

The Impact of Organizational Improvisation on Organizational Innovation in the Yangtze River Delta Economic Belt with Flexible Human Resource Management as Mediator

Jintong Wei^{1,a,*}, Chere C. Yturralde^{1,b}

¹Graduate School, Angeles University Foundation, Angeles City, Philippines

^a158598322@qq.com, ^byturraldecc@auf.edu.ph

*Corresponding author

Abstract: As global industrial competition intensifies, organizations can only gain competitiveness by continuously improving original innovation, how to promote organizational innovation through organizational improvisation has become a research direction for scholars. This study used a questionnaire survey to investigate 243 technology-based enterprises in the Yangtze River Delta Economic Zone of China from the perspective of flexible human resources management. The survey subjects of this article mainly focus on middle and senior managers of enterprises. Through correlation analysis and mediation testing of the data, it was found that: organizational improvisation has a positive impact on organizational innovation; flexible human resource management positively affects organizational innovation and play a mediating role between organizational improvisation and organizational innovation.

Keywords: organizational improvisation; flexible human resource management; organizational innovation; Yangtze River Delta Economic Belt; China

1. Introduction

As the environment changes and consumer demands continue to increase, organizational innovation has become an important ability for enterprises to adapt to the environment. Especially in China's Yangtze River Delta Economic Belt, the past era of relying solely on imitation to gain competitive advantages has become a thing of the past. Enterprises can only adapt to the needs of the environment through continuous innovation.

How to promote innovation from the perspective of organizational management, especially empirical research is extremely lacking (Han Chen, Gao Shanxing, 2018). Organizations need to make changes to inherent beliefs, habits, and routines in the process of implementing innovation (Chen Mingshu, Li Jiawen, and Lu Qingtao, 2018). Therefore, organizational improvisation has been proposed by scholars as a factor to construct organizational innovation, which has been confirmed to have a positive effect on organizational innovation through research on environmental dynamics (Wang Jian, 2019). Although this study builds a new path for organizational innovation, it does not reveal how organizations implement organizational improvisation, that is, the resource base for organizational improvisation is not clear. Organizing improvisation requires a certain resource base and a matching organizational mechanism (Nisulaam, 2016). Therefore, this study believes that organizational improvisation does not exist independently of organizational innovation, but requires the help of intermediate links to affect organizational innovation.

Flexible human resource management emphasizes the internal consistency of the organization in the process of operation, and it can obtain continuous competitiveness in a dynamic environment by designing a series of human resource systems. Flexible human resource management refers to the ability of an organization to adapt to changes in the environment with flexibility, and ultimately achieve effective personnel matching to meet the diverse needs of the organization. Therefore, it can be considered that flexible human resource management is conducive to the organization's original innovation. Organizations need to build basic resources in the implementation of organizational improvisation, and the effectiveness of resources will help overcome the outdated, rigid thinking and

"rigid" operating practices formed during the operation of the organization, that is, flexible management of the organization is required (Huang Yan and Peng Liping,2022). Flexible human resources management emphasizes the "flexibility" of organizational personnel and operating mechanisms. Therefore, it can be inferred that the organization improves the organization's flexible human resource management in the process of implementing organization improvisation, that is, organizational improvisation has a positive impact on flexible human resource management.

Existing research on organizational innovation mainly discusses the perspective of the system, connotation or evolution mechanism, etc., based on the macro level, and there is a lack of research on organizational innovation at the enterprise level. This study analyzes the impact of organizational improvisation on organizational innovation from the perspective of human resources flexibility, in order to provide a theoretical basis for organizations to implement organizational innovation through organizational improvisation.

The main theoretical contributions of this study are as follows: First, it expands and enriches the scope of organizational innovation research. Compared with most of the current studies on organizational innovation based on the macro perspective, this study discusses organizational innovation from the micro perspective of the organization. Based on the research on the impact of organizational improvisation on organizational innovation, it expands the depth and breadth of research on organizational innovation. Second, this study believes that it is too rough to directly establish the relationship between organizational improvisation and organizational innovation. Instead, it seeks an intermediary role between the two, and through the successful intermediary verification of flexible human resource management.

