

Impact of psychological contract in knowledge sharing: A case study from Industrial Cluster Enterprises

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Abstract. Psychological contract plays a critical role in knowledge sharing. In this paper, we have analyzed the influence of psychological contract and affective commitment to knowledge sharing in China. After using AMOS software for data processing by employing data on the questionnaire, which indicated that there are high consistency and stability and good convergence validity and construction reliability among variables, the multiple Ordinary Least Square(OLS) method was utilized in the study. There are 183 questionnaires were received in the experiment. After analysis, 157 questionnaires were valid for the research; the effective recovery rate was about to 86%. Based on the study, the conclusion could be conducted that the relationship contract and development contract of enterprise technical staff have positive impacts to knowledge sharing, On the contrary, the transaction contract has a negative impact to knowledge sharing.

1 Introduction

A large number of empirical studies show that the transfer of cluster knowledge is an important factor to improve the innovation ability and rapid development, which guarantees cluster enterprises to enhance their competitive advantage, and knowledge sharing is the key guarantee of knowledge transfer (Zhang Xiaobo, 2011; Cui Ning, 2014; Wang Bin, 2015; Wang Xin, 2016) [1-4]. With the increasingly important role of knowledge resources in enterprise competition, the research on knowledge sharing among enterprises in industrial clusters has become a hot issue in organizational planning and strategic development. Large number of studies show that the knowledge sharing among technicians in cluster enterprises has an increasing impact on the ability and quality of enterprise innovation. We chose the technical personnel of cluster enterprises to analyze the relationship among psychological contract, affective commitment and knowledge sharing.

2 The theoretical basis and hypotheses

2.1 The influence of Psychological contract on knowledge sharing

Reasonable use of psychological contract can have an imperceptible impact on employees in enterprises, and can obtain more positive and effective results than traditional incentive methods. Hendriks(1999) found that the knowledge sharing of employees is influenced by some psychological motives, such as sense of

accomplishment, self-worth, responsibility and other factors [5]. Siemsen et al. (2007) found that only when the personal benefits gained from knowledge sharing were greater than the cost of knowledge sharing, employees would have a positive willingness to share knowledge [6]. Liang Qihua et al. (2006) pointed out that the unmeasurable of tacit knowledge lead to the negative effect of psychological contract violation on tacit knowledge transmission [7]. He Mingrui et al. (2011) under the conditions of China, took knowledge employees as the object, explored the difference of the influence of different dimensions of psychological contract on tacit knowledge sharing and also examined the applicability of the mature three-dimensional division of psychological contract abroad in China's national conditions [8]. Wang Shihong et al. (2012) focused on national auditors to explore the relationship between psychological contract and knowledge-sharing behavior. The results showed that auditors' psychological contract had a positive effect on their knowledge-sharing behavior [9]. Lu Fuchai et al. (2012) proved that good trust relationship between enterprises and employees can have a further impact on psychological contract and knowledge sharing intention [10].

H1-1: Transaction contract of technicians can positively affect explicit knowledge sharing

H1-2: Relationship contract of technicians can positively affect explicit knowledge sharing

H1-3: Development contract of technicians can positively affect explicit knowledge sharing

H1-4: Transaction contract of technicians can positively affect tacit knowledge sharing

H1-5: Relationship contract of technicians can positively affect tacit knowledge sharing

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H1-6:Development contract of technicians can positively affect tacit knowledge sharing

2.2 The influence of Psychological contract on affective commitment

Research is divided into the following aspects:(1).Psychological contract and affective commitment, Roussaeu et al. (1999) pointed out that the commitment of the members of the organization stems from their psychological contract. The degree of satisfaction of members' psychological contract can strengthen their affective commitment^[11]. Turnley et al. (1999) suggested that when the psychological contract of the members of the organization is effectively maintained and the members feel that their expectations are satisfied, members will strengthen their commitment to the organization, etc.^[12]. Wei Jiangru et al. (2011) pointed out through empirical study that scientific management can improve the psychological contract of employees, and then affect the level of employee commitment^[13]. Xu Xixiong et al (2011) studied the relationship between psychological empowerment, support and commitment from the point of view of psychological contract, and demonstrated the application of psychological contract and commitment theory in practice through practical cases. It is proved that the reasonable construction of psychological contract has a positive effect on commitment^[14].(2). Psychological contract breach and affective commitment, Bunderson et al. (1993) pointed out that psychological contract breach will reduce the degree of commitment of members^[15]. Qi Lin et al. (2012) pointed out that if members feel that the expected commitment has not been fulfilled, they will reduce their affective commitment to the enterprise, which will lead to a reduction in the level of work of their members and even the departure of members^[16].(3). The differences between psychological contract and affective commitment, and the differences between Chinese and western countries. Ling Wenshuan et al. (2000) pointed out that the unwritten relationship between employees and organizations is the common feature of psychological contract and affective commitment. The difference between the two is that the psychological contract is the implicit expectation between the employees and the organization, while the affective commitment is the willingness of the employee to contribute to the organization because of factors other than the economic contract^[17]. Yu Shan et al. (2008) tested the difference between Chinese and western employees' feelings that psychological contract breach is the influence on affective commitment and work behavior by empirical study. The influence of different dimensions of psychological contract on Chinese and western employees is different^[18].

