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The Acquisition of Tacit Knowledge in China: An Empirical Analysis of the ‘Supplier-side Individual Level’ and ‘Recipient-side’ Factors

Abstract

- This study examines the impact of ‘supplier-side individual level’ factors pertaining to foreign expatriates, e.g., individual embeddedness and motivation, as well as a number of recipient-side variables, on tacit knowledge acquisition by Chinese firms through joint ventures.
- Results indicate that individual embeddedness of foreign expatriates, and recipient-side variables such as recipient’s collaborativeness, its readiness, and the comprehensiveness of its acquisition methods play critical roles in the successful acquisition of tacit knowledge.

Key Results

- Establishing individual embeddedness for foreign expatriates in the joint venture is vital for Chinese firms to acquire tacit knowledge from their foreign partners.

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Introduction

Research in both strategic management and international business indicates that knowledge is the basis of a firm's competitive advantage (Buckley/Casson 1976, Grant 1996, Kogut/Zander 1993). Tacit knowledge, in particular, is considered a crucial source for a firm's core competences (Kogut/Zander 1993, Teece 1982). Acquiring tacit knowledge regarding critical capabilities from partner firms via JVs is therefore an important means for a firm to establish its competitiveness. This is especially true for firms in emerging economies, as they are under increasing pressure to compete directly with technologically advanced rivals from developed countries, their ability to acquire critical knowledge from their foreign partners often determines their fate in the marketplace.

Despite the fact that the most widely cited motive for establishing alliances is the acquisition of new knowledge (Hamel 1991), previous research does not adequately address the following aspects: First, research on knowledge migration across firm boundaries primarily takes a supplier's perspective, and focuses on knowledge transfer (e.g., Martin/Salomon 2003, Simonin 1999, 2004) rather than on its acquisition from a recipient's point of view. Second, the small group of studies on knowledge acquisition only focus on JVs rather than local firms as the recipients of knowledge (e.g., Lyles/Salk 1996, Tsang et al. 2004). In reality, however, and especially in emerging economies, the ultimate knowledge receivers are the local firms, while JVs as temporary entities are used primarily as a platform for knowledge acquisition. Third, few previous studies empirically examine the acquisition of tacit knowledge, even though research on this important concept abounds (Nelson/Winter 1982, Polanyi 1966).

In this study, we attempt to address these limitations. We take the recipients', i.e., the local firms' perspective, and focus on their tacit knowledge acquisition through JVs in an emerging economy, China. We then empirically examine the impact of 'supplier-side individual level' factors, e.g., individual embeddedness and motivation of foreign expatriates, on tacit knowledge acquisition, because "*tacit knowledge is a distinctively personal concept*" (Nonaka 1994, p. 24), though most previous studies on knowledge transfer and acquisition tend to focus on "firm level" factors, including a recent one by Dhanaraj et al. (2004).

Our results indicate that the 'supplier-side individual level' factor, e.g., individual embeddedness of foreign expatriates in the joint venture, is a key determinant in the successful acquisition of tacit knowledge by local Chinese firms. Moreover, recipient-side variables, e.g., the recipient's collaborativeness, its readiness, and the comprehensiveness of its acquisition methods also play important roles in this endeavour.

In the next section, we discuss factors that affect knowledge migration across firm boundaries in general. Subsequent sections focus first on tacit knowledge and

our hypotheses related to its acquisition; then on relevant empirical analyses; and finally on implications and directions for future research.

Factors Influencing Knowledge Migration Across Firm Boundaries

Knowledge migration across firm boundaries, especially when it involves partners from different cultural backgrounds, is a complex process. The success or failure of knowledge transfer is likely to be driven by many factors, which can be broadly categorized into three groups: 'firm' factors, 'technology/knowledge' factors, and 'context' factors (Szulanski 1996).

'Firm' Factors

This refers to the characteristics of the firms involved in the knowledge transfer, i.e., the supplier, the recipient, and the joint venture. On the supplier side, a number of studies list partner protectiveness (Simonin 2004, Szulanski 1996), motivation (Szulanski 1996), control (Lyles et al. 2003), prior experience (Subramaniam/Venkatraman 2001), and source transfer capacity (Martin/Salomon 2003) as key factors influencing knowledge transfer.

On the recipient side, the importance of absorptive capacity (Cohen/Levinthal 1990, Lane et al. 2001), experience (Simonin 1999, Zander/Kogut 1995), learning intent (Beamish/Berdrow 2003, Hamel 1991), and rigidity of managerial belief (Inkpen/Crossan 1995) has been well established.

As for the joint ventures, research indicates that besides organizational distance (Simonin 1999), knowledge connection (Inkpen 2000), organizational structure (Inkpen 1997), and ownership type (Kogut 1988, Mowery et al. 1996), relationship features such as openness (Hamel 1991, Inkpen 2000), attachment between partners (Inkpen/Beamish 1997), empathy (Buckley et al. 2002), and relationship quality (Szulanski 1996) are also important, because they determine the level of trust and the amount of social capital among partner firms, which directly affect knowledge transfer and inter-organizational learning (Inkpen 1997, Inkpen/Tsang 2005).

