

A Study on the Relationship among Social Embeddedness, Tacit Knowledge Acquisition, and Job Performance

社會內嵌性、內隱知識取得與工作績效間關係之研究

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摘要

本研究從社會內嵌性 (social embeddedness) 的角度來探討個人在工作群組內，社會資本與內隱知識取得行為間的關係。為了避免自我陳述 (self-reporting) 的資料蒐集方式所產生的偏誤，我們採取「多線民」式 (multi-informants) 的問卷設計。針對 183 份回收問卷資料所做的分析結果發現，當不考慮關係內嵌性 (relational embeddedness) 時，個人的結構內嵌性 (structural embeddedness) 不必然會對其在工作群組中取得內隱知識有所幫助。因此，對於那些在群組中擁有較高情感式信任 (affect-based trust) 及共享價值 (shared values) 的員工而言，其社會互動 (social interaction) 與內隱知識取得間的關係較為強烈 (相對於情感式信任與共享價值較低的那群人而言)。此外，內隱知識取得與工作績效間的正向關係，亦受到統計上的支持。本研究的結果，除了有助於知識分享研究的累積之外，更有助於知識管理實務的落實。

關鍵詞：工作績效、內隱知識、多線民設計、社會資本

Abstract

This study investigated how an individual can acquire tacit knowledge from his partners in a workgroup by virtue of his social capital from the perspective of structural embeddedness and relational embeddedness. We adopt a multi-informants questionnaire design in order to avoid the bias resulted from self-reporting. Based on data collected from 183 respondents, the results indicate that structural embeddedness aspect of social capital does not necessarily lead to tacit knowledge acquisition unless the moderating effect of relational embeddedness aspect of social capital is taken into account. The relationship between social interaction and tacit knowledge acquisition is stronger among individuals having higher affect-based trust and shared values than among individuals having lower affect-based trust and shared values. Besides, positive relationship between tacit knowledge acquisition and job performance is also identified. Several managerial implications and research limitations are also proposed.

Keywords: Job Performance, Multi-Informants Design, Social Capital, Tacit Knowledge.

1. Introduction

While exchange of tacit knowledge is a problem in organizations, several researchers have pointed out that it can only be accomplished efficiently through interpersonal interaction and mentoring (e.g. Nonaka, 1994; Osterloh & Frey, 2000). Several studies also suggested that knowledge sharing is highly related to an individual's social network and can be analyzed from the social exchange perspective (e.g. Bock et al., 2005; Wasko & Faraj, 2005). Especially in a workgroup, tacit knowledge exchange is a critical success factor because an individual team member usually does not possess all necessary skills and capabilities for project completion.

Recently, social capital related issues have been paid much attention by several researchers (e.g. Bolino et al., 2002; Kostova & Roth, 2003; Nahapiet & Ghoshal, 1998). An individual can secure benefits by regarding social capital as a valuable asset embedded in the social network within which he is located. This study attempts to examine the relationship among an individual's social capital, tacit knowledge acquisition, and job performance within a workgroup from the perspective of distinction between structural embeddedness and relational embeddedness proposed by Granovetter (1992). In order to avoid the bias resulted from self-reporting, we adopt a multi-informants questionnaire approach in which an individual's social capital is reported by both focal respondent and other members in the same workgroup.

2. Conceptual Background

2.1 Tacit Knowledge

Nonaka (1994) categorized human knowledge into two types: explicit and tacit. The most important difference between tacit knowledge and explicit knowledge is transferability (Alavi, 2000). Explicit knowledge can be easily articulated in

certain codified forms and shared through information technology, such as manual or computer files. Tacit knowledge, on the other hand, is deeply rooted in action, experience, thought, and involvement in a particular context (Alavi & Leidner, 2001), and thus is difficult to be converted into explicit form in order to be easily transferred (Berman et al., 2002). Koskinen et al. (2003) consider that tacit knowledge is embedded in human mind to the extent that the knowers are not fully aware of the knowledge they possesses. Nevertheless, the tacit knowledge determines the behavior of the knower. Examples of tacit knowledge include the knowledge of an expert baseball player, the ability to ride a bicycle, and skills to debug computer programs.

