



Research on the Influence Mechanism of Superior Developmental Feedback and Employee Innovation Behavior Based on Regression Analysis

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Abstract

In order to better predict the impact of superior developmental feedback on employees' attitudes and behaviors, and better serve organization. This study uses SPSS to perform correlation and regression analysis on the 84 samples collected and found that superior developmental feedback positively affects the sense of work gain and employees' innovative behavior, the sense of work gain plays a completely mediating effect, and the growth need strength plays a positive moderating effect. Finally, this paper gives pieces of further study advice.

Keywords- *Superior Developmental Feedback; Sense of Work Gain; Innovative Behavior; Growth Need Strength; regression analysis*

1. INTRODUCTION

In October 2020, the word "innovation" was mentioned 27 times in the 6,000-word important speech delivered by the general secretary at the 40th-anniversary celebration of the establishment of the Shenzhen Special Economic Zone. The global outbreak of the new crown epidemic in the past two years has brought challenges to the existing business methods and strategies of enterprises. Rapid changes in the external environment has brought challenges to the development and survival of enterprises. Innovation, as a weapon for the survival and development of enterprises, enables enterprises to gain a competitive advantage in the era of the knowledge economy. Therefore, how companies take up the important task of innovation and achieve continuous development in a turbulent environment is a hot topic of current academic circles.

As a kind of extra-role behavior, innovative behavior has the characteristics of high risk, high uncertainty, and high complexity, which make employees have a certain degree of evasion or resistance. The main reasons are as follows: first, the increase in uncertainty in the digital age, the influx of a large amount of information and the rapid iteration speed, make it impossible for employees to

screen information well and generate more novel ideas; second is the recognition of individuals. Knowledge is limited, and there are certain barriers that hinders them from forming the knowledge structure required for innovation; third, employees need a verification process to transform knowledge into innovation. According to the theory of resource conservation, the uncertainty of innovation behavior is strong, employees need to perform innovative behaviors on the basis of completing their own work. For better innovation, employees need to diversify their existing time, resources, energy, etc. to the innovation process, which may affect their own work and threaten certain losses. Therefore, employees are more willing to choose conservative strategies. How can companies dispel these worries of employees to a certain extent? Developmental feedback as a solution has been valued by many scholars.

In the era of borderless careers, it is important to make people meaningful in the organization. Companies are required to provide opportunities and resources to enable employees to truly display their creativity and capabilities. The flat organizational structure, the personalities and values of employees have gradually become prominent, and the role of managers has also changed along the way. They become mentors and supporters of staffs, pay attention to their growth needs and career development in

management, and provide them with valuable information that they need, that is, superior developmental feedback [1]. "As a "future-oriented" feedback method, what will superior feedback bring to employee innovation? Numerous scholars have conducted research on this issue and have reached relatively consistent conclusions [2], but are there other intermediary mechanisms and boundary conditions? This paper studies the above issues based on conservation of resource theory and social information processing theory.

2. RESEARCH HYPOTHESIS

2.1. Superior developmental feedback and innovative behaviors of employees

Innovative behavior is the behavior of individuals through the analysis of problems, using knowledge (both self and externally acquired) to break through the mindset and then generate creativity and put into practice. Innovation as an off-role behavior, because of its high risk and uncertainty, people are faced with the loss of their own resources, such as innovation facing failure, and innovation will cause individual emotional tension and anxiety when cannot get supported. The superiors have more resources, such as high-level social network relationships, unique strategic development vision, keen market sense, etc. They are the main source of employee information and are more reliable than other information sources [3]. Developmental feedback from superiors provides resource support for employees' innovation, and avoids the defensive mechanism initiated by employees due to the loss of resources. First of all, the concern of superiors for the future growth, learning and development of employees will establish a good exchange relationship between superiors and subordinates [4]. Based on the principle of "reciprocity" in the social exchange theory, when employees perceive the care of their superiors, they may produce innovative behaviors expected by their superiors and the organization [5]. With the help of the information that helps their strengths, skills and work proficiency get improvement, employees gradually improve their overall ability according to the guidance of their superiors every working day, and are able to break the shackles of existing thinking and carry out innovative activities. Conservation of resource theory believes that when individuals have more resources, they are more willing to make some resource investment behaviors. Although innovative behaviors are associated with risks, the benefits after success are of great significance to employees, so when the superiors give development feedback, employees will be more willing to invest in resources and show more proactive behaviors [6], such as knowledge sharing and innovative behaviors. Finally, superior developmental feedback as the informative feedback, it can create a relaxed atmosphere in the

