

How to solve the Involution problem in workplace?An investment model based on the SEM structural equation might be an feasible antidote

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Abstract. The involution problem exert huge pressure to not only Z Era youth but also employees older than them. Previous research are mainly concentrated on discussing the negative effects of the issue rather than providing a solution. Thus, this paper will set a SEM model to act as a investment model for supervisors.

Keywords: Industrial environment; behavior tendency; evaluation method;

1. Introduction

Inner convolution, namely the involution is defined as the antonym of evolution, is a form of self consumption and self repetition that stay at a low level. (Geertz, 1963) Involution is a kind of value which emphasis repeating or expanding existed operational modes rather than make innovation or improve efficiency. (Prasenjit, 1989) The essence of involution is the diminishing marginal benefit of labor. (Huang Zongzhi, 2000) The endless and meaningless efforts of the youth is the definition of involution (Xushu, 2021) The consequence of involution is the increase of resource operation cost (Zhang xuelin, 2022)

However, current research on involution are mainly concentrate on a specific phenomenon or scene, lacking of penetrating research. (Qin Xinyuan, 2022) The problem of domestics research is that the content of scholars' research is single and repetitive, seldom have interdisciplinary application. (Liu junping, 2022)

According to the research outcome of Xu huazhi, we could analyze the involution from the following three dimensions: industrial environment, behavior tendency and evaluation method. Method for judging whether the work place is in the state of involution is to investigate the satisfaction level of employees. (Han jiangfeng, 2019)

Based on academic opinions above, this paper will take a field research to set a investment model in the form of SEM structural equation. The object of trials below is to figure out the relation between different dependent variables and the relation between relevant Independent and dependent variables.

2. Independent and dependent variables determination

2.1 industrial environment factors confirmation

According to the statistical outcome of Zhaoman, industrial environment factors mainly include ① population growth rate of employees ② the output value of the industry ③ the number of customers ④ number of enterprises ⑤ economic development level of the city.

2.2 behavior tendency factors confirmation

Based on Ma xiaojing's view, the evaluation indexes of behavior tendency are ① the quantity of organizational citizenship behavior ② The result of employees' works.

2.3 evaluation method factors confirmation

According to Han jiangfeng, we could analyze the evaluation methods from the perspective of professionalism, fairness, independence.

2.4 Chart-form conclusion

2.4.1 Dependent variables

Chart.1 Dependent variables

Dependent variables	definition	abbreviation
satisfaction level of employees	Employees' recognition of the organization	SA

2.4.2 Independent variables

Chart.2 Independent variables

Independent variable	definition	abbreviation
industrial environment	The degree of competition in this field	IE
behavior tendency	Actions the employee intends to take	BT
evaluation method	Methods of evaluating employees* performance	EM

2.4.3 Control variable

Chart.3 Control variable

control variable	definition	abbreviation
population growth rate of employees	Speed of arrival of new employees	GR
the output value of the industry	Income of the enterprise from operating activities	OI
the number of customers	Number of consumer who buy our products or services	NC
number of enterprises	Number of competitors in this industry	NE
economic development level of the city	Overall economic level and income level of the city	ED
the quantity of organizational citizenship behavior	The number of Voluntary behavior that employees made to the firm	QO
The result of employees' works	Good or bad work results of employees	RE
professionalism of the assessment	reliability of the indexes	PA
fairness of the assessment	whether the indexes are fair to different employees	FA
independence of the assessment	whether managers or employees can decide their assessment standards independently	IA

3. Experimental feasibility test

3.1 Data source introduction

The data source of this paper is from the questionnaire star platform.(A mainstream data collection platform in China which has a internal mechanism to prevent data counterfeiting)

3.2 Feasibility analysis

3.2.1 Reliability test

Chart.4 Outcome of Reliability test

Reliabilit Analysis of Cronbach			
Item	CITC	Deleted a-factor	Cronbach a value
SA	0.954	0.933	
GR	0.745	0.939	
01	0.717	0.940	
NC	0.737	0.940	
NE	0.696	0.941	
ED	0.762	0.939	0.944
QO	0.775	0.938	
PA	0.722	0.940	
RE	0.746	0.939	
FA	0.743	0.940	
IA	0.748	0.939	
Standard Cronbach a value: 0.946			

In this paper,we take the analytical method of Cronbach to test whether the investigation outcome is reliable.Since the Cronbach value is over the reference value 0.6,thus we could infer that this dataset is reliable.