'Knowledge/Technology' Factors

Research indicates that knowledge-specific variables, such as tacitness, complexity, specificity (Kogut/Zander 1993, Inkpen/Dinur 1998), and knowledge relatedness (Inkpen 2000, Lyles et al. 2003), are all important in securing the successful transfer of knowledge. These factors, particularly, tacitness and complexity of knowledge contribute significantly to the ambiguity raising barriers to imitation (Reed/DeFilippi 1990), and knowledge migration (Szulanski 1996).

'Context' Factors

This refers to the specifics of the context and includes cultural distance (Lyles/Salk 1996, Mowery et al. 1996), organizational context (Kogut/Zander 1993, Zander/Kogut 1995), and legal, political and technical differences between the two parties involved in the transfer of knowledge (Marcotte/Niosi 2000).

A small group of studies deals specifically with knowledge acquisition. The contributory factors they identify overlap substantially with those discussed above, e.g., partner protectiveness, absorptive capacity, and so on. An additional set of factors such as the transferor's commitment (Tsang et al. 2004), its articulated objective or goal clarity (Lyles/Salk 1996, Inkpen 2000), and local parent receptivity (Tsang et al. 2004) are also identified as important.

Despite its extensiveness, previous literature pays little attention to the acquisition of tacit knowledge by firms from emerging economies, and the impact of the 'supplier-side individual level' factors on this important endeavour. Due to the urgent need for firms from emerging economies to rapidly establish their competitiveness, and the personal, idiosyncratic nature of tacit knowledge, this is a non-trivial omission.

Tacit Knowledge Acquisition and the 'Supplier-side Individual Level' and 'Recipient-side' Factors

The paramount importance of tacit knowledge in establishing a firm's competitive strength makes it a key element in organizational learning (Inkpen 1998). Indeed, "*learning from partners occurs largely through the transfer of tacit knowledge*" (Glaister et al. 2003, p. 84), and "*frequently, the capabilities needed involve the acquisition of tacit knowledge*" (Makhija/Ganesh 1997, p. 509). Not surprisingly, in the context of JVs, learning undertaken by local firms in emerging economies concentrates on tacit knowledge, e.g., skills in management, marketing and so on (Lane et al. 2001).

Despite the importance of tacit knowledge, only a few studies examine this construct empirically, e.g., its impact on performance in NBA games (Berman et al. 2002), its role in a firm's capacity for developing new transnational products (Subramaniam/Venkatraman 2001), and the determinants of its transfer from parent firms to JVs (Dhanaraj et al. 2004). Yet none of these studies takes the recipient's perspective in examining the acquisition of tacit knowledge by local firms in emerging economies through JVs, and the impact of the supplier-side 'individual' level factors, in particular, those pertaining to foreign expatriates, in driving this effort.

We therefore investigate two sets of variables: 1) 'supplier-side individual level' factors, e.g., individual embeddedness and motivation of foreign expatriates; 2)

recipient-side factors, e.g., recipient collaborativeness, readiness and method comprehensiveness. The choice of factors is prompted by Inkpen (2000)'s work on knowledge acquisition by joint venture partners, in which knowledge accessibility and acquisition effectiveness are identified as the key determinants. Factors such as individual embeddedness, individual motivation, and recipient collaborativeness are directly related to knowledge accessibility, while method comprehensiveness and recipient readiness are related to acquisition effectiveness. These factors have also emerged during our discussions with industry experts and practitioners in this field.

'Supplier-side Individual Level' Factors

Our emphasis on the expatriate-related 'individual level' factors stems from the fact that tacit knowledge is highly personal, deeply rooted in an individual's involvement within a specific context, and its transfer may require numerous individual exchanges (Nonaka 1994). Hence, the greater the tacitness, the more likely that individuals will be the primary knowledge transfer agents (Inkpen/Dinur 1998). Although tacit knowledge is also embedded in organizational processes and routines (Inkpen/Dinur 1998, Makhija/Ganesh 1997), we decide to focus at first on individual learning since learning occurs through individuals (Inkpen/Crossan 1995), and it provides the foundation for understanding the organization learning process (Nonaka 1994).

Individual Embeddedness

The impact of 'firm level' embeddedness has been acknowledged by a recent study (Dhanaraj et al. 2004). Extending this view, we maintain that relational embeddedness at firm level alone may not be sufficient to facilitate the migration of tacit knowledge across firm boundaries, because 'firm level' embeddedness may not automatically result in the 'individual level' embeddedness essential in creating the personal "intimacy" needed for tacit knowledge migration. Therefore, we focus on embeddedness at the individual level.

Following Uzzi (1999), we define individual embeddedness as the degree to which expatriates from foreign parent firms are embedded in social relations in the joint venture. This factor is important for the following reasons. Firstly, as discussed above, much tacit knowledge is embedded in the psyche and intuition of individuals (Brown/Duguid 1991, Grant 1996). Success in transferring such knowledge largely depends on the 'intimacy' of the overall relationship between source and recipient (Marsden 1990), which is most likely to be attained when the expatriates are deeply embedded in the joint venture. Such 'intimacy' facilitates a more informal mode of

interaction and control, promoting the learning and migration of tacit knowledge (Inkpen/Crossan 1995, Makhija/Ganesh 1997).

