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Transfers of tacit vs. explicit knowledge and performance in international joint ventures: The role of age

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ABSTRACT

This paper studies the transfer of tacit and explicit knowledge from foreign parents to international joint ventures (IJVs) and the impact of these two types of knowledge transfers on the performance of young and mature IJVs. We estimate a structural equation model using survey data from 334 Korean joint ventures and find support for our hypotheses regarding IJV age, knowledge transfers, and performance. Our results show that IJV age is positively associated with the transfer of tacit knowledge, but not with the transfer of explicit knowledge. In contrast, the transfer of tacit knowledge has a significant impact on the performance of both young and mature IJVs, while the transfer of explicit knowledge only has a significant effect on the performance of mature IJVs. These results confirm the important role of IJV age as a driver of knowledge transfers in IJVs, and as a moderator of their effects on performance.

1. Introduction

Globalization and the intensification of domestic competition have led many firms to seek overseas markets (Elango & Pattnaik, 2007; Kauser & Shaw, 2004; Teegen & Doh, 2002). Geographical diversification, rapid technological progress, and changing social, political and economic environments are creating new challenges for businesses (Culpan, 2002). To meet these new challenges, firms are required to expand their knowledge resources. Few firms possess all of the information and know-how needed to cope effectively with the dynamic and complex business environments of globalizing markets, and often create partnerships across borders to acquire knowledge resources from their foreign partners (Kale, Singh, & Perlmutter, 2000). However, cross-border collaboration between organizations is risky and difficult to manage, and less than half of such alliances achieve their goals (Bamford, Ernst, & Gubini, 2004). Thus, it is important for the field of international business to improve understanding of the factors that may influence knowledge transfers in joint ventures, and their impacts on firm performance (Kogut, 1988; Suseno & Ratten, 2007).

Knowledge transfer is obviously not the only challenge and motive for all international joint ventures (IJVs), but abundant research has shown that effective knowledge transfer is a critical factor for alliances' survival and performance (Lane, Salk, & Lyles, 2001; Lyles & Salk, 1996; Pak, Ra, & Park, 2009; Suseno & Ratten, 2007). To study the process of knowledge transfer and its impact on performance, researchers often distinguish between tacit and explicit knowledge, because the processes for each type of knowledge transfer and their resource requirements differ significantly (Nonaka, 1994). Unfortunately, accumulated research on the performance effects of tacit and explicit knowledge has provided inconsistent results (Becerra, Lunnan, & Huemer, 2008). For instance, in their sample of Hungarian IJVs, Dhanaraj, Lyles, Steensma, and Tihanyi (2004) show positive performance effects for explicit knowledge transfer, but a surprising negative coefficient for tacit knowledge. On the contrary, Anh, Baughn, Hang, and Neupert (2006) find insignificant performance effects for explicit knowledge transfer and a positive impact for tacit knowledge transfer in their Vietnamese IJVs sample. Becerra et al. (2008) conjecture that these inconsistencies in findings may stem from differences in the contexts in which knowledge transfers occur.

In this paper, we want to advance our understanding of the conditions under which tacit vs. explicit knowledge transfers are more likely to take place in IJVs, and their impact on the performance of the knowledge-receiving organization. More

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specifically, we focus on the impact of IJV age as a critical antecedent of knowledge transfers and a moderator of their performance implications. Organizational age is an important contextual variable in management studies that reflects the changing features, capabilities, and challenges of the organization as it matures, which has a wide variety of organizational implications such as the liability of newness and the product-life cycle (Anderson & Zeithaml, 1984; Henderson, 1999). Our study investigates the differences between young and mature IJVs in the amount of tacit and explicit knowledge they obtain from their foreign partners and the performance implications of these transfers for the IJVs. We develop a two stage theoretical framework that recognizes the complementary nature of explicit knowledge ('*knowing that*') and tacit knowledge ('*knowing how*'). In the first set of hypotheses, we examine the impact of age on the acquisition of explicit and tacit knowledge by IJVs, that is, the transfer and absorption of both types of knowledge by the Korean IJVs in our sample. In the second set of hypotheses, we examine how IJV age moderates the performance consequences of these two types of knowledge transfers (Duguid, 2005; Ryle, 1949).