3.2.2 Validity test

Chart.5 Outcome of Validity test

Result of Validity analysis		
Item	Factor load factor	
	Factor1	Communality(Common factor variance)
SA	0.965	0.931
GR	0.795	0.631
OI	0.769	0.591
NC	0.788	0.62
NE	0.75	0.562
ED	0.808	0.652
QO	0.82	0.672
RE	0.795	0.633
PA	0.773	0.598
FA	0.792	0.627
IA	0.797	0.635
Eigenvalue (before rotation)	7.153	-
Variance interpretation rate% (before rotation)	65.02%	-
Cumulative variance interpretation rate% (before rotation)	65.02%	-
Eigenvalue (after rotation)	7.153	-
Variance interpretation rate% (after rotation)	65.02%	-
Cumulative variance interpretation rate% (after rotation)	65.02%	-
KMO value	0.954	-
Bart spherical value	1684.275	-
df	55	-
p value	0	-

Since the KMO value is over 0.8, therefore we could make a conclusion: this dataset is appropriate for extracting information.

4. Experimental modeling

4.1 Intermediary reaction test

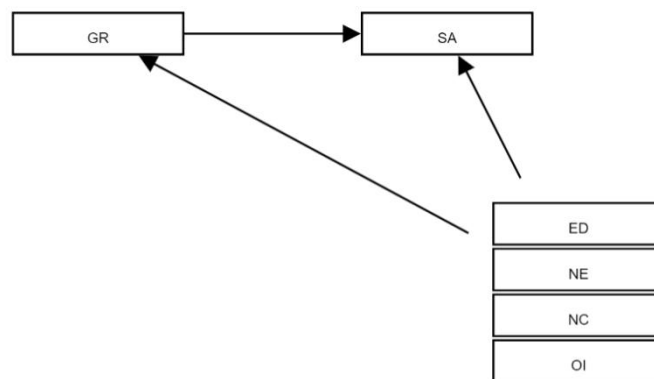
4.1.1 industrial environment element test

Chart.6 Outcome of Intermediary reaction test(1)

Result of mediation effects						
Item	Test conclusion	C Total effect	a*b Intermediary effect	C Direct effect	Calculation formula of effect proportion	Proportion of effect
OI=>GR=>SA	Partial intermediary	0.204	0.037	0.167	a * b/c	18.121%
NE=>GR=>SA	Partial intermediary	0.224	0.034	0.189	a * b/c	15.384%
ED=>GR=>SA	Partial intermediary	0.248	0.077	0.171	a * b/c	31.088%
NC=>GR=>SA	Partial intermediary	0.276	0.055	0.221	a * b/c	19.941%

Since the proportion of intermediary effect of GR with other elements is over 0,we could infer that it could act as a Mediation module of other elements.The visual model will be presented as follow.

Chart.7 Mediating mechanism of related elements(1)



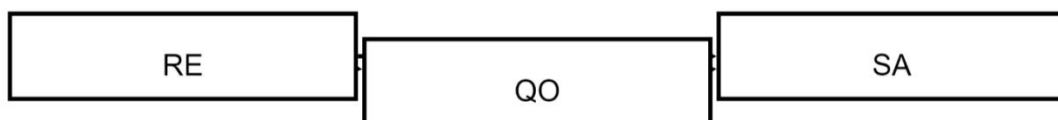
4.1.2 behavior tendency element test

Chart.8 Outcome of Intermediary reaction test(2)

Item	C Total effect	a	b	a*b Intermediary effect	c Direct effect
RE=>QO=>SA	0.583~0.729	0.518~0.759	0.300~0.435	0.229~0.332	0.349~0.494

Since the proportion of intermediary effect of RE with QO is over 0,thus we could infer that RE could act as the catalyst of QO.The visual model will be presented as follow.

Chart.9 Mediating mechanism of related elements(2)



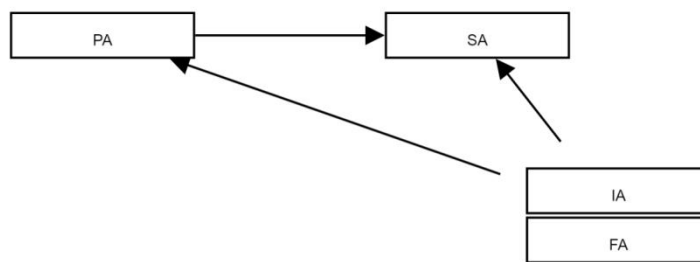
4.1.3 evaluation method elements test

Chart.10 Outcome of Intermediary reaction test(3)

Result of Mediating effect test										
Item	C total effect	a	b	a*b Intermediary effect value	a*b (Boot SE)	a*b (z value)	a*b (pvalue)	a*b (95% BootCI)	c Direct effect	Test conclusion
FA=>PA=>SA	0.409*	0.412*	0.277**	0.114	0.002	69.215	0.000	0.090 ~ 0.181	0.295**	Partial intermediary
IA=>PA=>SA	0.395*	0.321*	0.277**	0.089	0.002	56.081	0.000	0.065 ~ 0.153	0.306**	Partial intermediary
*p<0.05 **p<0.01										

Since the proportion of intermediary effect of PA with IA and FA is over 0, we could infer that it could act as a Mediation module of other elements. Visual model is presented as follow.

