisor support	B3	.805	72.02%
	B4	.811	
	C1	.734	
Organizational support	C2	.912	
	C3	.806	
	C4	.892	
	D1	.764	
	D2	.622	
Contribution of	D3	.791	
knowledge	D4	.802	
-	D5	.634	<u>(0.240/</u>
	D6	.691	69.34%
	E1	.832	
abaamtion of Imaruladaa	E2	.759	
absorption of knowledge	E3	.492	
	E4	.548	
	F1	.864	
	F2	.760	
Employee innovation	F3	.581	72.04%
benaviour	F4	.844	
	F5	.700	

F6	.784	
F7	.627	
F8	.602	

#### 4. Analysis

### **4.1 Descriptive statistical analysis**

According to Table 3, 38.8% of the respondents were men and 61.2% were women, and more women participated in the survey; Employees aged 31-40 and 26-30 account for the majority, accounting for 30.0% and 28.6% respectively, followed by those aged 41-50 and 25 and below, accounting for 19.9% and 19.1% respectively; In terms of educational background, the majority of respondents have bachelor's degree, accounting for 112, accounting for 73.6%. The respondents with educational background below junior middle school are the least, accounting for only 1.3%; In terms of positions, the respondents are mainly ordinary employees, accounting for 64.5%, and the number of senior managers is the least, accounting for only 3.3%; In terms of the nature of enterprises, the respondents mainly come from state-owned enterprises, collective enterprises and private enterprises, accounting for 40.1% and 38.8% of the total respectively.

	Tuble 5 Desemptive statistics analysis.						
Gender		male		Female			
Number		59		93			
Percentage		38.8%		61.29	%		
Age	25 and under	26-30	31-40	41-50	51-60		
Number	29	43	46	30	4		
Percentage	19.1%	28.6%	30%	19.9%	2.5%		
Education	Junior high school and below	High school	junior colle	ege undergraduat	te Master degree or above		
Number	2	8	17	112	13		
Percentage	1.3%	5.3%	11.2%	73.6%	8.6%		
Position	General staff	General ma	anagement	Middle management	Senior management		
Number	98	3	1	18	5		
Percentage	64.5%	20.4	4%	11.8%	3.3%		
Nature of enterprise	state-owned enterprise	foreign-funded enterprise		private enterprise	other		
Number	61	1	7	59	15		
Percentage	40.1%	11.2	2%	38.8%	9.9%		

Table 3 Descriptive statistics analysis.

#### 4.2 Variable correlation analysis

In order to facilitate the analysis of the measured data, this paper processes the sample data of three variables to obtain the average value and standard deviation of organizational innovation atmosphere, knowledge sharing and employee innovation behaviour, as shown in Table 4. The standard deviation of each variable is small, indicating that the survey sample is relatively stable.

Pearson binary correlation analysis was carried out for each variable. It can be seen from Table 4 that the correlation coefficient between organizational innovation atmosphere and employee innovation behaviour is 0.77 and P < 0.01. The correlation coefficient between organizational innovation atmosphere and knowledge sharing was 0.61 and P < 0.01. The correlation coefficient between knowledge sharing and employee innovation behaviour was 0.50 and P < 0.01. According

to the correlation verification, it is preliminarily determined that H1, H2 and H3 are tenable, but further regression analysis is needed.

Variable	Mean value	Standard deviation	Organizational innovation atmosphere	Knowledge sharing	Employee innovation behaviour
Organizational innovation atmosphere	3.59	0.76	1		
Knowledge sharing Employee	3.47	0.87	.61**	1	
innovation behaviour	3.63	0.63	.77**	.50**	1

Table 4 Variable correlation analysis.

Note: N=157; \*\*. Significantly correlated on the .01 level (both sides).

### 4.3 Regression analysis

4.3.1 Regression analysis of organizational innovation atmosphere on employees' innovation behaviour

Construct the regression model of organizational innovation atmosphere on employees' innovation behaviour. Gender, age, education, length of service, position and company nature were taken as control variables. Put in the independent variable organizational innovation atmosphere and dependent variable employee innovation behaviour to build model I. Regression of model 1. The specific regression results are shown in Table 5. The F value of the model is significant at the level of 0.01, indicating that the regression equation is effective. The regression coefficient of organizational innovation atmosphere on employees' innovation behaviour is 0.749 and reaches the significant level of P < 0.001. The regression coefficient results are significant, indicating that employees' innovation behaviour is positively affected by organizational innovation atmosphere, and hypothesis H1 is established.

Table 5 Regression analysis of	organizational innovation	n atmosphere on	i employees'	innovation
	behaviour.			

Model 1	Non standardized coefficient		Standard coefficient		
	В	Standard error	Trial	t	sig
(Constant)	.178	.365		.487	.627
Control variable					
Gender	.010	.104	.005	.098	.922
Age	081	.144	098	565	.573
Working years	.075	.146	.089	.513	.609
Education	.120	.066	.094	1.814	.072
position	.135	.066	.112	2.057	.041
Nature of	007	.043	009	174	.862
enterprise					
Independent					
variable					

Organizational	.788	.053	.749	16.966	.000
innovation					
atmosphere					
R2			0.442		
$\triangle$ R2			0.425		
F			36.966		
Sig.F Change			.000		

4.3.2 Regression analysis of organizational innovation atmosphere on knowledge sharing

Build the regression model of organizational innovation atmosphere on knowledge sharing, put in the control variable, and then put in the independent variable, organizational innovation atmosphere and dependent variable knowledge sharing to establish model 2. The F value of the model is significant at the level of 0.01, indicating that the regression equation is effective. The standardized regression coefficient is significant at the significant level of 0.01, the regression coefficient is 0.578 and reaches the significant level of P < 0.001, indicating that the organizational innovation atmosphere has a positive impact on knowledge sharing, and the hypothesis is true. The specific results are shown in Table 6.