Specifically, we pose the following research questions: (1) how do young vs. older IJVs differ in the amount of tacit and explicit knowledge that they acquire from their foreign partners? and, (2) how do the transfers of tacit and explicit knowledge affect IJV performance in young vs. older IJVs? We test and find support for our theoretical framework about the important role of IJV age in cross-border knowledge transfers from the foreign parent, using a structural equation model estimated with survey data from a sample of 334 IJVs in Korea.

Our study makes three key contributions to the literature on cross border knowledge flows in IJVs. First, we investigate the role of an IJV's age as a determinant of different types of knowledge transfers. We show how age facilitates the acquisition of knowledge from the foreign partner by the local IJV, but only for tacit knowledge that is embedded in its specific organization's routines and practices. Our results with respect to tacit knowledge acquisition confirm the importance of IJV age to increase the local units' ability to learn and utilize information embedded in the partner's organizational routines (Cohen & Levinthal, 1990; Lane et al., 2001), which we refer to as related tacit knowledge acquisition. In contrast, age does not affect the acquisition of explicit knowledge by IJVs to the extent that explicit knowledge is more easily transferred to IJVs due to its inherent codifiability and lower prior knowledge requirement for proper absorption.

By distinguishing in our theoretical framework between tacit and explicit knowledge, recognizing their complementary nature, and identifying differences between different types of tacit knowledge (specific vs. generic), our paper helps us understand the mixed results previously observed for the effect of age in the amount of knowledge transfers from the foreign partner to the IJV (Van Wijk, Jansen, & Lyles, 2008).

Second, we explore IJV age as a moderator of the performance effects of knowledge transfers. Because an IJV's age has not been the main focus of earlier research and has been usually treated as a control variable at best, researchers have not been able to uncover how IJV age may impact the performance consequences of different types of knowledge flows. Though the positive effects of tacit knowledge on performance are well established from a resource-based view (Barney, 1991; Grant, 1996), earlier research has not identified any performance implications for explicit knowledge transfers (Anh et al., 2006; Becerra et al., 2008). We contribute to the literature on organizational knowledge by showing that, when we distinguish between young and old IJVs, we can see important differences in the performance implications of knowledge transfers, especially explicit knowledge transfer, the performance effects of which had not been detected. Our results confirm that explicit knowledge transfers from the foreign partner to the IJV can indeed have positive performance consequences, but only for older IJVs.

Finally, we add new empirical evidence about the transfer of tacit and explicit knowledge to IJVs in a new context. Our study investigates IJVs located in South Korea, a rapidly growing country that is quickly becoming a leader in various technological fields. Because of differences in locational advantages across countries (Dunning, 1980), it is likely that the type of knowledge transferred to IJVs by multinational parents, as well as its performance implications, may differ systematically across markets with different characteristics. In this sense, the empirical evidence about knowledge transfers to Korean IJVs complements existing research from studies in countries with very different economic and institutional contexts, like Hungary (Lane et al., 2001) and Vietnam (Anh et al., 2006; Tsang, Nguyen, & Erramilli, 2004).

In sum, our study explores IJV age as an important construct for understanding when and why tacit vs. explicit knowledge is more likely to be transferred to IJVs, and their relative effects on IJV performance for young versus older IJVs. These ideas about the different use and relevance of tacit vs. explicit knowledge transfers to IJVs are likely to be of interest not only for researchers in international business, but also for managers in multinational corporations responsible for relationships with their IJVs.

Our paper is structured as follows. In the next section, we present a brief literature review of research on knowledge transfers in international business. Later, we formulate two sets of hypotheses regarding how an IJV's age affects the transfer of tacit and explicit knowledge from the foreign partner to the Korean unit, as well as its performance implications for young vs. older IJVs. In the following two sections, we describe the data, the empirical study, and the results. The paper concludes with a discussion of the main findings and their implications for research on knowledge flows in joint ventures and for their actual management by practitioners.

2. Cross border knowledge transfers within and among corporations

The prior literature on cross-border knowledge transfers focused initially on transfers within multinational corporations (MNCs). This literature provided the foundation that informed extensive literature on cross-border transfers of knowledge between organizations. Firms are generally acknowledged as social communities where individual, social, and collective expertise can be transformed into economically useful products and services (Kogut & Zander, 1992). Among the collection of resources possessed by firms, a key resource in gaining competitive advantages is knowledge (Grant, 1996), and new skill development may lead to further competitive advantages (Inkpen, 1998; Teece, Pisano, & Shuen, 1997). Knowledge-based theories of the firm rely on the idea that knowledge is critical for value creation and appropriation, to the extent that knowledge is indeed unique, i.e., valuable, rare, and difficult to replicate as a strategic resource (Barney, 1991; Grant, 1996). The transfer of knowledge is particularly critical in international business because MNCs serve to internalize within the organization the transfer of such knowledge across borders (Kogut & Zander, 1993).