organization and reduce employees' worries due to innovation risks and after-the-fact costs. Decrease their psychological burden, and avoid the staff worrying about the lack of resources caused by resource depletion to avoid the possibility of engaging in creative work. Therefore, this article proposes the following assumptions:

H1: Developmental feedback from superiors positively affects the innovative behavior of employees.

2.2. The mediating role of sense of work gain

Developmental feedback from superiors is the behavior of superiors providing employees with valuable information about their future learning, development and growth [1]. The focus of developmental feedback is on the value of feedback content and its benefits to employees [7]. In business management, the link between employees and the organization is job. As an important source of employees' sense of gain, work plays an important role. The sense of work gain is the psychological feeling and evaluation of employees on the basis of actual contribution and gain [8]. The superior is the "spokesperson" of the organization [9], with the dual identity of individual and organization. No matter what kind of their status is, when they provide subordinates with feedback that cares about their future growth, learning, and development, individuals perceive changes in their own resources. When superiors provide feedback that affects the future of their subordinates based on their work past performance, employees perceive their superiors' recognition, respect and trust for their work [10] and believe that they are treated fairly in the organization. It strengthens the perception of his internal identity [11-12], and it is easy to establish harmonious relations and good social exchanges between superiors and subordinates [13-14]. Those all make employees' psychological resources more abundant. The establishment of good relationships increases the social resources of subordinates, and the acquisition of resources enhances the motivation of employees to work. Developmental feedback from superiors is a supportive measure to increase the actual psychological and social gains of employees. In order to realize the value-added of existing resources, employees will take more active actions. Developmental feedback is future-oriented for employees. It means that the superiors put forward new requirements for their skills and abilities based on their past work performance to improve their professional abilities, task skills, and job familiarity. In the era of information economy, developmental feedback provided by superiors helps to improve the thinking structure. The acquisition of these cognitive resources improves the employees' existing knowledge, skills and growth, and reduces the ambiguity of their roles. According to the conservation of resource theory, when the stock of resources such as skills and knowledge increases, employees' awareness of work will deepen, and the

pleasure of finding work will be enhanced by employees' perception of "realistic" acquisitions. As a resource, superior developmental feedback will reduce the reduce employees' stress, such as reducing employees' emotional exhaustion [15]. As a channel for employees to obtain psychological resources, developmental feedback provided by superiors affects the emotional changes of employees at work, and the acquisition of positive emotions helps employees to better complete their work. The superior developmental feedback is not simply based on the evaluation of the employees' past performance, but provides developmental feedback through comprehensive analysis of the situation and the purpose of the employee's behavior. According to the conservation of resources theory, when employees have more resources, they are more willing to make resource investment behaviors, are more proactive in their work, and have more sense of gain. Therefore, this article proposes the following assumptions:

H2: Developmental feedback from superiors positively affects the employee's sense of work gain.

Sense of work gain is a positive psychological experience and emotional cognition in the workplace [16]. When employees have more resources, they will take actions to accumulate resources and produce a spiral growth of resources. When employees are recognized and respected by their superiors or organizations for their work, they will have a pleasant emotional experience, and then show more organizational citizenship behavior. Developmental feedback makes employees full of information and hope for their own development in the organization, gains the joy of personal learning, growth and development, and makes employees more engaged in work, and has opportunities to discover innovations in their work. According to the conservation of resources theory, when the value of the resources acquired by employees in the workplace is higher, in order to reduce the loss of their existing resources, they show less tendency to leave and can continue to contribute to the innovation of the organization. Therefore, this article proposes the following assumptions:

H3: The employee's sense of work gain positively affects the employee's innovative behaviors.