Moreover, individual embeddedness may also help to forge positive personal relationship and facilitate the development of trust (Leana/Van Buren 1999). Considered a critical component of absorptive capacity (Lane et al. 2001), trust promotes knowledge acquisition and inter-organizational learning (Glaister et al. 2003, Inkpen/Tsang 2005), because it fosters norms of reciprocity (Nahapiet/Ghoshal 1998), escalates the commitment of parties to a cooperative relationship (Inkpen/Beamish 1997), and reduces partner protectiveness (Inkpen 2000). Therefore, we propose the following hypothesis:

Hypothesis 1. Individual embeddedness of expatriates in the joint venture is positively related to the acquisition of tacit knowledge by the recipient firm.

Individual Motivation

Individual motivation refers to intrinsic motivation which “*is valued for its sake and appears to be self-sustained*” (Calder/Staw 1975, p. 599). Research indicates that intrinsic motivation enables the generation and transfer of tacit knowledge where extrinsic motivation fails (Osterloh/Frey 2000). This factor is important because tacit knowledge is abstract, and can be communicated only through the active involvement of the ‘teacher’ (Dhanaraj et al. 2004). Therefore, transferring tacit knowledge demands a significant amount of teaching (Marcotte/Niosi 2000, Winter 1987), and real commitment from foreign partners (Berdrow/Lane 2002). Hence, expatriates have to be sufficiently motivated to carry out such a challenging task.

Secondly, since the ‘teacher’ and the ‘student’ come from countries with different cultural and language backgrounds, many problems and frustrations are likely to occur. Strong individual motivation on the expatriate side is certainly required to cope with these daunting obstacles, because intrinsic motivation helps to overcome the so-called multiple task problem (Gibbons 1998). Therefore, we propose the following hypothesis:

Hypothesis 2. Individual motivation of expatriates is positively related to the acquisition of tacit knowledge by the recipient firm.

We are working under the assumption that Chinese individuals involved in the JVs will automatically ‘transfer’ the tacit knowledge to their Chinese firms.¹ The validity of this assumption is confirmed by the representative firms we interviewed on the following grounds: first, the key objective of individuals assigned to joint ventures is to acquire knowledge, and they are obliged to transfer the knowledge back to the local firm once their tenures at joint ventures come to an end; second, they are also motivated to do so because their ability to ‘bring knowledge back home’ determines

whether they will be given the assignment, e.g., a highly lucrative one, again in the near future.

Besides these 'supplier-side individual level' factors, we also identify several recipient-side variables that have not yet sufficiently examined by previous studies.

'Recipient-side' Factors

Recipient Collaborativeness

Recipient collaborativeness refers to the recipient firm's willingness to establish a mutually beneficial and collaborative relationship, and reflects the recipient firm's genuine intention to create a win-win situation. Research indicates that partners' intent (collaborative versus competitive) is a key determinant of inter-organizational learning (Hamel 1991), because a competitive intent makes partners very reluctant to share knowledge due to the risk of spillover (Inkpen 2000), which in turn may shift the balance of bargaining power (Inkpen/Beamish 1997). In fact, a major barrier to knowledge sharing is the risk that the recipient may use it against the interest of the supplier, e.g., the foreign partner (Inkpen/Tsang 2005). Therefore, if learning is viewed by the foreign partners as a competitive acquisition of knowledge rather than a collaborative process, the effect can be destabilizing (Beamish/Berdrow 2003), and the co-operative venture will not be learning-oriented (Galister et al. 2003). In such cases, firms tend to monitor the activities of other partners as well as restrict the flow of proprietary information (Makhija/Ganesh 1997).

On the other hand, a collaborative attitude leads to a more open relationship, which promotes knowledge acquisition (Hamel 1991, Inkpen 2000). Moreover, foreign partners are more likely to employ a knowledge creation than a re-use strategy, with the former being more open to knowledge sharing (Buckley et al. 2003). Our interviews with senior executives also reveal that a recipient's lack of collaborativeness often causes distrust and even conflict, resulting in parent firms being reluctant to dedicate necessary resources to the joint venture (Tsang et al. 2004). This severely hinders the transfer and acquisition of knowledge (Lyles/Salk 1996). Therefore, we propose the following hypothesis:

Hypothesis 3. Recipient firm's collaborativeness is positively related to its acquisition of tacit knowledge.

Method Comprehensiveness

This term refers to the comprehensiveness of the knowledge acquisition methods employed by a given recipient firm. The research examining acquisition effectiveness focuses only on knowledge connection and relatedness (Inkpen 2000). How-

ever, we maintain that acquisition effectiveness is also driven by the appropriate acquisition method.

Acquiring tacit knowledge is a cumulative process (Inkpen 1998), and it necessitates engaging both the 'teacher' and the 'student' in the learning process over time and gaining expertise in an incremental fashion (Badaracco 1991). Moreover, understanding and assimilating tacit knowledge requires the active engagement and substantial interaction of both parties (Inkpen/Dinur 1998, Lane et al. 2001). Hence, the more tacit the knowledge being transmitted, the more intense and lengthy the interactions should be (Berdrow/Lane 2002). Consequently, successful acquisition of tacit knowledge depends on appropriate acquisition methods, which enable the recipient firm to pursue cumulative learning, and involve the 'teacher' repeatedly and intensively with sufficient duration.