Chart.11 Mediating mechanism of related elements(3)



4.2 Regulation test

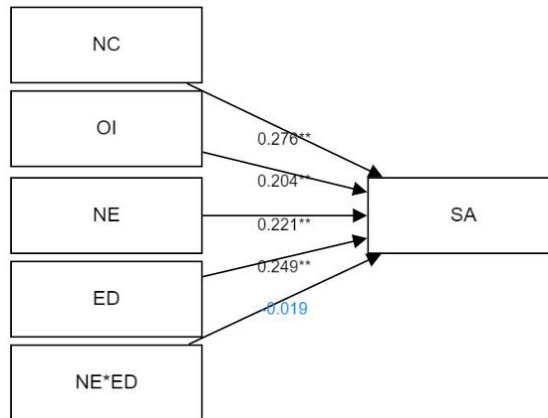
4.2.1 industrial environment element test

Chart.12 Outcome of regulation effects test(1)

	Model 1					Model 2					Model 3				
	B	Stand ard error	t	p	β	B	Stand ard error	t	p	β	B	Standar d error	t	p	β
Cons tant	1.186	0.132	9.008	0.000*	-	1.595	0.134	11.925	0.000*	-	1.609	0.135	11.9	0.000*	-
NC	0.338	0.039	8.733	0.000*	0.402	0.276	0.036	7.633	0.000*	0.328	0.276	0.036	7.617	0.000*	328
OI	0.276	0.042	6.54	0.000*	0.303	0.204	0.04	5.13	0.000*	0.223	0.204	0.04	5.128	0.000*	0.224
NE	0.297	0.038	7.915	0.000*	0.337	0.224	0.036	6.268	0.000*	0.254	0.221	0.036	6.168	0.000*	0.251
ED						0.248	0.037	6.7	0.000*	0.289	0.249	0.037	6.717	0.000*	0.29
NE* ED											-0.019	0.025	-0.76	0.448	-0.024
R2			0.763					0.807					0.808		
Aduj sted R2			0.759					0.803					0.803		
F value			F(3,196)=210.364,p=0.000					F(4195)=204.329p=0.000					F(5,194)=163.225,p=0.000		
△R2			0.763					0.044					0.001		
△F value			F(3,196)=210.364p=0.000					F(1,195)=44.893,D=0.000					F(1.194)=0.578,p=0.448		
SA															

In the change process from model 2 to model 3, there is little significant change, therefore we could infer that there's no regulation effects in these elements. The visual form is presented as follow.

Chart.13 Visualization results of regulation effects test(1)



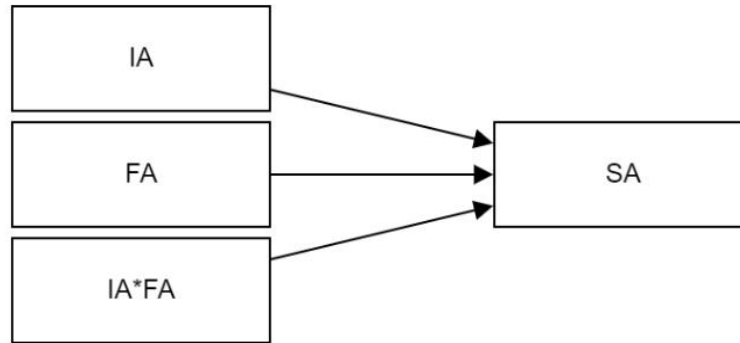
4.2.2 behavior tendency element test

Chart.14 Outcome of regulation effects test(2)

Regulatory effect analysis														
	Model 1					Model 2					Model 3			
	B	Standard error	t	P		B	Standard error	t	P		B	Standard error	t	P
constant	3.050	0.047	65.556	0.000**	-	3.050	0.038	81.275	0.000**	-	3.056	0.04568.379	0.000**	-
IA	0.626	0.038	16.495	0.000**	0.761	0.395	0.038	10.435	0.000**	0.480	0.394	0.03810382	0.000**	0.480
FA						0.409	0.039	10360	0.000**	0.477	0.409	0.04010.338	0.000**	0.477
IA*FA											-0.007	0.028-0.251	0.802	-0.009
R2			0.579					0.727				0.727		
Adjusted R2			0.577					0.725				0.723		
F value	A(1,198)=272.072,p=0.000					A(2,197)=262.756,p=0.000					f(3,196)=174.358,p=0.000			
△R2			0.579					0.149				0.000		
△F value	A(1,198)=272.072,p=0.000					f(1,197)=107.331,p=0.000					A(1,196)=0.063,p=0.802			
SA														