We may consider tacit knowledge as the concepts of skill (Berman et al., 2002) or practical know-how (Koskinen et al., 2003). Thus, individuals usually are reluctant to share their tacit knowledge with others due to potential risk of losing advantage and lack of proper reward mechanism (Osterloh & Frey, 2000). Accordingly, Osterloh and Frey (2000) argue that tacit knowledge transfer can be only facilitated by intrinsic motivation, such as sociability and friendship. Nonaka (1994) also suggests that tacit knowledge is of personal quality and can be transferred through sharing metaphors or experiences during social interaction without substantial knowledge loss. That is to say, the efficiency of tacit knowledge exchange is highly dependent on social networks within which actors are located (Käser & Miles, 2002).

2.2 Social Capital and Embeddedness

Adler and Kwon (2002) suggest that social capital is a valuable asset with which to secure benefits for social actors, including individuals, communities, and organizations. Nahapiet and Ghoshal (1998) consider that social capital is essential for the dissemination of knowledge within organizations. Bolino et al. (2002) also suggest that social capital is an important resource for individuals working together.

Although social capital is jointly owned by all involved actors, one can also benefit from the personal goodwill resulting from good relationships with others (Adler & Kwon, 2002). In this study, we argue that one's social capital is helpful in his tacit knowledge acquisition within a workgroup.

Traditionally, researchers investigated social capital from the structural or the relational perspectives (Kostova & Roth, 2003). From the structural view, social capital can provide value by virtue of the configuration of social network within which actors are located. However, the network structure itself can only offer opportunities to leverage the social capital (Adler & Kwon, 2002). On the other hand, the relational perspective of social capital considers the quality of the relationship among social actors, such as trust and shared vision (Tsai & Ghoshal, 1998). The quality of relationship provides the motivational sources of social capital (Adler & Kwon, 2002). That is, an individual is willing to help others with a commitment to the shared good because of the friendly relationship.

Besides, Granovetter (1992) also proposed the distinction between the structural embeddedness aspect and relational embeddedness aspect of social capital. Structural embeddedness describes the impersonal configuration of the social network, while relational embeddedness describes the personal nature of relationships among social actors. Besides, Nahapiet and Ghoshal (1998) propose that structural, relational, and cognitive aspects are three dimensions of social capital. In their discussion, Nahapiet and Ghoshal consider the first two dimensions of social capital are similar to structural embeddedness and relational embeddedness respectively, and introduce the third dimension – cognitive social capital – which has generally received less attention in the mainstream literature on social capital. However, the relational and cognitive dimensions both describe the personal qualities of interpersonal relationship (Bolino, et al., 2002). Thus, we argue that

the cognitive cluster is also a kind of relational embeddedness aspect of social capital. In the following, structural social capital is classified into structural embeddedness while relational social capital and cognitive social capital are classified into relational embeddedness.

Structural Embeddedness. Nahapiet and Ghoshal (1998) conceptualize the structural social capital as the overall pattern of relationships among social actors. The structural social capital can also be considered as the extent to which actors in a social network are connected (Bolino et al., 2002). Tsai and Ghoshal (1998) suggest that social interaction that bears some resemblance to network ties is the major manifestation of structural social capital. People can easily obtain information and assess specific resources by virtue of their personal contacts.

Relational embeddedness. Relational embeddedness includes relational social capital and cognitive social capital. Relational social capital can be defined as the assets created and leveraged through ongoing relationship, such as respect and friendship, that influence the participants' behavior (Nahapiet & Ghoshal, 1998). It describes the affective quality of interpersonal relationship (Bolino et al., 2002) and can be manifested by trust, norms, obligations, and identification (Nahapiet & Ghoshal, 1998). Cognitive social capital is conceptualized as common understanding among social actors through shared language and narratives (Nahapiet & Ghoshal, 1998). It describes the cognitive quality of interpersonal relationship (Bolino et al., 2002) and is embodied in attributes, such as shared vision or shared values, that facilitate individual and collective actions and common understanding for proper actions and collective goals (Tsai & Ghoshal, 1998). With higher cognitive social capital, common perception and interpretation toward events is more likely to develop (Boland & Tenkasi, 1995).