With the advent of globalization, crucial knowledge that leads to competitive advantage can now be derived from and transferred to foreign markets. Moreover, as business is increasingly being conducted across borders, the importance of effective and efficient cross-border knowledge transfer has subsequently increased (Perez-Nordtvedt, Kedia, Datta, & Rasheed, 2008). As a result, transfers of knowledge from external constituents have become

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central to the success of MNCs, particularly those competing in the global arena (Easterby-Smith, Lyles, & Tsang, 2008).

Effective knowledge transfer within and between organizations, however, is not easy to achieve given the varied and complex nature of the challenges and processes involved (Easterby-Smith et al., 2008). In particular, cross-border knowledge transfers are challenging from an organizational perspective because of the many differences that may exist between organizations, including spatial, technological, cultural, institutional, linguistic, and other differences (Javidan, Stahl, Brodbeck, & Wilderom, 2005; Perez-Nordtvedt et al., 2008). Thus, knowledge transfer is both difficult and costly in terms of time and effort, and its effectiveness should not be taken for granted (Reagans & McEvily, 2003; Szulanski, 1996).

As posited by researchers in international business, one of the barriers to effective knowledge transfer is the fact that much of the specialized knowledge of a firm lies in a non-tradable, tacit form (Gupta & Govindarajan, 2000). Because of its nature, this type of knowledge is particularly important for building competitive advantage, but it is also more difficult to transfer and absorb (Grant, 1996). Furthermore, its transfer to another organization is also an inherently risky activity because it may result in involuntary expropriation and the creation of new competitors (Gupta & Govindarajan, 2000).

In the context of international knowledge flows, the modes of governance for the relationship between partners have important effects on the behavior of involved partners and the effectiveness of resulting transfers of knowledge (Gulati & Singh, 1998). IJVs are formed when partners of distinct national origin contribute resources to create a new entity (Pak et al., 2009). They are widely regarded as an efficient mechanism to facilitate the creation and transfer of knowledge across borders in order to minimize the transaction costs associated with the exchange of resources and information (Kogut, 1988). Knowledge obtained from foreign parents enhances the IJV's organizational capability to interpret and respond to its environment, presumably leading to an improved performance for the IJV (Lane et al., 2001).

Given the importance of knowledge transfers, a large literature has accumulated in the international business field, which investigates the factors that may influence the efficacy and consequences of knowledge transfers, including motivation (Gupta & Govindarajan, 2000; Szulanski, 1996), absorptive capacity (Lane et al., 2001; Lyles & Salk, 1996), characteristics of the knowledge transferred (Birkinshaw, Nobel, & Ridderstråle, 2002), disseminative capacity (Minbaeva & Michailova, 2004), knowledge transfer capacity (Park, 2011), organizational context (Evangelista & Hau, 2009), investment mode (Park, 2012), and social factors, such as relationship capital (Kale et al., 2000), exchange climate (Park, Vertinsky, & Lee, 2012), relationship development capability (Choi & Johanson, 2012), and interpersonal similarity (Mäkelä, Andersson, & Seppälä, 2012). Most of the existing literature focuses on the transfer of tacit knowledge between partners, but the relevance of transferring explicit knowledge is far less clear, probably because it lacks the distinctive features of strategic resources associated with limited replicability and imitability by competitors (Anh et al., 2006).

In the following section we analyze whether and how the acquisition of tacit versus explicit knowledge in IJVs depends on the length of the relationship with its foreign partner, which is reflected by the IJV's age. We then examine the moderating role of age on the relationship between the acquisition of explicit versus tacit knowledge and performance. After we develop several hypotheses about the differences between younger and older IJVs regarding the transfer of tacit and explicit knowledge from their foreign parent, we test them in a sample of Korean IJVs.