2. Theoretical overview and research hypotheses

2.1 Organizational improvisation and organizational innovation

Organizational improvisation first originated from jazz metaphors, which also led to the early research on organizational improvisation being limited to the perspective of jazz metaphors(Han Chen etc, 2018). Although there are some limitations in the research on organizational improvisation from the perspective of jazz metaphor, it is still of pioneering significance. Because some scholars previously regarded organizational improvisation as an undesired outcome. Therefore, this perspective theoretically provides a positive recognition of organizational improvisation in academia, and also provides a theoretical basis for the subsequent in-depth discussion of organizational improvisation. Although the definition of the concept of organizational improvisation in the academic circle is still not unified, it is found through combing the relevant research that scholars' research on organizational improvisation has gradually deepened from the simple description of phenomena to the cognitive stage of essential abstraction.Zhang Han and Wang Cizhi (2022) believed that organization improvisation usually presents an immediate method, emphasizing that the organization implements reasonable behaviors at a reasonable time, which is more original and novel. To achieve innovation in an organization is to change the original routine of the organization. Organizational improvisation is an innovative behavior caused by the organization's own promotion of change. It has a significant positive impact on some breakthrough innovations in the organization (Guo Qiuyun et al., 2017). Therefore, it can be considered that organizational improvisation can effectively promote organizational innovation. Therefore, the following hypothesis is proposed:

H1: Organizational improvisation has a significant positive impact on organizational innovation.

2.2 Organizational improvisation and flexible human resource management

Flexible human resource management first originated from strategic flexibility and was gradually introduced into human resource management based on the development of strategic flexibility. After that, it was recognized in the academic circle and gradually developed. Guo Xiaochao&Wen Zongchuan (2023) first proposed the concept of flexible human resource management in his research. and divided into two sub-dimensions, one is resource-flexible human resource management which implements human resource activities to acquire and develop employees' diverse knowledge and skills; It is a coordinated human resource management that implements reasonable arrangements for employees quickly and effectively. The main focus of flexible human resource management is how to adapt the organization's core skilled employees to the environment. It mainly improves the diversification of the skill level of organizational employees through organizational learning and

enrichment of organizational work, so that employees can try a variety of working conditions to improve employees. Adapt to the skill level of the work and enhance the organization's ability to adapt to the dynamic external environment.

Organizational improvisation helps to improve flexible human resource management. First of all, judging from the results presented by organizational improvisation, organizational improvisation reflects the overall performance of the organization (Guo Qiuyun, Li Nan, Jian Lirong, 2017), which will improve flexible human resource management through organizational learning. Second, the study by Nisulaam (2020) confirmed the correlation between organizational improvisation and organizational growth. In addition, Hatch (1998) pointed out that the future organizational characteristics should present the characteristics of flexibility, adaptability and flexibility. It can be seen that organizational improvisation can improve organizational flexibility to a certain extent, especially flexible human resource management. Therefore, the following hypothesis is proposed:

H2: Organizational improvisation has a significant positive impact on flexible human resource management

2.3 Flexible Human Resource Management and Organizational Innovation

Venus Tong (2023) believes that the stock of knowledge and skills in flexible human resource management can play an important role in technological innovation for organizations. The continuous implementation training of flexible human resource management in the organization can promote organizational innovation. Wenyu (2019) believes that the organization's ability to integrate existing knowledge will have a great impact on the level of organizational innovation. Thus, the following hypothesis is proposed:

H3: Flexible human resource management has a significant positive impact on organizational innovation

2.4 The mediating role of flexible human resource management

Because the constraints of rigid resources often make it impossible for organizations to respond quickly in a dynamic environment. In other words, organizations need to establish relevant resources to implement organizational improvisation, and flexible human resource management can meet this condition. It can be said that flexible human resource management has built the necessary space or bridge for the impromptu implementation of the organization. Wang Jian, Huang Qunhui (2019) believed that organizational factors are the decisive factors for whether organizational improvisation can produce effects in the innovation process. Ye Yijiao, He Yanzhen, Zhu Hong, Deng Xincai, Lu Yijing. (2020) proposed that organizations can facilitate improvisational behavior across departments in different organizations. In summary, this paper infers that flexible human resource management may have a mediating effect between organizational improvisation and organizational innovation. Therefore, combined with H1, H2, and H3, this paper puts forward the following hypothesis:

H4: Flexible human resource management has a mediating effect between organizational improvisation and organizational innovation

3. Research Design

3.1 Sample and data

Table 1: Sample distribution

Profile	Options	Quantity	%
	0~50	36	14.81
	51~100	57	23.46
Enterprise size	101~300	82	33.74
	>301	68	27.98
Established	3~6Years	78	32.09
	6~10Years	92	37.86
	>10Years	73	30.04
Stated-owned		38	15.63
Nature		189	77.78
Private			
	Foreign	16	6.58

This research adopts the method of questionnaire survey to collect data, and the samples are mainly from high-tech enterprises in China's Yangtze River Delta Economic Belt. A total of 512 questionnaires were distributed in this study and 243 valid questionnaires were finally obtained, with a valid recovery rate of 47.4%. See table 1.