3. Research Model and Hypotheses

Based on previous conceptual background, this study proposes a research model in order to investigate the relationship among social embeddedness, tacit knowledge acquisition, and job performance within a workgroup (as shown in Figure 1). In the following, three research hypotheses derived from research model are proposed.

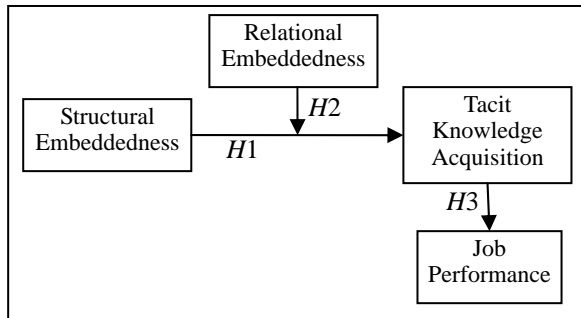


Figure 1. Research Model

Social Embeddedness and Tacit Knowledge Acquisition. First, we deal with the relationship between structural embeddedness, manifesting as social interaction, and tacit knowledge acquisition. While explicit knowledge sharing can be facilitated by information technology, tacit knowledge sharing is subject to social interaction (Käser and Miles 2002; Nonaka 1994). That is to say, tacit knowledge sharing among organizational members is socially driven. Frequent social interaction can offer social actors opportunities to share know-how and experiences. Choi and Lee (2003) also suggest that an individual can acquire tacit knowledge and personal experience only through tacit-oriented manner that emphasizes social interaction. Accordingly, we propose the following hypothesis:

H1: An individual's Structural embeddedness aspect of social capital positively affects his tacit knowledge acquisition within workgroup.

Next, the moderating role of relational embeddedness, manifesting as affect-based trust and shared values, is emphasized. Affect-based trust reflects the emotional ties

linking individuals, such as friendship, love, or care (McAllister, 1995). Shared values can be defined as “the extent to which partners have beliefs in common about what behaviors, goals, and policies are important or unimportant, appropriate or inappropriate, and right or wrong” (Morgan & Hunt, 1994, p. 25). As the trustor begins to trust the trustees, he will be quite confident that the trustees will not sacrifice his interests and become more likely to help them (McAllister, 1995). It is reasonable to argue that an individual is more willing to share tacit knowledge with somebody who is trustworthy in his social network. In other words, as an individual is considered trustworthy in the social network to which he belongs, he can more easily acquire tacit knowledge from his friends through personal mentoring. Besides, Becerra-Fernandez and Sabherwal (2001) suggest that tacit knowledge also can be easily shared through the establishment of shared understanding between individuals. Miranda and Saunders (2003) consider that information sharing is a process of social construction of meaning, which implies that the meaning emerges from interactive and collective interpretation among social actors. When social actors have similar values about how things should be done collectively, they can more easily exchange tacit knowledge without misunderstanding. Accordingly, with higher levels of shared values, one can easily acquire tacit knowledge from others in the social network to which he belongs. We propose the following hypothesis:

H2: An individual's relational embeddedness aspect of social capital positively moderates the relationship between structural embeddedness and tacit knowledge acquisition.

Tacit Knowledge Acquisition and Job Performance. Tacit knowledge is usually regarded as the most critical resources for an individual's capability formation and task completion (Berman et al., 2002). In a workgroup, an individual team member usually does not possess all necessary skills

for task completion and need to acquire knowledge from various sources, such as technical documents or other team members. Much knowledge for nowadays teamwork is highly tacit in nature and can only be acquired and shared through interpersonal interaction. An individual may improve his skills and capabilities through acquiring know-how and experience from other team members. For examples, an individual's capabilities of programming will be improved when he can easily acquire various debugging skills from other members in the software project team. According, an individual will perform better in his works when he can easily acquire tacit knowledge from colleagues in the same workgroup. Gibson et al. (2000) also suggested that skill and know-how are critical for an employee's job performance. The following hypothesis is then proposed:

H3: An individual's tacit knowledge acquisition positively affects his job performance.