In our interviews with executives, we learned that three methods of knowledge acquisition, e.g., repetitive, accumulative and bundling, appear to be effective. The repetitive method enables the recipient firm to engage the foreign partner repeatedly; the accumulative method allows the recipient firm to pursue cumulative learning, and the bundling method enables the recipient firm to access the total knowledge package, e.g., hardware, software and so on. These methods maximize the number, intensity, and duration of interactions between the two parties, essential for acquiring tacit knowledge. Method comprehensiveness thus measures the extent to which recipient firms employ these sensible knowledge acquisition methods. Therefore, we propose the following hypothesis.

Hypothesis 4. Recipient firm's method comprehensiveness is positively related to its acquisition of tacit knowledge.

Recipient Readiness

Recipient readiness refers to the extent to which the recipient firm is prepared to acquire tacit knowledge from its foreign partners, and is reflected by the presence of a supporting organizational infrastructure and appropriate mechanisms that facilitate effective learning. Previous research already indicates the importance of absorptive capacity, an ex ante resource, on inter-organizational learning (Cohen/Levinthal 1990, Lane et al. 2001), we maintain that, in addition to this factor, which is passive in nature, the recipient firm's readiness to acquire knowledge, indicating a more proactive attitude, is also important.

Learning takes place by design and with careful attention, and it is not a random process (Hamel 1991). Just having access to knowledge and absorptive capacity do not guarantee the effective acquisition of knowledge by a recipient firm, simply because it may not be ready to learn, especially if the learning task is rather complicated as in the case of acquiring tacit knowledge. Research tends to support this view by attributing the failure of knowledge acquisition among recipient

firms from developing countries to their lack of organizational readiness (Marcotte/Niosi 2000).

This readiness is not only reflected in the presence of a proper organizational context, but also in the individuals' strong commitment to learning, and their possession of essential skills, such as language skills and an understanding of cultural differences, both of which are also found to strongly influence a firm's ability to benefit from knowledge spillovers (Glaister et al. 2003). Moreover, such firms are less likely to suffer from a lack of motivation (Zander/Kogut 1995), or of clear goals (Lyles/Salk 1996), both of which hinder knowledge transfer. Therefore, we propose the following hypothesis:

Hypothesis 5. Recipient firm's readiness is positively related to its acquisition of tacit knowledge.

Moderating Effects

Alliance Origin

The impact of personal embeddedness on tacit knowledge acquisition largely relies on the level of transparency between partners. Research indicates that there exist asymmetries in the transparency between Western and Japanese partners (Hamel 1991), which result directly from the openness of western culture and the 'clannishness' of Japanese culture (Ouchi 1980). US and European firms, to a lesser degree, are more open minded about knowledge sharing, while Japanese firms are much less so. In the case of a China-Japan joint venture, the knowledge sharing may tend to be even sparser due to the animosity effect (Klein et al. 2002). Therefore, we propose the following hypothesis:

Hypothesis 6. There will be a higher level of tacit knowledge acquisition by a recipient firm via a Western-Chinese joint venture than in a Japanese-Chinese joint venture, given the same level of personal embeddedness.

Alliance Experience

The positive influence of recipient readiness on tacit knowledge acquisition depends on the firm's level of alliance experience, e.g., the practical knowledge gained by the local firms in working with foreign partners. Research shows that the more extensive a firm's prior experience with alliance partners, the more likely it will be to effectively acquire knowledge from its partner (Inkpen 2000), because repeated exposure to different partners exposes individuals within the firm to a broad reper-

toire of experience, facilitating the interpretation of unforeseen contingencies in subsequent alliance interaction. Therefore, we propose the following hypothesis:

Hypothesis 7. There will be a higher level of tacit knowledge acquisition in a recipient firm that has more alliance experience than in one that has less, given the same level of recipient readiness.