H2-1:Transaction contract of technicians have a positive impact on affective commitment

H2-2:Relationship contract of technicians have a positive impact on affective commitment

H2-3:Development contract of technicians have a positive impact on affective commitment

2.3 The influence of affective commitment on knowledge sharing

The research shows that affective commitment is binding on the members of the organization, and the level of affective commitment will affect the behavior of individuals (Meyer,2002)^[19]. Low level of affective commitment may cause employees to deliberately make certain adverse behaviors^[20]; high level of affective commitment has a positive role in promoting employee innovation, organizational citizenship behavior and so on^[21].According to the social exchange theory, they are willing to transmit knowledge to repay the enterprise^[22]. When members agree with their own organization and have values consistent with the organization, they have a positive attitude towards the transmission of knowledge^[23]. Low affective commitment can even hinder the knowledge-sharing process of employees. Wang Duanxu et al. (2009) focused on the IT industry and discussed affective commitment and knowledge sharing get positive correlation between two dimensions^[24]. Jin Hui (2013) studied the relationship between affective commitment and attitude and willingness to share knowledge^[25].

H3-1:Affective commitment of technicians have a positive impact on explicit knowledge sharing

H3-2:Affective commitment of technicians have a positive impact on tacit knowledge sharing

2.4 The intermediary role of affective commitment

This paper attempts to introduce the medium variable affective commitment to open the "black box" between psychological contract and knowledge sharing of technicians. Turnley (2003) pointed out that the employee's psychological contract contains the employee's expectation to the organization, the organization provides employees with a good environment to meet their expectation, will cause the employee to produce the high level emotion commitment, strengthens the employee's organizational citizenship behavior and knowledge sharing is also an important part of organizational citizenship behavior^[26]. Zhang Aiwu (2006) constructed a psychological contract and knowledge sharing research model, and through the questionnaire analysis and other empirical research methods, briefly discussed the relationship between psychological contract, affective commitment, knowledge sharing^[27]. We infer that the level of affective commitment of technicians leads to differences in the attitude of employees to work.

H4-1:The affective commitment of technicians plays an intermediary role in the relationship between transaction contract and explicit knowledge sharing

H4-2:The affective commitment of technicians plays an intermediary role in the relationship between relationship contract and explicit knowledge sharing

H4-3:The affective commitment of technicians plays an intermediary role in the relationship between development contract and explicit knowledge sharing

H4-4: The affective commitment of technicians plays an intermediary role in the relationship between transaction contract and tacit knowledge sharing

H4-5: The affective commitment of technicians plays an intermediary role in the relationship between relationship contract and tacit knowledge sharing

H4-6: The affective commitment of technicians plays an intermediary role in the relationship between development contract and tacit knowledge sharing

3 Research technique

3.1 Measurement of variables

A total of 183 questionnaires were recovered, 157 valid questionnaire data were obtained, and the effective recovery rate was about 86%. Correlation coefficients of main research variables show the results of these correlations are consistent with our theoretical expectations.

The measurement of psychological contract in this paper refers to the scale developed by Rousseau in 2000^[28]. Psychological contract is divided into three parts in this paper: transaction contract, relation contract and development contract for 17 issues. In the study of Allen & Meyer (1993) for the measurement of affective commitment^[29], Combining with the contents of the research, finally 6 questions. Knowledge sharing is divided into two parts: tacit knowledge sharing(5 questions) and explicit knowledge sharing(4 questions) respectively(Bock,2005)^[30].

3.2 Regression Analysis and Mediation Test

After using AMOS software for data processing, which indicated that there are high consistency and stability and good convergence validity and construction reliability among variables.