H4: The sense of work gain plays a mediating role between superior developmental feedback and employees' innovative behavior.

2.3. The moderating effect of growth need strength

Growth need strength refers to the individual's expectation to obtain opportunities for learning, growth and development from work [17]. For the same job, the intensity of growth needs of different individuals is also different. Individuals with high growth needs will actively learn new things and new knowledge to expand their knowledge and broaden their horizons, and at the same time will strive to do their work well. The theory of social information processing believes that individuals will process and interpret the obtained information and choose the information they want. Therefore, for individuals with high growth needs, when individuals receive developmental feedback from their superiors, they have a deeper understanding of work interests, knowledge and skills required for work, which are interpreted as investment in resources. At the same time, individuals with high growth needs are more inclined to pay attention to opportunities that can promote their development at work. Developmental feedback from superiors just releases the signal to pay attention to the future learning, growth and development of employees. Under this stimulus, individuals will strengthen their own actual feelings. With the help of the intermediary of work gains, creative thinking and practice will ultimately achieve the goal of self-growth and gain more leadership support. Based on this, the following hypotheses are proposed:

H5: Growth need strength positively moderates the developmental feedback from superiors and sense of work gain, that is, the higher the intensity of growth demand, the stronger the positive correlation between superior developmental feedback and the innovative behavior of employees.

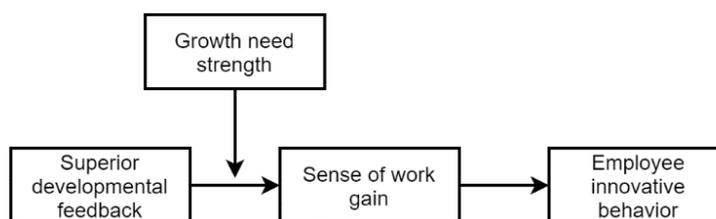


Figure 1. Theoretical model

3. RESEARCH METHODS

3.1. Research process and samples

The samples of this study mainly come from the manufacturing and service industries in Henan, Liaoning and Xinjiang. A total of 101 questionnaires were made available at this study and 84 were finally used. The effective response rate of the questionnaire was 83.17%. In terms of gender, 36 were males, accounting for 42.86%, 48 were females, accounting for 57.14%. In terms of age, 14 were 18-25, accounting for 16.67%; 26-30 were 26, accounting for 30.95%; and 21 were 31-40, accounting for 25%; 12 people aged 41-50, accounting for 14.29%; 11 people over 50, accounting for 13.10%. In terms of education, 21 people are high school and below, accounting for 25%; 26 are junior college students, accounting for 30.95%; 19 are undergraduates, accounting for 22.62%; 18 graduate students, accounting for 21.43%. In terms of working years, 37 employees under 1 year, accounting for 44.05%; 16 employees in 1-5 years, accounting for 19.05%; 14 employees in 6-10 years, accounting for 16.67%; 11 -15 years 9 people, accounting for 10.71%; 8 people over 15 years, accounting for 9.52%. In terms of ranks, 52 ordinary employees, accounting for 61.90%; 25 grassroots managers, accounting for 29.76%; and 5 middle managers, accounting for 5.95 %; 2 senior managers, accounting for 2.38%.

3.2. Research tools

This article uses SPSS to analyze the data. The measurement of superior developmental feedback from draws on the 8 items [18]. The Cronbach’s α value of the superior developmental feedback scale in this study is 0.932. The measurement of sense of work gain is built on the researcher’s single-dimensional 9-item sample based on the characteristics of developmental feedback and combined with the interview design. After using a small sample test, it is concluded that the values of χ^2/df , CFI, GFI, RMSEA, etc. all meet the criteria for judgment. In

this study the Cronbach’s α value is 0.934. The measurement of employee innovative behavior draws on the 6-item scale compiled by Scott and Bruce [19]. In this study we chose 5 items. The Cronbach’s α value of the employee innovation behavior scale is 0.933. The measurement of the growth need strength draws on the 7-item scale compiled by Hackman and Oldham. The Cronbach’s α value in this study is 0.951. Control variables: demographic variables may have an impact on an individual’s cognition, behavior, attitude, etc. In this study, gender, age, study, working years and rank were controlled during hypothesis testing.