4. Research Method

4.1 Respondents

A sample of 183 employees, including personnel from MIS departments, R& D departments, and various project teams, reported on social relationships with peers, tacit knowledge acquisition, and job performance. People whose works are highly knowledge intensive and need certain degree of interpersonal interaction for task completion were invited to participate in this study.

4.2 Research Design

As an individual's social capital is embedded in interpersonal relationships, we employed a multi-informants questionnaire design in which a respondent's social capital is reported by other members in the same workgroup. Besides, each respondent's job performance also reported by others in order to avoid the bias resulted from self-reporting. To reduce respondents' tasks to a more manageable size, three members in a

workgroup are invited. Each respondent is asked to rate each dimension of social capital and job performance for each other two members in the same workgroup. For example, R_1 , R_2 , and R_3 are three respondents in a workgroup. R_1 is asked to evaluate the social embeddedness and job performance of R_2 and R_3 , while his social embeddedness and job performance are evaluated by R_2 and R_3 . The construct of tacit knowledge acquisition is measured in self-rated way by each respondent.

4.3 Measures

Our constructs were measured using multiple-item scales, drawn from pre-validated measures in previous related studies. All measurement items were evaluated on seven-point Likert scales ranging from strongly disagree (1) to strongly agree (7). In order to strengthen the validity of the translation from English to Chinese, this study has the following three steps. First, all the items are translated into Chinese with modification by researchers. Second, two graduate students – SA and SB – from department of English in a University from southern Taiwan were invited to measurement modification procedure. SA was first asked to translate the Chinese items into English. In order to check the semantic differences, the back-translated English version was compared to original English version by SB. The wordings of Chinese items in this study are then modified according to the significant semantic differences. Third, a pretest with several respondents who have real world work experiences was conducted to ensure the wordings were understandable.

5. Analyses and Results

One hundred and eighty-three respondents from 48 organizations agreed to participate in this study. These respondents were from 61 groups that ranged in size from 3 to 12 people, with average team size of 5.31 (SD = 2.16). About 68% of the respondents were male and 71 % were 26 to 34 years old. With regard to tenure, the

respondents' work experiences ranged from 8 month to 180 months with average of 34.79 months (SD = 30.68).

5.1 Reliability and Validity

In order to assess the underlying factor structures of the 18 measurement items, exploratory factor analysis (EFA) was performed. We eliminated one items of shared values because of low factor loadings and cross-loading. As shown in Table 1, the EFA (principal axis factoring method with varimax rotation) resulted in a five-factor solution with the items loading clearly on their respective constructs, suggesting acceptable convergent validity.

Table 1. Exploratory Factor Analysis

Items	Factors				
	SI	AT	SV	TKA	JP
SI1	0.975				
SI2	0.967				
SI3	0.945				
AT1		0.843			
AT2		0.903			
AT3		0.818			
AT4		0.827			
AT5		0.883			
SV2			0.912		
SV3			0.927		
SV4			0.829		
TKA1				0.758	
TKA2				0.899	
TKA3				0.869	
TKA4				0.874	
JP1					0.902
JP2					0.902
Eigenvalues	2.466	5.966	1.711	3.841	1.376
Variance	13.699	33.147	9.504	21.341	7.645
Explained (%)					

Note. SI = Social Interaction; AT = Affect-based Trust; SV = Shared Values; TKA = Tacit Knowledge Acquisition; JP = Job Performance.

The Cronbach's alphas for variables are shown in the diagonal of Table 2 and all are greater than 0.9, with acceptable construct reliability. In order to assess discriminant validity among the constructs, we compared the correlations between any pair of scales with the coefficient alphas of both the scales. As shown in Table 2, all coefficient alphas are greater than the interconstruct correlations, thus discriminant validity is supported (Gaski, 1986).

Table 2. Cronbach's Alphas and Correlations

Variables	1	2	3	4	5
1. SI	(0.988)				
2. AT	-0.268 **	(0.950)			
3. SV	-0.075	0.390 **	(0.936)		
4. TKA	0.066	0.289 **	0.125	(0.925)	
5. JP	0.279 **	0.031	0.049	0.320 **	(0.934)

Note. Coefficient Alphas are in parentheses on the diagonal. SI = Social Interaction; AT = Affect-based Trust; SV = Shared Values; TKA = Tacit Knowledge Acquisition; JP = Job Performance.