Model 2	Non standardized coefficient		Standard coefficient		
	В	Standard error	Trial	t	sig
(Constant)	.999	.462		2.163	.032
Control variable					
Gender	.069	.132	.035	.527	.599
Age	146	.183	180	801	.425
Working years	.065	.184	.079	.350	.727
Education	.055	.084	.044	.649	.517
Position	.072	.083	.061	.864	.389
Nature of	.087	.055	.104	1.585	.115
Independent variable					
Organizational innovation atmosphere	.585	.068	.578	8.644	.000
DO			0.389		
K2			0.367		
$\Delta \mathbf{K}^2$			13.483		
F C: T C'			.000		
Sig F Change					

Table 6 Regression analysis of organizational innovation atmosphere on knowledge sharing.

4.3.3 Regression analysis of knowledge sharing on employees' innovative behaviour

Build the regression model of knowledge sharing on employee innovation behaviour, put in the control variable, and then put in the independent variable knowledge sharing and dependent variable employee innovation behaviour to establish the model three. The F value of the model is significant at the level of 0.01, indicating that the regression equation is effective. The standardized regression coefficient is significant at the level of 0.01, the standardized regression coefficient is 0.459 and reaches the significant level of P < 0.01, indicating that employees' innovation behaviour is positively affected by knowledge sharing, and hypothesis H3 is established. The specific results are shown in Table 7.

Model 3	Non standardi	zed coefficient	Standard coefficient		
	В	Standard error	Trial	t	sig
(Constant)	1.155	.507	1	2.280	.024
Control variable					
Gender	.091	.146	.044	.622	.535
Age	004	.203	005	019	.985
Working year	.130	.093	.101	1.396	.165
Education	015	.204	017	071	.943
Position	.216	.092	.179	2.360	.020
Nature of enterprise Independent variable	034	.061	039	555	.580
Knowledge sharing	.471	.075	.459	6.285	.000
R2					0.396
$\triangle R2$					0.362
F					8.640
Sig.F Change					.000

### Table 7 Regression analysis of knowledge sharing on employees' innovative behaviour.

### 4.3.4 Mediating effect of knowledge sharing

In this paper, SPSS software is used as a tool to establish a regression model for regression analysis. In order to verify the mediating effect, gender, age, education, length of service, position and company nature were taken as control variables. Put in independent variables, organizational innovation atmosphere and dependent variables, employee innovation behaviour. Finally, the knowledge sharing of intermediary variables is added to obtain model 4. Regression analysis is carried out, as shown in Table 8.

Table 8 Mediating effect of knowledge sharing.	

Model 4	Non standardized coefficient		Standard coefficient		
Widdel 4	В	Standard error	Trial	t	sig
(Constant)	.161	.372	2	.434	.665
Control variable					
Gender	.009	.104	.004	.086	.931
Age	079	.145	095	545	.586
Working year Education	.120 .074	.067 .146	.093 5 .088	1.792 .504	.075 .615
Position	.134	.066	5 .111	2.027	.044
Nature of enterprise	009	.044	010	204	.838

Independent variable					
Organizational innovation atmosphere Mediating variable	.796	.066	.673	12.046	.021
Knowledge sharing	.034	.065	.382	20	.000
R2					.433
$\triangle R2$					.413
F					8.320
Sig.F Change					.000

According to Table 4, Table 5 and Table 6, the regression results of model 1, model 2 and model 3 shows that there is a significant correlation between the organizational atmosphere of innovation and the innovative behaviour of the dependent variable, and the regression coefficient is 0.749. There is a significant correlation between independent variable organizational innovation atmosphere and intermediary variable knowledge sharing; the intermediary variable knowledge sharing has a significant correlation with the dependent variable employee innovation behaviour. According to Table 5.6, the F value of model IV is 8.32 and significant at the level of 0.01, indicating that the regression equation is effective. The standardized regression coefficient of the independent variable organizational innovation atmosphere is 0.673, which is lower than that of model I, and reaches the significant level of P < 0.05, indicating that knowledge sharing plays a partial intermediary role in the main effect, and the hypothesis H4 is true.

### 5. Conclusion

This paper discusses whether the organizational innovation atmosphere can change employees' innovation behaviour. At the same time, it explores the role of knowledge sharing between the two. Combined with the analysis results, this paper draws the following conclusions: (1) organizational innovation atmosphere has a positive impact on employees' innovation behaviour.(2) Knowledge sharing plays an intermediary role in the process of organizational innovation atmosphere affecting employees' innovation behaviour.

Organizational innovation atmosphere has a positive impact on employees' innovation behaviour. When the innovation atmosphere created by the enterprise is strong enough, employees will show more innovative behaviour.

Knowledge sharing plays an intermediary role in the main effect. The higher the degree of knowledge sharing, the easier it is for employees to communicate candidly with colleagues and superiors, making new knowledge and technology more popular in the enterprise, making employees show more creativity and have more innovative behaviours.

In order to improve the innovation performance of the organization and improve the overall competitiveness, it is necessary for enterprises to take some targeted measures to improve employees' innovation behaviour. From the perspective of this paper, enterprises should first create a good innovation atmosphere, arrange and reflect the leaders and organizational system, establish an innovative organizational system, and inject the innovation consciousness into the organizational culture. Leaders should teach by example, take the lead and implement it through informal organizational relations.

Within the organization, we should also establish a knowledge sharing mechanism, build an internal sharing platform, strengthen the efficiency of information transmission within the organization, broaden the channel of information dissemination and enhance the ability of information acquisition.

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