4. DATA ANALYSIS

4.1. Correlation analysis

Correlation analysis refers to the analysis of two or more correlated variable elements, so as to assess the closeness of the two variable factors. According to the theoretical model of the research, the correlation analysis of the variables involved in the research is conducted. In this paper, Pearson correlation analysis method is used to analyze the relationship between variables, use formula (1) to get the results in Table I.

$$\rho(X, Y) = \frac{E[(X-\mu_X)(Y-\mu_Y)]}{\sigma_X \sigma_Y} = \frac{E[(X-\mu_X)(Y-\mu_Y)]}{\sqrt{\sum_{i=1}^n (X_i-\mu_X)^2} \sqrt{\sum_{i=1}^n (Y_i-\mu_Y)^2}} \tag{1}$$

It can be seen from Table I that the superior developmental feedback is significantly positively correlated with the sense of work gain ($r=0.390, p<0.01$), significantly positively correlated with the employee’s innovative behavior ($r=0.218, p<0.05$), and significantly positively correlated with the growth need strength($r=0.346, p<0.01$); the growth need strength is significantly positively correlated with the sense of work gain($r=0.387, p<0.01$)and significantly positively correlated with the employee’s innovative behavior ($r=0.333, p<0.01$);the sense of work gain is positively correlated with employee’s innovative behavior($r=0.591, p<0.01$).

TABLE I. CORRELATION ANALYSIS

	1	2	3	4	5	6	7	8	9
1.Gender	1								
2.Age	-0.317**	1							
3.Education	0.124	-0.751**	1						
4.Years	-0.086	.603**	-0.582**	1					
5.Rank	-0.048	0.142	-0.086	0.021	1				
6.SDF	-0.208	-0.163	-0.026	-0.123	-0.023	1			
7.GNS	-0.042	-0.119	0.007	0.206	-0.200	.346**	1		

8.SWG	-0.123	-0.086	0.032	0.100	-.235*	.390**	.387**	1
9.EIB	-0.101	-0.109	0.008	.227*	-.293**	.218*	.333**	.591** 1

Note: In the table, GNS is the growth need strength, SDF is the superior developmental feedback, SWG is the sense of work gain, and EIB is the employee innovative behavior; * p < 0.05, ** p < 0.01, *** p < 0.001. The following tables are all the same.

4.2. Intermediary effect and moderating effect test

In order to further determine the quantitative relationship between two or more variables, this study uses regression analysis to address this problem. The basic idea of stepwise regression is to reduce the degree of multicollinearity by eliminating variables that are less important and highly related to other variables. The specific method is to introduce the variables one by one. After each new variable is entered, the old variables that have been selected into the equation are tested. This process goes through several steps until it can no longer be introduced any new variables, and old variables cannot be eliminated. The condition for introducing variables is to pass the test of the partial F statistic, the specific formula is shown in (2).

Suppose there are *l*-1 independent variables in the model, and the set of independent variables is A. When an independent variable *x_k* that is not in A is added to the model, the general form of the partial F statistic is:

$$F = \frac{SSE(A) - SSE(A, x_k)}{SSE(A, x_k) / (n - l - 1)} = \frac{SSR(x_k | A)}{MSE(A, x_k)} \quad (2)$$

Regression analysis was performed by partial statistic F test to get Table II. It can be seen from Table II that the coefficient of higher-level developmental feedback in M4, it is significant (β=0.253, p<0.05); the coefficient of sense