**Correlation is significant at the .01 level (two-tailed).

5.2 Hypotheses Testing

Main effects. In order to test main effects in our research model, linear regression analyses with 183 responses were performed. As shown in Table 3, hypotheses 1 cannot gain supports. It indicates that an individual's structural embeddedness aspect of social capital not necessarily facilitate his tacit knowledge acquisition, thus implies the importance of situational factors. Besides, results support hypotheses 3 (as shown in Table 4). As an individual can more easily acquire know-how and experiences from coworkers in the same workgroup, he will perform better in his works.

Table 3. Regression Analysis for Hypothesis 1

Model	Standardized Coefficients	t-values	p values
Intercept		20.289	0.000
Social Interaction	0.066	0.897	0.371
$R^2 = 0.004$; adj- $R^2 = -0.001$; $F(1, 181) = 0.804$; $p = 0.371$			
Dependent Variable = Tacit Knowledge Acquisition			

Table 4. Regression Analysis for Hypothesis 3

Model	Standardized Coefficients	t-values	p values
Intercept		3.740	0.000
Tacit Knowledge Acquisition	0.320	4.551	0.000
$R^2 = 0.103$; adj- $R^2 = 0.098$; $F(1, 181) = 20.716$; $p = 0.000$			
Dependent Variable = Job Performance			

Moderating Effects. We employed moderated regression analysis (MRA) to identify the moderating effects without information loss resulting from the artificial transformation of a continuous variable into a qualitative one in the subgroup analyses (Szymanski et al., 1995). This method would be used to determine which of the following models is most appropriate: (a) Model 1: Y

= $b_0 + b_1X + b_2Z + b_3XZ$ and (b) Model 2: $Y = b_0 + b_1X + b_2Z$. Y is the dependent variable, X is the independent variable, and Z is the moderator variable. In order to identify the best-fit and most parsimonious model, we examined the change in R squared from Model 1 to Model 2. If the difference is statistically significant, then (1) the interaction model (Model 1) is the best fitting model, and (2) post-hoc examination of the interaction effects is appropriate. A best fitting interaction model implies the moderating effect of variable Z.

In Table 5 and Table 6 we present the results of the moderating effects of relational embeddedness. With Tacit Knowledge Acquisition as the dependent variable, Social Interaction as the independent variable, and Affect-based Trust as the moderator, we found significant change in R squared between Model 1 and Model 2 (as shown in Table 5). Result indicates that Affect-based Trust positively moderates the relationship between Social Interaction and Tacit Knowledge Acquisition. Thus, hypothesis 2a is supported.

Table 5. Moderating Effect of Affect-based Trust

Models	Standardized Coefficients	R ²	ΔR ²	ΔF for ΔR ²
Model 1:		0.145	–	–
SI	-0.458*			
AT	-0.278			
SI×AT	0.765**			
Model 2:		0.106	0.039	8.263
SI	0.155*			
AT	0.330***			

Dependent Variable = Tacit Knowledge Acquisition.

Note 1. SI = Social Interaction; AT = Affect-based Trust.

Note 2. *p<0.05; **p<0.01; ***p<0.001.

With Tacit Knowledge Acquisition as the dependent variable, Social Interaction as the independent variable, and Shared Values as the moderator, we found significant change in R squared between Model 1 and Model 2 (as shown in Table 6). Result indicates that Shared Values positively moderates the relationship between Social Interaction and Tacit Knowledge Acquisition and offer support for hypothesis 2b. The coefficient of Shared Values in Model 2 is

not significant, which indicates that Shared Values is a pure moderator.

Table 6. Moderating Effect of Shared Values

Models	Standardized Coefficients	R ²	ΔR ²	ΔF for ΔR ²
Model 1:		0.063	–	–
SI	-0.613*			
SV	-0.468*			
SI×SV	0.902**			
Model 2:		0.021	0.042	8.012
SI	0.076			
SV	0.131			

Dependent Variable = Tacit Knowledge Acquisition.

Note 1. SI = Social Interaction; SV = Shared Values.