(1) Regression analysis on psychological contract to knowledge sharing among technicians

(a) Regression analysis on psychological contract to explicit knowledge sharing

The multiple linear regression analysis was performed with the substitution equation. Table 1 shows the multivariate correlation coefficient between the three explanatory variables and explicit knowledge sharing is 0.774, the determining coefficient R^2 is 0.599, the adjusted R^2 is 0.591, and the error of standard estimation is 0.53365, which means three explanatory variables can explain the 59.1% variation of explicit knowledge sharing. The F value is 76.030, and the significance level is 0.000, which has passed the significance test. The relationship contract ($\beta=0.365$, $p=0.002<0.05$), shows the H1-2 is accepted. Development contract ($\beta=0.379$, $p=0.001$), the H1-3 is accepted. The transaction contract ($\beta=0.029$, $p=0.778>0.5$), p value failed to pass the significance test, H1-1 is rejected.

Table 1. Psychological contract, explicit knowledge sharing regression analysis.

model	R	R ²	adjusted R ²	Standard estimate error	F	Sig.
1	.774a	.599	.591	.53365	76.030	.000b
predictive variable: (constant), transaction contract, relationship contract, development contract						
model	Non-standardized coefficient			t	Sig.	
	β	standard error				
(constant)	.300	.135		2.220	.028	
transaction contract	.029	.104		.282	.778	
relationship contract	.365	.114		3.202	.002	
development contract	.379	.115		3.292	.001	
Dependent variables: explicit knowledge sharing						

Table 2. Psychological contract of technicians and affective commitment regression analysis.

model	R	R ²	adjusted R ²	Standard estimate error	F	Sig.
1	.863a	.745	.740	.43278	148.762	.000b
predictive variable: (constant), transaction contract, relationship contract, development contract						
model	Non-standardized coefficient			t	Sig.	
	β	standard error				
(constant)	.250	.110		2.279	.024	
transaction contract	.159	.084		1.853	.062	
relationship contract	.392	.092		4.696	.000	
development contract	.475	.093		5.083	.000	
Dependent variable: emotional commitment						

(b) Regression analysis on psychological contract to tacit knowledge sharing

Similarly, the multivariate correlation coefficient between the three explanatory variables and tacit knowledge sharing is 0.779, the determining coefficient R^2 is 0.606, the adjusted R^2 is 0.598, and the error of the standard estimate is 0.49568, which indicates that three explanatory variables can explain the 59.8% variation of tacit knowledge sharing. The F value of the equation is 78.481 and the significance level is 0.000, which has passed the significance test. Among them, the transaction contract ($\beta=-0.237$, $p=0.027<0.5$) shows that the H1-4 is rejected. The development contract ($\beta=0.391$, $p=0.000<0.001$) shows that the development contract can significantly affect tacit knowledge sharing, and the H1-6 is verified. The relationship contract ($\beta=0.108$, $p=0.266>0.5$), the p value failed to pass the significance test, H1-5 has not been validated.

(2) Regression analysis of psychological contract of technicians to affective commitment

Table 2 shows the multivariate correlation coefficient between the three explanatory variables and affective commitment is 0.863, the determining coefficient R^2 is 0.745, the adjusted R^2 is 0.740, and the standard estimate error is 0.43278, assuming that three explanatory variables can explain 74.0% of the variation of affective commitment. The F value was 148.762, and the significance level was 0.000, which had passed the significance test. Among them, the transaction contract ($\beta=0.159$, $p=0.062>0.05$) shows that the H2-1 is rejected. The relationship contract ($\beta=0.392$, $p=0.000$

<0.01) shows assuming H2-2 is verified. The development contract ($\beta=0.475$, $p=0.000<0.01$), the p value failed to pass the significance test, indicating that H2-3 is verified.

(3) Regression analysis of affective of technicians commitment to knowledge sharing

(a) Regression analysis of affective commitment of technicians to explicit knowledge sharing

Table 3 shows that the univariate correlation coefficient between explanatory variables and explicit knowledge sharing is 0.703, the determining coefficient

R² is 0.494, the adjusted R² is 0.491, and the error of standard estimation is 0.59520, assuming that explanatory variables can explain 49.1% variation of explicit knowledge sharing. The F value is 151.354 and the significance level is 0.000. It can be concluded that the change of affective commitment as independent variable entering the regression equation reflects the linear change of dependent variable explicit knowledge sharing. The commitment ($\beta=0.691, p=0.000<0.01$), H3-1 is valid.