3. Hypotheses

We will analyze now how IJV age affects the transfer of tacit and explicit knowledge from a foreign parent to the local IJV, as well as the performance consequences of these transfers for young vs. older IJVs. To do so, we break our analysis into two parts. First, we explore how age may influence the acquisition of each type of knowledge. Second, we investigate how the acquired tacit and explicit knowledge, after it has been absorbed by the IJV, may be associated with improved performance for both young versus old IJVs. Thus, once the knowledge acquisition has taken place and the knowledge absorbed, we analyze the extent to which younger vs. older IJVs may be able to convert the received knowledge into greater performance. We argue that this is likely to depend on the type of knowledge, the existence of complementary resources in the IJV (Teece, 1986), and the accumulation of related tacit knowledge resources required for mobilizing knowledge into action.

3.1. IJV age as facilitator of tacit and explicit knowledge transfer

Empirical research on knowledge transfers has provided inconclusive results about the effect of age (Van Wijk et al., 2008). In their meta-analysis of the antecedents and consequences of knowledge transfers, Van Wijk et al. (2008) identified 13 papers that have explored the relationship between age and knowledge transfers, and they reported an insignificant correlation between both variables. However, they did find that younger units significantly transfer less knowledge intra-organizationally (without distinguishing between inflows and outflows), though older organizations also tend to encounter more difficulties, specifically when acquiring knowledge. In the context of knowledge flows to IJVs, Anh et al. (2006) also found an insignificant effect of age on the knowledge acquisition of Vietnamese IJVs, but they report an unexpected and surprising negative coefficient for tacit knowledge transfer, probably because their model also includes several variables that account for absorptive capacity.

The disparity in the results is likely due to the diverse contexts in which knowledge transfers have been investigated and the different control variables used in each study. Such diversity makes the comparison across studies more difficult, particularly for interpreting what the age variable actually captures in each one. Thus, the relationship between IJV age and knowledge transfers is far from straightforward. Among the possible negative effects of age on organizational learning in general, Cyert and March (1963) first noted that aging organizations tend to become slow to adapt and learn, though this negative effect may be less relevant in the context of IJVs that are closely attached to and often technologically dependent on their foreign partner. On the contrary, important positive effects of age have also been identified, especially due to the relational capital that develops through time between partners. Longer relationships with more frequent communication allow the development of trust, commitment, and mutual understanding among managers (Becerra & Gupta, 2003; Szulanski, 1996). As a relationship is substantiated over time, cultural distance tends to decrease (Meschi, 1997) and partners develop personal attachments (Inkpen & Beamish, 1997). From this perspective, IJVs that have enjoyed a longer history of interactions and presumably a deeper relationship with their foreign partners should have been able to develop a more positive climate for exchange and a stronger relational capital (Dhanaraj et al., 2004; Robson, Skarmeas, & Spyropoulou, 2006). Stable relationships, trust, personal attachments, and understanding of partners are all conditions that facilitate learning.

Notwithstanding these social factors that may be associated with IJV age and the quality of the relationship between an IJV and

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its foreign parent, we contend that age is a critical factor that influences the development of absorptive capacity of an IJV, and hence the knowledge that it may absorb from its foreign partner specifically. An organization's absorptive capacity is generally defined as the organization's ability to recognize the value of the information transmitted, assimilate this information, and apply it to commercial ends (Cohen & Levinthal, 1990). A firm's absorptive capacity tends to develop cumulatively, it is path dependent, and it builds heavily on prior knowledge (Cohen & Levinthal, 1990; Park, 2011); thus, as a reflection of an organization's growing experience, absorptive capacity should be closely associated with its age. As the IJV grows older, it is likely to have had more opportunities to develop its knowledge resources internally and to acquire knowledge from other external sources as well. The IJV and the foreign parent have more opportunities to interact and develop a better understanding of each other's needs and capabilities over time (Simonin, 1999), so that the IJV becomes more proficient in learning from its parent (Dhanaraj et al., 2004). To the extent that the IJV's own knowledge of the parent firm, its routines and practices, and thus its related absorptive capacity (i.e., its specialized capability to learn from the parent) develops through time, we should expect a positive relationship between IJV age and the knowledge absorbed by the IJVs, after the initial stage in which the IJV is actually set up and starts to function. Similarly, as a partnership matures, the relationships between the partners face a variety of tests and those partnerships that survive are likely to be more resilient, reflecting increased commitments of the partners to the partnership, investment in the development of more effective inter-organizational routines, and accumulation of relational capital (Lin & Germain, 1998; Tsang et al., 2004). This is likely to increase the willingness of parents to transfer knowledge to the IJV and invest in improvements to their disseminative capacity beyond the improvements that result from cumulative experience.