3.2 Variable measurement

This study uses a 5-point Likert scale, where "1" means "totally disagree" and "5" means "totally agree". The organization improvisation used the scale developed by Vera and Venus Tong (2023). The results of the test of the fitting effect of the variable factor structure are as follows: χ^2 (df=43)=101.52, TLI=0.96, CFI=0.97, IFI=0.97, RMR= 0.03, RMSEA=0.06. It shows that the fitting effect is good. At the same time, the Cronbach` α coefficient of organizational improvisation is 0.85, indicating that the reliability of the scale is good. Organizational innovation refers to the scale developed by Ye et al. (2020).The Cronbach α coefficient of the scale is 0.61 (>0.6), the KMO value is 0.77, and Sig.=0.00, It shows that the scale has good validity.The flexible human resources management scale adopts the measurement method of Peng Chen et al. (2018). The two factors of this variable have a good fitting effect: χ^2 (d f=43) = 101.52, TLI = 0.96, CFI = 0.97, IFI =0.97, RMR=0.03, RMSEA=0.06.In addition, the control variables are set to enterprise size and enterprise year, where the enterprise size is expressed by the total number of enterprises.

3.3 Empirical analysis and results

3.3.1 Validity test

The results of confirmatory factor analysis (CFA) for all factors are shown in Table1. It can be seen from Table 2 that the corresponding AVE values are all greater than 0.5, and the CR values are all higher than 0.7, indicating that the data has good convergent (convergent) validity.

Table 2: Model AVE and CR index results

Factor	Average variance extraction AVE value	Reliability CR value
FHRM	0.696	0.901
OIM	0.709	0.907
OIN	0.745	0.852

Table 3 shows the square root of the AVE value of the three factors, and the square root of the AVE value corresponding to the three factors is greater than the maximum value of the correlation coefficient between the factors, indicating that the data has good discriminant validity.

Table 3: Discriminant validity

Factor	FHRM	OP	OI
FHRM	0.834		
OP	0.713	0.842	
OI	0.623	0.691	0.863

Note: Diagonal numbers are square root values of AVE

3.3.2 Correlation analysis

It can be seen from Table4 that the correlation coefficient between organizational improvisation, flexible human resource management, and organizational innovation is greater than 0, indicating that there is a positive correlation between organizational improvisation and other variables.

Table 4: Pearson correlation coefficient

Variable	Mean	SD	1	2	3	4	5
YEAR	3.091	0.893	1				
SCALE	2.652	0.672	0.624**	1			
OIM	3.559	0.793	0.541	0.451	1		
FHRM	3.418	0.791	0.187	0.265**	0.610**	1	
OIN	3.565	0.808	0.354	0.558**	0.659**	0.298	1

Note **. Significant correlation at 0.01 level (both sides); *. Significant correlation at 0.05 level (both sides), the same below.

3.3.3 Regression analysis

In Table 5 the year of the enterprise and the number of persons in the enterprise are used as control variables, and flexible human resource management is used as the dependent variable for linear regression analysis. It can be seen from Table 5 that Model 1 did not pass the F test ($F=0.681, p>0.05$), indicating that the year of the enterprise and the number of persons in the enterprise will not have an impact on flexible human resource management. After model 2 added organizational improvisation to model 1, the change in F value was significant ($p<0.05$), and the regression coefficient of organizational improvisation was 0.761, which was significant ($t=25.358, p=0.000<0.01$), which means that organizational improvisation has a significant positive impact on flexible human resource management, so hypothesis H2 is confirmed.

Table 5: Hierarchical regression analysis

Variable	MODEL1				MODEL2				MODEL3			
	B	SD	t	p	B	SD	t	p	B	SD	t	p
Constant	3.528	0.108	32.557	0.000	0.819	0.138	5.953	0.000	0.632	0.126	4.639	0.000
Industry	0.011	0.138	0.082	0.935	-0.046	0.100	-0.458	0.647	-0.029	0.036	-0.299	0.765
Year	-0.035	0.129	-0.269	0.788	0.075	0.094	0.803	0.422	0.058	0.097	0.643	0.521
Scale	0.126	0.094	1.350	0.177	0.079	0.068	1.160	0.247	0.066	0.066	1.026	0.305
Position	-0.101	0.096	-1.044	0.297	-0.065	0.070	-0.940	0.347	-0.054	0.167	-0.804	0.422
OIM					0.761	0.031	25.358	0.000	0.540	0.043	23.954	0.000
R ²	0.004				0.509				0.514			
Adjust R ²	-0.003				0.505				0.510			
F	F =0.599,p=0.663				F =129.711,p=0.000				F =110.242,p=0.000			
ΔR ²	0.004				0.505				0.034			
ΔF	F =0.599,p=0.663				F =643.042,p=0.000				F =43.662,p=0.000			
Dependent variable: flexible human resource management * p<0.05 ** p<0.01												