Note 2. *p<0.05; **p<0.01; ***p<0.001.

6. Discussions and Implication

Overall, our findings indicate that structural embeddedness and relational embeddedness proposed by Granovetter (1992) have different effects on an individual's tacit knowledge acquisition in his workgroup. As argued by Adler and Kwon (2002), structural embeddedness can only offer opportunities to leverage the social capital, while relational embeddedness provides the motivational sources of social capital. This study shows that an individual's frequent social interaction with coworkers not necessarily facilitate his tacit knowledge acquisition without consideration of social relationship quality by examining the moderating effects of affect-based trust and shared values. The relationship between structural embeddedness and tacit knowledge acquisition is stronger among individuals having higher relational embeddedness than among individuals having lower relational embeddedness. Besides, the relationship between tacit knowledge acquisition and job performance is also supported by our analyses. This result is consistent with previous studies that suggest tacit knowledge can be regarded as the most important source of an individual's skills and capabilities that are helpful for task completion and performance (e.g. Berman et al., 2002; Conner & Prahalad, 1996; Käser & Miles, 2002).

There are two important managerial implications of our findings. First, it is most important for group leaders or managers to encourage tacit knowledge exchange among group members. Knowledge exchange is the most important way to increase values of knowledge utilization (Alavi, 2000), which will enhance group competitiveness (Berman et al. 2002). Especially in an innovative project team, tacit knowledge exchange is critical for project success because individual team members usually do not possess all necessary skills and capabilities. Besides, an individual can also increase his capability by acquiring tacit knowledge from colleagues in the same workgroup and then improving his job performance. Second, intensive social networking does not ensure tacit knowledge exchange among members in a project team without quality interpersonal relationships. For managers, it is important to cultivate common values and trusting relationships among team members in order to enhance the quality of social capital, thus facilitating tacit knowledge exchange that leads to project success. For example, a manager can send signals (verbal and non-verbal) that interpersonal relationships are valuable assets to the organization and encourage social interaction among employees.

7. Conclusions and Limitations

This study demonstrates the relationship among an individual's social capital, tacit knowledge acquisition, and job performance within a workgroup by employing a multi-informants design. Instead of self reporting, each respondent's social capital in our study was reported by both other members in the same workgroup. As a result, our research design ensures that the data for social capital is relevant and reliable. In addition to the methodological advantage, this study also strongly supports that an individual's social capital is a valuable resource by which he can easily secure tacit knowledge, thus leading to higher job performance. Beyond these

results, we are interested in how social capital is derived and accumulated within an organization. This question suggests that future research may attempt to identify factors such as organizational attributes and/or individual characteristics in order to enhance our understanding of the derivation and accumulation of social capital. Besides, future research may extend our study to group or organizational level in order to investigate the effects of collective social capital on knowledge exchange in organizational settings.

There are nevertheless several limitations in this study. First, three members were selected as respondents for each group in order to reduce respondents' tasks to a more manageable size. Each respondent is asked to rate actual social capital and job performance for each other two members in the same workgroup. However, this research design may be questionable for a work group with large number of members. When a respondent comes from a large workgroup, his social capital and job performance cannot be reported properly from only two colleagues. Future studies may be conducted with better research design to solve this problem. Second, the measures of structural embeddedness and relational embeddedness were first employed in our studies. Other broader conceptualizations and possible measures of social capital should be proposed and examined, and an overall stronger measurement system would be helpful in enhancing our understanding of social capital related research questions.

Third, as this study employed a cross-sectional design, all the hypothetical causal relationships can only be inferred rather than proven. Future studies may avoid this shortcoming by conducting a longitudinal design. Furthermore, a study with longitudinal design can also enhance our understanding about the dynamics of tacit knowledge sharing among employees. Finally, the cultural factors should be taken into account in interpretation of the results because this study was conducted in Taiwan.

People's attitudes and tendency to share knowledge in Eastern corporations may be quite different from those in Western corporations. Thus, the findings should not be interpreted as necessarily applicable to work groups in distinctly different national cultures. Later studies should be conducted by replicate or extend this study to other cultural groups in order to comprehend the effects of cultural factors on tacit knowledge exchange among employees.

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