(b)Regression analysis of affective commitment of technicians to tacit knowledge sharing

Similarly, the test results show the univariate correlation coefficient between the explanatory variable and tacit knowledge sharing is 0.683, the determining coefficient R² is 0.466, the adjusted R² is 0.463, and the error of standard estimation is 0.57324. It is indicated that the explanatory variable can explain 46.3% variation of tacit knowledge sharing. The F value is 135.438, and the significant level is 0.000. The affective commitment ($\beta=0.630, p=0.000<0.01$), H3-2 is accepted.

Table 3.Affective commitment of technicians and explicit knowledge sharing regression analysis.

model	R	R ²	adjusted R ²	Standard estimate error	F	Sig.
1	.703a	.494	.491	59520	151.354	.000b
Predictive variables: (constant), emotional commitment						
model	Non-standardized coefficient			t	Sig.	
	β	standard error				
(constant)		.438	.143	3.057	.003	
affective commitment		.691	.056	12.303	.000	
Dependent variables: explicit knowledge sharing						

Table 4.Regression analysis of the mediating effect of affective commitment between psychological contract and explicit knowledge sharing of technicians.

model	R	R ²	adjusted R ²	Standard estimate error	F	Sig.
1	.793a	0.625	0.619	0.52906	58.935	.000b
Predictive variables: (constant), transaction contract, relationship contract, development contract, affective commitment						
model	Non-standardized coefficient			t	Sig.	
	β	standard error				
(constant)		0.253	0.136	1.855	0.066	
transaction contract		-0.036	0.108	-0.329	0.743	
relationship contract		0.347	0.113	3.066	0.003	
development contract		0.289	0.123	2.343	0.02	
affective commitment		0.199	0.099	2.016	0.047	
Dependent variable: explicit knowledge sharing						

(4) The test of the intermediary function of affective commitment

(a) Affective commitment on psychological contract and explicit knowledge sharing of technicians

Table 4 shows that affective commitment coefficient ($\beta=0.199$), significant level (Sig.=0.047) is less than 0.05. Because the relationship between transaction contract and explicit knowledge sharing is not significant in the previous analysis (Sig.=0.778>0.05), H4-1 is rejected. Coefficient of relation contract ($\beta=0.347$), and reached the level of significance (Sig.=0.003). Therefore, affective commitment has partial intermediary utility between relationship contract of technicians and explicit knowledge sharing, and the H4-2 is accepted. The coefficient of the development contract ($\beta=0.289$) and the significance level (Sig. = 0.02), the H4-3 is accepted.

(b)Affective commitment on psychological contract and tacit knowledge sharing of technicians

Similarly, the results show that the coefficient of affective commitment ($\beta=0.201$), and the level of significance (Sig.=0.043<0.05). Because the effect of transaction contract on tacit knowledge sharing is significant, but transaction contract on affective commitment is not, it is necessary to carry out Sobel test and the significance of the test result is 0.154, more than 0.1, H4-4 is rejected. Since the relationship contract has no significant influence on tacit knowledge sharing in the previous analysis (Sig.=0.226>0.05), H4-5 is rejected. The coefficient of development contract ($\beta=0.361$), and reached the level of significance (Sig.=0.002), H4-6 is accepted.

4 Conclusions and suggestions

The main findings are as follows: (1) the relationship contract and development contract in the psychological contract of technical staff of an Enterprise can positively affect explicit knowledge sharing, but there is no significant influence between transaction contract and explicit knowledge sharing; (2)the development contract of technical personnel psychological contract has a significant positive predictive effect on tacit knowledge sharing, but the transaction contract can negatively predict tacit knowledge sharing, and there is no significant influence between relational contract and tacit knowledge sharing; (3) affective commitment plays an intermediary role in the relationship between technical personnel contract and explicit knowledge sharing, between development contract and explicit knowledge sharing, and between development contract and tacit knowledge sharing.

Therefore, in order to better promote the effect of knowledge sharing among technicians in cluster enterprises, and finally to improve the competitive advantage of industrial clusters. Firstly we should pay close attention to the psychological contract construction of enterprise technicians; Secondly, give the technicians enough affective commitment. Facing the fierce competition, complex and changeable realistic factors, enterprise managers should let the technicians realize their importance to the enterprise and enhance their sense of belonging; Lastly, set up the social network relation resources for the growth and development of the industrial cluster, improve the embedding of the cluster network, enlarge the network scale of the industrial cluster.

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