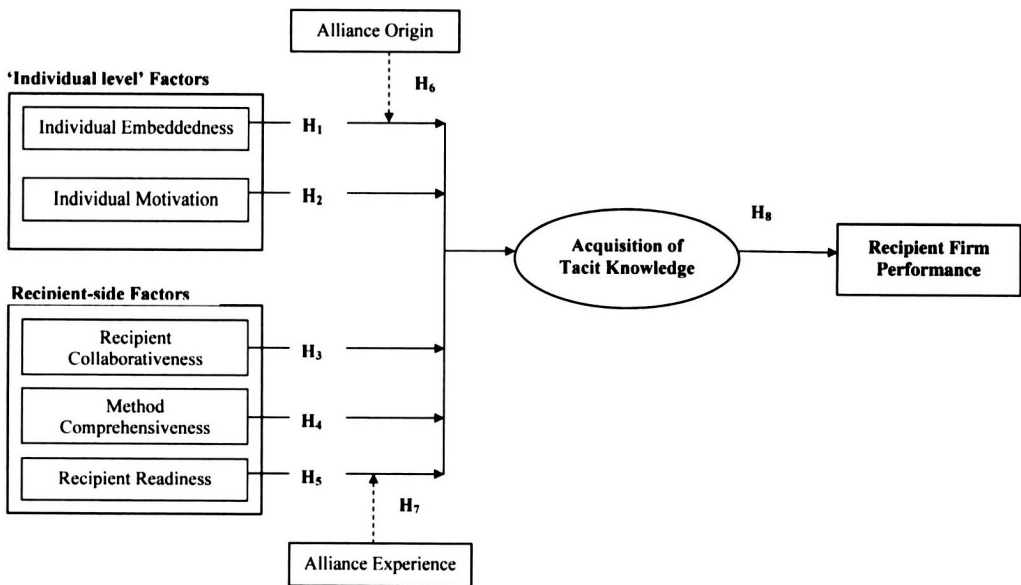
Performance Implication

We also examine the impact of tacit knowledge acquisition on the recipient firm’s performance in an exploratory spirit, since this relationship is not the focus of our study. Research generally shows that knowledge acquisition leads to better performance (Lyles/Salk 1996, Tsang et al. 2004). However, the positive relationship between tacit knowledge acquisition and firm performance finds no empirical support (Dhanaraj et al. 2004). Moreover, previous studies focus on the performance of joint ventures rather than on that of local firms. Due to its importance, we maintain that the acquired tacit knowledge will help the recipient firm enhance its market performance. Therefore, we propose the following hypothesis:

Hypothesis 8. Tacit knowledge acquisition is positively related to the recipient firm’s performance.

Our conceptual framework can be summarized by the following figure.

Figure 1. Conceptual Model for the Acquisition of Tacit Knowledge



Impact of 'Supplier-side Individual Level' and 'Recipient-side' Factors on Tacit Knowledge Acquisition: Empirical Evidence

In this section, we empirically examine the impact of 'supplier-side individual level' and recipient-side factors on the acquisition of tacit knowledge.

Sample

The data was collected from the EMBA program of a leading business school in Shanghai. These students are business executives primarily from Shanghai and the surrounding provinces, such as Jiangsu and Zhejiang. This region has the most vibrant economy in the country, and firms in this area can justifiably be said to represent joint ventures in China as a whole.

We selected 415 firms based on the following criteria, 1) firms from industries in which technology is the basis for competitive advantage, 2) firms that have engaged in technology transfer via joint venture in the past three years, 3) firms whose foreign partners are primarily from Europe, North America, and Japan. Nearly all these firms indicated a strong intent to acquire critical knowledge from their foreign partners.

Having chosen the sample, we identified key executives personally involved in managing the knowledge acquisition. They have a clear understanding of the entire process and are able to assess the impact of such endeavours on their organizations. We made an enormous effort to ensure a high response rate, which includes several runs of phone calls, follow-up letters, and a book incentive. The result is satisfactory: 136 questionnaires have been returned, representing a response rate of 33 percent. Among the returned questionnaires, 8 were excluded because of incomplete answers, leaving 128 usable responses.

Instrument

The questions in the survey we developed were based on a literature review and in-depth interviews with industry experts and senior executives from 12 representative firms. We then did a small-scale pilot survey with 20 Chinese companies. Based on their feedback, we revised our questionnaire by eliminating confusing items and adding relevant new ones. Senior executives from these firms helped us assess the clarity and face validity of each item.

Because our primary aim is to examine the acquisition of tacit knowledge, we have designed the questionnaire in such a way that prompts the respondents to focus on the acquisition of tacit knowledge during the process of technology transfer. All statement-type items in the questionnaire follow 7-point Likert-type scales, and are measured on a scale from 1 = strongly disagree to 7 = strongly agree. Multiple-item measures were used for all key constructs to enhance content coverage.

Measures

This section discusses the dependent, independent and control variables and their measurements. The definitions of the variables used to test our hypotheses are given in the Appendix 1.

Dependent Variables

Tacit Knowledge Acquisition (K.Acquire)

This variable measures how much tacit knowledge is acquired by the recipient firms from their foreign partners. Unlike Dhanaraj et al. (2004), who separate tacit and explicit knowledge, we maintain that all forms of knowledge have a tacit element, and the measure used should be able to capture tacit knowledge acquisition in its entirety. We have thus adopted a multi-dimensional operationalization used in previous studies for this construct (Lyles/Salk 1996, Tsang et al. 2004), omitting one item, i.e., 'knowledge about foreign culture and taste'. Our interviews with senior executives indicate that this is not a key element in their knowledge acquisition efforts.

Firm Performance (Perform)

Like Lyles and Salk (1996) and Tsang et al. (2004), we use subjective measures for firm performance and rely on executives' assessments. We also depart from their approach by developing a measure for overall performance consisting of only three performance indicators: productivity, revenue, and market share. This is because we see some of the components in their performance measures as the antecedents of performance, e.g., human resource competency (Lyles/Salk 1996), and customer satisfaction (Tsang et al. 2004).

Independent Variables

The definitions and measurements for all the independent variables are provided in the Appendix 1.

Individual Embeddedness (I.Embed)

We use four statements to measure individual embeddedness of expatriates in the joint venture. We chose these items based on our prior interviews with senior executives and industry experts who confirmed the appropriateness of this approach in assessing individual embeddedness.

Individual Motivation (I.Motive)

We use three statements to measure the individual motivation of foreign expatriates. Again, these statements were chosen because the feedback from interviews and the pre-test indicated their appropriateness.