of work gain in M5, it is significant (β=0.70, p<0.001); put all independent variables and intermediate variables into the model and get M6. From M6 it can be seen that after adding the intermediary variable, the sense of work gain has no significant impact on the employees' innovative behavior by the superior developmental feedback (β=-0.017, p>0.05), but the effect of the sense of job gain on the employee's innovative behavior is still significant (β=0.707, p<0.001). According to the research of Wen Zhonglin and Ye Baojuan [20], indicating that the sense of work gain plays a completely mediating role between the developmental feedback from the superior and the innovative behavior of employees. M1 indicates that the superior developmental feedback has a positive effect on the sense of work gain (β=0.382, p<0.001). M2 is the growth need strength as the moderating variable, the superior developmental feedback coefficient drops from 0.382 to 0.286, growth need strength significantly positively affects the sense of gain at work (β=0.238, p<0.01). M3 is calculated by adding interaction terms on the basis of M2. At this time, the fitting effect of the model R² is significantly improved, which is increased by 0.152 compared with M1. The regression coefficient can be obtained from the superior developmental feedback to multiply the growth need strength has a significantly positive effect on the sense of work gain (β=0.230, p<0.01). It indicates that the intensity of growth demand positively regulates the relationship between superior developmental feedback and job gain.

TABLE II. THE MEDIATING EFFECT AND THE MODERATING EFFECT TEST

	SWG				EIB	
	M1	M2	M3	M4	M5	M6
Intercept	2.114***	1.617***	1.185**	2.413***	0.883*	0.919*
SDF	0.382***	0.286**	0.377***	0.253*		-0.017
SWG					0.700***	0.707***
GNS		0.238**	0.244**			
SDF*GNS			0.230**			
R ²	0.152	0.225	0.304	0.048	0.349	0.350
Adjusted R ²	0.142	0.205	0.278	0.036	0.342	0.334
F value	14.752	11.724	11.644	4.102	44.054	21.776
P value	0.000	0.000	0.000	0.046	0.000	0.000

5. CONCLUSIONS AND FUTURE PROSPECTS

5.1. Conclusion

This result is similar to the research results of Su Weilin et al. and Le Cong Thuan, that is, developmental feedback provided by superiors to subordinates can promote the innovative behavior of employees. When superiors provide developmental feedback to the subordinates, it can build a high-quality social exchange relationship with the subordinates. As a relational resource, it can provide or protect valuable resources for employees [21]. Secondly, employees believe that the developmental feedback provided by their superiors is a psychological resource such as trust, respect, care and attention to them, which will strengthen their internal perception of identity, have a stronger sense of "ownership", and reduce their risk of resistance. Whether it is psychological resources or relationship resources, they provide support for employees' work resources and enhance their enthusiasm for innovation.

Research has identified that it is the path of superior developmental feedback that influences employees' innovative behaviors through sense of work gain. Based on the conservation of resource theory, this research takes the developmental feedback of superiors as a resource, the sense of work gain as a perceptual feeling after obtaining the resources, and the innovative behavior of employees as the perceptual response, and recognizes that the sense of work gain has a positive effect on the developmental feedback of superiors. Conservation of resource theory believes that when employees have fewer resources, they tend to reduce resource consumption or avoid resource input. The superior developmental feedback is that superiors dynamically provide relevant information based on external situations and employee characteristics, so that employees' psychological resources and social resources, emotional resources, cognitive resources, and opportunity resources have been increased, allowing employees to experience gains in the work experience. Under the premise of resource protection, they can get rid of factors such as risk fear and after-the-fact costs, and use existing resources for boldness. Making breakthroughs, generating creative ideas, and practicing innovative ideas. Research has further identified that the growth need strength is the boundary condition for superior developmental feedback and sense of work gain. This article finds that the growth need strength has a positive moderating effect between developmental feedback from superiors and sense of job gain, that is, the higher the growth need strength of employees, the more likely they are to have a sense of work gain after receiving developmental feedback from superiors.

5.2. Further research

This research mainly explores the dynamic changes of employees' perception of superior developmental feedback and its influence mechanism. Although the mediating of sense of work gain and the moderating effect of growth need strength have been verified, other mediation or moderation mechanisms may also exist. In the future, we can continue to explore what variables exist that mediate the developmental feedback of superiors and the innovative behavior of employees.

Throughout the existing studies, most of the existing studies are about the influence of a single antecedent variable on innovation behavior. In the future, multiple antecedents can be considered to act together Innovative behavior of employees. Response surface analysis can be used to select subordinate variables that match the developmental feedback of the superior, such as, feedback seeking, matching the levels of the two variables, and studying the impact of consistency and difference on employee behavior and attitudes.

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