We need, however, to further qualify our claim that IJV age should be positively associated with knowledge acquisition from the foreign partner, because it is likely to be contingent on the type of knowledge that is being transferred. The transfer processes for tacit and explicit knowledge differ significantly in terms of their modes, their speed, the supporting mechanisms they require, and the conditions that enable them. Tacit knowledge is more difficult to identify, evaluate, and absorb because it is embedded in organizational practices and informal rules, routines, and processes (Nelson & Winter, 1982). It is transferred mainly through observation and face to face interactions (Nonaka & Takeuchi, 1995; Polanyi, 1966). "In learning situations, for example, it is not simply what a mentor or teacher can say, but also what he or she implicitly displays about the particular art, craft, or discipline" (Duguid, 2005:112). Those who possess this type of knowledge "know more than they can tell," and often are not aware that they have it (Polanyi, 1966). Tacit knowledge is revealed through repeated observations by the "learner" and interactions with the "teacher".

Discovery through observation of practice requires the development of the skills to observe, the ability to interpret observations, and prior knowledge of the specific institutional environment in which the knowledge is embedded. For this reason, we argue that older IJVs should be more likely to and better at absorbing tacit knowledge from their foreign parents (i.e., related tacit knowledge). Though there is only scarce empirical research on this topic, Lane et al. (2001) report some preliminary empirical evidence that tacit knowledge transfers to IJVs increased between 1993 and 1996 for the Hungarian firms in their sample, and call for future research to investigate this relationship in greater detail.

Thus, older IJVs should be more prepared and capable to absorb tacit knowledge, if we regard IJV age as a reflection of the organization's experience and hence its absorptive capacity. We would expect that older IJVs would be more likely to have shared experiences with their parents, effectively absorb "best practices," and take advantage of opportunities for interaction and observation for the IJV's employees, as discussed above. Thus, we can formulate our first hypothesis.

H1a. More mature IJVs are likely to acquire more tacit knowledge from their foreign parents than younger ones.

In contrast, we do not expect IJV age to be associated with greater transfer of explicit knowledge past the very early stages of its founding, since the transfer of explicit knowledge only requires minimal interaction between the IJV and its foreign parent. When the knowledge is fully codified, its transfer does not require repeated interactions between knowledge senders and recipients, nor does it require a high level of familiarity with the context in which the knowledge was generated, as is the case with tacit knowledge. Though in most circumstances tacit knowledge is shared 'locally' (i.e., through face to face interactions), in many areas it can be shared widely among communities of practitioners, most of who never come into contact with one another (Duguid, 2005). Though some prior tacit knowledge is always necessary to absorb explicit knowledge (Polanyi, 1966), only *generic* knowledge seems necessary in this case, i.e., tacit knowledge that is widely shared in communities of practice and is not specific to the parent/IJV relationship, as we discussed earlier. Because it may be possible to hire practitioners with this type of generic knowledge necessary to process explicit knowledge transfers from the foreign parent, young and older IJVs alike should be able to have a similar level of absorptive capacity of explicit knowledge.

To sum up, unlike the acquisition of tacit knowledge that requires related absorptive capacity (one which requires prior possession of tacit knowledge specific to the parent organization) and takes time to develop, the acquisition of explicit knowledge only requires the deployment of generic absorptive capacity (one that is shared more widely in communities of practice) that can be acquired through recruitment and thus depends less on IJV age to develop.

We would expect, therefore, IJV age to have a much more important role in the transfer and absorption of tacit knowledge than in the acquisition of explicit knowledge, as the following hypothesis suggests.

H1b. More mature IJVs are not likely to acquire more explicit knowledge from their foreign parent than younger ones.

3.2. IJV age as a moderator of the performance effects of tacit and explicit knowledge

To understand the performance consequences of explicit and tacit knowledge transfers for IJVs of different ages, we need to examine further the differences between tacit and explicit knowledge as well as their potential to generate competitive advantage. As noted by Dhanaraj et al. (2004:430), "Whereas explicit knowledge provides the building blocks, tacit knowledge provides the glue and integrating mechanism in learning." Tacit knowledge is particularly important because it clarifies how the sum of the parts works together (Polanyi, 1969) and it provides meaning and deeper understanding to explicit knowledge (Dhanaraj et al., 2004). While explicit knowledge is about knowing what is the innovation that the transfer is intended to trigger, knowing how to put it successfully into practice requires a different type of knowledge that is largely tacit, specialized, and embedded in organizational contexts, routines, and practices (i.e., related tacit knowledge).