Recipient Collaborativeness (Collaborate)

We measure recipient collaborativeness with three statements reflecting how collaborative the recipient firms are in managing their relationships with foreign partners.

Method Comprehensiveness (Method)

We measure method comprehensiveness with three statements reflecting how comprehensive these acquisition methods are.

Recipient Readiness (Ready)

We measure recipient readiness with four statements reflecting how well the recipient is prepared for their knowledge acquisition task.

Moderating Variables

Alliance Origin (Origin)

We use a dummy variable to capture the alliance origin effect, coding the variable as 1 if the Chinese firm has a US or European partner, and as 0 if the firm has a Japanese partner. There are a few firms that have both Western and Japanese partners. In such cases, we code the variable based on the most recent partner type.

Alliance Experience (Experience)²

Alliance experience can be reflected by the number of a local firm's partners, and by the variety of these partnerships' national origins. We therefore develop an index that is the product of a local firm's partner number and its partnership variety, with the latter takes the value 1 if the firm has only western partners; 2 if it has both western and Japanese partners; and 3 if it also has partners of other types.

Control Variables

Firm Size (Size)

Firm size is a common control variable since it may influence knowledge acquisition and exploitation, and is commonly measured in terms of the number of employees. In this case, we use a dummy variable to code the large firms, i.e., firms that have over 1,000 employees, as 1, and medium or small firms as 0.

Industry Type (Industry)

Whether or not industry type affects knowledge acquisition is unclear. Lane and Lubatkin (1998) take this factor into consideration, while Dhanaraj et al. (2004) do not think it is relevant. We categorize industries as high knowledge intensive (e.g., telecommunication, IT, pharmaceutical) and low knowledge intensive industries (e.g., manufacturing, utility and so on), coding firms from the former group as 1, and the latter group as 0.

Table 1. Descriptive Statistics and Pearson Correlation Coefficients (N = 127)

Variable	Mean	SD	1	2	3	4	5	6
1. <i>K. Acquire</i>	5.63	1.42						
2. <i>I.Embed</i>	4.45	1.42		1				
3. <i>I.Motive</i>	3.89	1.54		-0.11	1			
4. <i>Collaborate</i>	4.25	1.61		0.29**	-0.15	1		
5. <i>Method</i>	4.31	1.39		0.35**	-0.09	0.31**	1	
6. <i>Ready</i>	3.69	1.50		0.56**	-0.01	0.39**	0.56**	1

** $p \leq 0.01$

Table 1 summarizes the correlations among the explanatory variables. Among them, only two exceed .5 (*I.Embed* with *Ready* and *Method* with *Ready*). Moreover, all of our multiple-item constructs achieved Cronbach alphas of 0.71 or higher, indicating strong internal consistency. As in Subramaniam and Venkatraman (2002), we pair each construct and factor analyse all the pair combinations. The indicators of each construct were loaded only on their own construct for every pair of constructs. Therefore, convergent and discriminant validity requirements were satisfied.

Model and Analysis

We use multiple regressions to test our hypotheses. The analysis proceeds in four stages (i.e., four models). Model 1 regresses the level of knowledge acquisition on 'supplier-side individual level' factors and control variables, i.e., firm size and industry. Model 2 regresses the level of knowledge acquisition on recipient-side factors and control variables. Model 3 includes both 'supplier-side individual level' factors and recipient-side factors, along with control variables. Model 4 is a full model that includes the main effects, hypothesized interaction effects and control variables. Finally, we test the hypothesis regarding the relationship between tacit knowledge acquisition and firm performance.

Table 2 presents results for the multiple regression analysis. Results from Model 1 ($R^2 = .24$) indicate that individual embeddedness is highly significant in explaining the level of tacit knowledge acquisition, whereas individual motivation is insignificant. Model 2 ($R^2 = .34$) shows that all three variables, i.e., recipient collaborative-ness, readiness and method comprehensiveness are significant and have the right sign.

In Model 3 ($R^2 = .39$), individual motivation is again insignificant, as is recipient readiness. Model 4 indicates similar results, both individual embeddedness and three recipient-side factors are significant. None of the hypothesized interaction effects turn out to be significant. The whole model provides satisfactory explanatory power (adjusted $R^2 = .42$). No control variables are significant across all models.

Table 2. Multiple Regression Results for Tacit Knowledge Acquisition
(t values are in parenthesis)

	Model 1	Model 2	Model 3	Model 4
<i>I.Embed</i>	0.51***(6.38)		0.30***(3.28)	0.38**(2.50)
<i>I.Motive</i>	0.02(0.24)		0.09(1.27)	0.07(0.97)
<i>Collaborate</i>	0.19**(2.23)	0.18**(2.16)	0.18**(2.20)	
<i>Method</i>		0.22**(2.29)	0.21**(2.28)	0.18**(2.02)
<i>Ready</i>		0.34***(3.38)	0.19(1.73)	0.26**(2.03)
<i>Size</i>	0.02(0.20)	-0.05(-0.58)	-0.04(-0.46)	-0.01(-0.15)
<i>Industry</i>	-0.03(-0.34)	0.01(0.11)	0.04(0.54)	0.03(0.36)
<i>Origin</i>				0.18(0.74)
<i>Experience</i>				-0.11(-0.52)
<i>I.Embed x Origin</i>				-0.20(-0.72)
<i>Ready x Experience</i>				-0.12(-0.56)
Adjusted R ²	0.24	0.34	0.39	0.42
F	10.64	12.35	11.40	8.35
Prob.	0.000	0.000	0.000	0.000
N	124	112	112	112

***p ≤ 0.01, ** p ≤ 0.05, * p ≤ 0.1

In sum, regarding the main effects, the multiple regression results strongly support H₁, H₃, H₄, and H₅. H₂ hypothesizing the effect of individual motivation on tacit knowledge acquisition is not supported.