Table 6 Hierarchical regression analysis involves a total of 4 models. In model 1, R² is 0.004, which means that the industry, company age, company number and position can explain 0.4% of the change in organizational original innovation. The F test failed on the model. ($F=0.599, p>0.05$), the change in F value is significant ($p<0.05$), which means that the addition of flexible human resource management has explanatory significance for the model. The regression coefficient value of flexible human resource management is 0.341 and is significant ($t=5.788, p=0.000<0.01$), which means that flexible human resource management will have a significant positive impact on organizational original innovation. Hypothesis H3 is established.

Table 6: Hierarchical regression analysis

Variable	MODEL1				MODEL2				MODEL3			
	B	SD	t	p	B	SD	t	p	B	SD	t	p
Constant	3.528	0.108	32.557	0.000	0.819	0.138	5.953	0.000	0.632	0.136	4.639	0.000
Industry	0.011	0.138	0.082	0.935	-0.046	0.100	-0.458	0.647	-0.029	0.096	-0.299	0.765
Year	-0.035	0.129	-0.269	0.788	0.075	0.094	0.803	0.422	0.058	0.091	0.643	0.521
Scale	0.126	0.094	1.350	0.177	0.079	0.068	1.160	0.247	0.066	0.066	1.006	0.315
Position	-0.101	0.096	-1.044	0.297	-0.065	0.070	-0.940	0.347	-0.054	0.067	-0.804	0.422
OIM					0.740	0.031	23.954	0.000	0.540	0.043	12.684	0.000
FHRM									0.263	0.040	6.608	0.000
R ²	0.004				0.480				0.514			
Adjust R ²	-0.003				0.476				0.510			
F	F =0.599,p=0.663				F =115.675,p=0.000				F =110.242,p=0.000			
ΔR ²	0.004				0.476				0.034			
ΔF	F =0.599,p=0.663				F =573.790,p=0.000				F =43.662,p=0.000			

3.3.4 Flexible Human Resource Management Intermediary Inspection

Through verification, it is found that the 95% confidence interval of flexible human resource management is 0.41~0.79, excluding 0, indicating that the intermediary effect is significant (as shown in Table 7), so hypothesis H4 is established, that is, flexible human resource management plays an important role in organizational improvisation and organizational innovation.

Table 7: Mediating effect test results

Project	c	a	b	a*b	a*b (95% BootCI)	c'	Test Results
OIM=>FHRM=>OIN	0.50**	0.75**	0.79**	0.59	0.41 ~ 0.79	-0.09	full media

4. Conclusions and Recommendations

This study draws the following conclusions: organizational improvisation has a positive effect on organizational innovation and flexible human resource management; flexible human resource management has a positive effect on organizational innovation, and there is a mediating effect between organizational improvisation and organizational innovation.

The conclusions of this study provide new enlightenment and practical direction for enterprises to enhance their innovation capabilities. First, the organization should abandon old organizational practices promptly and create a good environment for implementing organizational innovation. Organizational innovation needs a good foundation and atmosphere, and untimely practices and norms in the organization will seriously restrict organizational innovation. Second, the organization should pay attention to the impromptu behavior of employees, continuously encourage and cultivate employees' improvisational thinking and improvisational ability, and finally transform it into organizational innovation. Third, the organization should build and implement flexible human resource management. Flexible human resource management not only helps organizations to implement innovations, but also improve staff skills and work adaptability to adapt to organizational development.

The limitation of this study is that the data cited are enterprise data in the Yangtze River Delta Economic Zone of China, and the scope represented by the sample has certain limitations. In addition, this study measures flexible human resource management as a whole. In fact, in existing research, flexible human resource management is divided into resource coordination flexible management and coordination flexible human resource management. Therefore, Meiji cannot be measured as an overall variable. Fully revealing the role of flexible human resource management in organizational innovation will also become the research direction of future scholars.

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