Since the interactive objects in model 3 are not significant,thus we could infer that there's no regulation effect

Chart.15 Visualization results of regulation effects test(2)



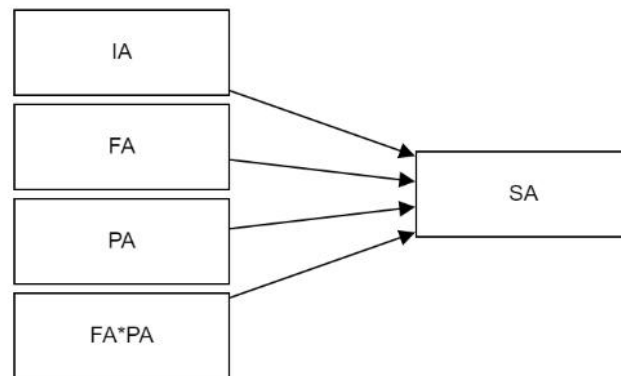
4.2.3 evaluation method elements test

Chart.16 Outcome of regulation effects test(3)

	Model 1					Model 2					Model 3				
	B	Standard error	t	p	β	B	Standard error	t	p	β	B	Standard error	t	p	β
常数	1.875	0.119	15.8	0.000*	-	2.14	0.11	19.519	0.000*	-	2.148	0.112	19.248	0.000*	-
IA	0.395	0.038	10.435	0.000*	0.48	0.306	0.035	8.702	0.000*	0.372	0.306	0.035	8.668	0.000*	0.372
FA	0.409	0.039	10.36	0.000*	0.477	0.295	0.038	7.825	0.000*	0.344	0.294	0.038	7.784	0.000*	0.343
PA						0.277	0.036	7.733	0.000*	0.332	0.278	0.036	7.727	0.000*	0.333
FA*PA											-0.01	0.025	-0.423	0.673	-0.014
R ₂			0.727					0.791					0.791		
调整R ₂			0.725					0.788					0.787		
F值			F(2,197)=262.7560, p=0.000					F(3,196)=247.385, p=0.000					F(4,195)=184.807, p=0.000		
ΔR_2			0.727					0.064					0		
ΔF 值			F(2,197)=262.756, p=0.000					F(1,196)=59.797, P=0.000					F(1,195)=0.179, p=0.673		

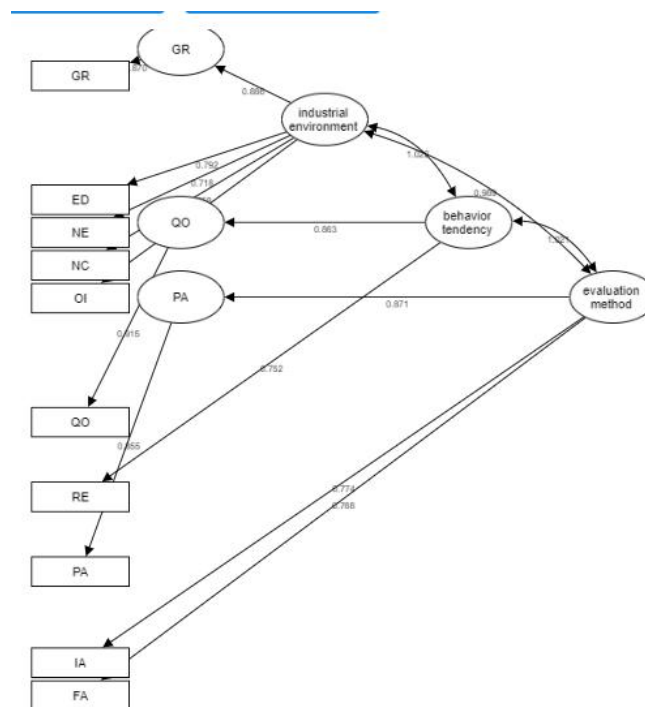
Since the model 3 is not significant, we could infer that there's no regulation effect.

Chart.17 Visualization results of regulation effects test(3)



4.2.4 Overall model setting(Based on SEM structural equation)

Chart.18 The overall SEM structural equation



5. Conclusion of the paper

When resources are put into a specific module, there will be a chain reaction between elements. Since the managerial environment is dynamic and the object of manager is always changing, supervisors should adjust their investing strategy frequently.

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