The hypothesized interaction effects are not supported by the results. We also conducted ANOVA to test H₆ and H₇. Results indicate no significant differences in the level of tacit knowledge acquisition between the groups, e.g., alliances with a Japanese partner vs. alliances with a western partner, and alliances with more experience vs. alliances with less experience.

We also examine the relationship between tacit knowledge acquisition and recipient firm performance. Results are reported in Table 3. Model 1 shows that tacit knowledge acquisition turns out to be highly significant, so is the control variable

Table 3. Multiple Regression Results for Performance
(t values are in parenthesis)

	Model 1	Model 2
<i>K.Acquire</i>	0.49***(6.15)	0.50***(6.17)
<i>Size</i>	-0.09(-1.14)	-0.12(-1.53)
<i>Industry</i>	0.18**(2.20)	0.17**(2.15)
<i>Origin</i>		0.09(1.00)
<i>Experience</i>		0.09(1.17)
Adjusted R ²	0.25	0.25
F	13.9	9.04
Prob.	0.000	0.000
N	119	119

***p ≤ 0.01, ** p ≤ 0.05, * p ≤ 0.1

'industry'. The same results hold for model 2. Therefore, H_8 is strongly supported, indicating that successful acquisition of tacit knowledge significantly affects the recipient firm's performance.

Discussion

In this study, the 'supplier-side individual level' factor, i.e., individual embeddedness, is proved to be highly significant in driving the successful acquisition of tacit knowledge. This finding seems to echo that of Dhanaraj et al. (2004), but there are important differences. Firstly, as discussed before, they focus on 'firm-level' embeddedness, which does not necessarily lead to 'individual level' embeddedness. Secondly, their study focuses on knowledge transfer and assumes that foreign firms are willing to transfer critical tacit knowledge to the joint ventures. However, both our in-depth interviews with senior executives and previous research (Szulanski 1996) indicate that most foreign firms are reluctant to do so for fear of losing their competitive advantage. Therefore, our finding shows that individual embeddedness can foster tacit knowledge acquisition even though the cooperative spirit at firm level may not be strong.

The insignificance of individual motivation is rather surprising, and we do not have a theoretical explanation as to why this supposedly important factor does not seem to matter. One possible reason is that this variable measures the intrinsic motivation of foreign expatriates, while the respondents of this questionnaire are Chinese executives. Therefore, the 'third-person' perspective on this construct fails to reflect the true level of intrinsic motivation among foreign expatriates.

All recipient-side factors turn out to be important. Among these, the most significant one is recipient collaborativeness, suggesting that successful acquisition of tacit knowledge by the recipient firm critically depends on its willingness to create a win-win situation which is cooperative in nature, and beneficial to both parties. Method comprehensiveness is also important, indicating that a comprehensive knowledge acquisition method that repeatedly and intensely engages foreign partners, at the same time, also enables the recipient firm to pursue a cumulative learning appears to be efficient in acquiring tacit knowledge. Furthermore, recipient readiness also tends to be important.

None of the hypothesized interaction effects are significant. Alliance types do not seem to affect tacit knowledge acquisition. One possible reason is that tacit knowledge is such a critical component of a firm's core competence, firms are generally reluctant to transfer it to partners even though they may have an open organizational culture. At the same time, alliance experience does not seem to affect the readiness of Chinese firms to acquire tacit knowledge. This result is also counterintuitive, but it may be due to the knowledge ossification effect (Berman et al.

2002), whereby previous learning inhibits the acquisition of new tacit knowledge. It may also be due to the limitations in the way we operationalize this construct. This issue certainly deserves further investigation.

As a control variable, industry type does not affect the level of tacit knowledge acquisition but does affect the relationship between tacit knowledge acquisition and firm performance. This implies that in more knowledge intensive industries, there is a stronger association between tacit knowledge acquisition and firm performance – a finding that makes intuitive sense.

Conclusions and Future Research

Grant states that '*knowledge has emerged as the most strategically significant resource of the firm*' (1996, p. 375). Creating and accumulating critical knowledge becomes the strategic imperative for firms striving to augment their competitive advantage, especially for those from emerging economies that aspire to compete with their more advanced rivals in the marketplace.

In this study, we take the recipient's view, i.e., local Chinese firms, and examine the determinants of their successful tacit knowledge acquisition from their foreign partners. In particular, we focus on the supply-side individual factors pertaining to foreign expatriates such as individual embeddedness and motivation, and a set of recipient-side variables, i.e., method comprehensiveness, recipient collaborativeness and readiness. Our results indicate that the individual embeddedness of expatriates in JVs and recipient factors such as collaborativeness, method comprehensiveness and recipient readiness are important factors in driving the successful tacit knowledge acquisition of recipient firms in China.

Several implications can be drawn from this study. First and foremost, due to the importance of individual embeddedness in knowledge acquisition, it is critical for recipient firms to establish a mechanism that enables such individual embeddedness to occur for expatriates. It is not longer sufficient to simply focus on relational embeddedness at the firm level.

Secondly, recipient firms, in order to be successful in acquiring tacit knowledge, need to demonstrate their genuine intent to establish a mutually beneficial and collaborative relationship. Thirdly, the method of acquisition tends to be an important factor, and it is therefore critical for firms to design a comprehensive acquisition method maximizing the level and duration of interactions and integration between the two parties.

There are a number of limitations that need to be addressed in future research. Firstly, in this study, we have not considered relationship quality and thus implicitly assume that individual embeddedness naturally leads to high quality personal relationships. Even though our empirical evidence indicates a positive link between

individual embeddedness and knowledge acquisition, it will be important to directly access the connection between individual embeddedness and resulting relationship quality, and its impact on knowledge acquisition.

Secondly, a significant portion of tacit knowledge is also embodied in organization routines (Nonaka 1994, Makhija/Ganesh 1997). In this study, we focus exclusively on the acquisition of individual tacit knowledge, which only represents part of the critical capacities of foreign partners. It is therefore important to examine how a local firm should best acquire organizational level tacit knowledge from its foreign partners.

Thirdly, in this study, we consider the joint venture as the extended arm of the local recipient firm, i.e., the knowledge acquisition platform, and assume that, once the critical pre-conditions for knowledge acquisition are in place, such 'grafting' (Huber 1991) occurs automatically. However, joint ventures are after all separate entities, transferring knowledge from JVs to parent firms is not a straightforward process and often requires delicate approaches (Inkpen/Dinur 1998). It is therefore critical to examine how tacit knowledge can best be transferred from the acquisition platform to the core, i.e., the recipient firm.

Finally, the measurements of certain key constructs are not without problems. For instance, individual motivation should be measured by asking expatriates directly, but this is not practically possible. Moreover, despite the current effort and several past attempts (Dhanaraj et al. 2004, Martin/Salomon 2003), the measurement of tacit knowledge is still open to further improvement due to its complicated nature. Future effort in this direction is certainly warranted.

Appendix 1. Constructs and their Measures

Tacit knowledge acquisition ($\alpha = 0.87$)

Our firm has successfully acquired the following tacit knowledge from its foreign partners via the joint venture.

1. *Managerial techniques*
2. *New marketing expertise*
3. *Product development skills*
4. *New technical expertise*
5. *Manufacturing process*
6. *Business operational expertise*

Individual Embeddedness ($\alpha = 0.77$)

1. We have successfully established the "embeddedness" of expatriates by creating a strong *sense of belonging* for them in the joint venture.

2. We have successfully established the “embeddedness” of expatriates by creating a strong *team spirit* for them in the joint venture.
3. We have successfully established the “embeddedness” of expatriates by fostering *win-win cooperation* between them and our team working in the joint venture.
4. We have successfully established the “embeddedness” of expatriates by communicating the *significance of the cooperation* between our team and theirs in the joint venture.

Individual Motivation ($\alpha = 0.76$)

1. We have been successfully motivating expatriates by expressing our sincere *gratitude* for their contributions.
2. We have been successfully motivating expatriates by inspiring them with a strong *sense of pride* in working with us.
3. We have been successfully motivating expatriates by emphasizing the *meaning of their contribution* to our firm and to our country.

Recipient Collaborativeness ($\alpha = 0.71$)

1. We allow our foreign partner firm to *inspect and monitor* the use of the knowledge acquired by our firm via the joint venture.
2. We have agreed *not to compete* directly with our foreign partner firm in the future, using the knowledge acquired from them.
3. We have agreed to *share the benefits* of the critical knowledge we have acquired from our foreign partner firm.

Method Comprehensiveness ($\alpha = 0.78$)

1. We have employed a *repetitive method* for tacit knowledge acquisition, e.g., we periodically renew the technology transfer contract.
2. We have employed a *multi-layer, accumulative method* for tacit knowledge acquisition, e.g., we acquire the easiest element of the knowledge package first, and then gradually acquire the more advanced elements.
3. We have employed a *bundling method* for tacit knowledge acquisition, e.g., we acquire the entire knowledge solution, e.g., hardware, software, support, maintenance and so on.

Recipient Readiness ($\alpha = 0.89$)

1. We designed a *sensible method* for critical knowledge acquisition before entering the joint venture agreement.
2. We have installed a *reward mechanism* that provides sufficient motivation.
3. We have established an *appropriate context* that provides varied and informal channels of communication, and also enables individuals to gain necessary skills.

4. We have established a set of initiatives that enable us to *leverage on the relationship* with expatriates to maximize our acquisition of critical knowledge from them.

Recipient Firm's Performance

1. Our firm has successfully improved its *productivity* due to tacit knowledge acquisition.
2. Our firm has successfully increased its *revenue* due to tacit knowledge acquisition.
3. Our firm has successfully expanded its *market share* due to tacit knowledge acquisition.

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- 2 We thank one of the reviewers for his or her comments on the appropriate operationalization of this construct, which inspired us to develop this measure.

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