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We will explore now how tacit knowledge represents action-oriented knowledge that may have a positive impact on performance to the extent that competitors have greater difficulty in replicating it. Since tacit knowledge is generated through learning-by-doing in an IJV context and is transferred through observation of practices, it helps bridge the gap which exists between "theory" and "practice," providing insight into how to translate knowledge into action in a way that competitors find difficult to replicate. Thus, the transfer of tacit knowledge facilitates enhanced utilization of knowledge assets by IJVs, which may have important implications for organizational performance (Lane et al., 2001; Shenkar & Li, 1999).

The positive effect of tacit knowledge on firm performance is also clear from a resource-based view. Organizational knowledge has the potential to deliver sustained competitive advantage to the extent that it is often valuable, rare, and difficult to imitate by competitors (Barney, 1991). This is particularly true for tacit knowledge as a strategic resource. Because the transfer of tacit knowledge is dependent on sustained interactions between parent and the IJV, not only is it inherently more difficult to transfer as we discussed earlier, but it also has a low chance of being observed and replicated by competitors.

Empirical research on alliance performance has supported the positive effects of tacit knowledge transfers on performance. In their analysis of Vietnamese IJVs, Anh et al. (2006) reported a positive effect of tacit knowledge transfer on IJV performance. Becerra et al. (2008) also showed in their sample of Norwegian alliances that those with greater transfers of tacit knowledge between partners enjoyed greater success.

Thus, based on resource-based arguments and the accumulated empirical research on alliances and IJVs, we may hypothesize a positive effect of tacit knowledge transfer on IJV performance for both younger and older IJVs. Essentially, we do not expect IJV age to moderate the effect of tacit knowledge transfer on performance because this type of knowledge is directly actionable by the IJV and it provides the local unit with a difficult-to-imitate resource that has the potential to generate a competitive advantage. Thus

H2a. A higher level of acquired tacit knowledge from the foreign parent is associated with a greater performance for both young and mature IJVs.

The effect of explicit knowledge transfers on joint venture performance is much more controversial. For instance, Anh et al. (2006) and Becerra et al. (2008) could not find a significant effect for explicit knowledge transfers, controlling for age of the joint venture, in their studies. We believe that IJV age should play an important role in the performance implications of explicit knowledge transfers in particular. The greater experience that comes with IJV age results in the accumulation of related tacit knowledge and increases the IJV's ability to transform the acquired explicit knowledge into actionable, potentially increasing performance. Young IJVs are likely to lack such experience and the knowledge of how to implement the explicit knowledge they absorb. Pisano (1988) makes clear the importance of experience in the exploitation of explicit knowledge when he claims that "experienced firms are more likely to possess the relevant tacit know-how to fill in the gaps left by codified descriptions. For a firm that has had no experience with the particular technology, these codified descriptions may provide only vague clues about what has been tried and what might be tried next." (Pisano, 1988:58).

Furthermore, young IJVs are less likely to enjoy performance benefits from transfers of explicit knowledge because of issues of appropriability. Teece (1986) has noted that complementary assets are necessary to appropriate the returns from commercial innovations that are not well-protected from replication in the market. The acquisition of explicit knowledge is one of those cases when the innovator (i.e., the IJV that receives the knowledge from its parent) does not have the necessary complementary assets. Like in the case of innovations, complementary resources are also necessary for the exploitation of explicit knowledge to generate performance improvements, because this type of knowledge and the strategic actions based on it are far less easy to protect and hide from competitors' scrutiny. Thus, the use of explicit knowledge in the local market is not likely to lead to sustainable improved IJV performance if it is not coupled with complementary resources owned by the IJV, which otherwise would be easy to infer by competitors and to replicate successfully if they do have the necessary complementary assets. Older IJVs have had more opportunities to develop and accumulate complementary resources, including their own related tacit knowledge, which allows them to profit from the explicit knowledge that they may receive from their foreign parent, with lower likelihood of being quickly imitated by competitors.

Thus, as IJVs grow older, they may be expected to accumulate the necessary experience and complementary assets to successfully benefit from the explicit knowledge they may acquire from their foreign parent. Only in this case, the transfer of explicit knowledge may have a positive impact on IJV performance. With this idea in mind, we can formulate our last hypothesis as follows:

H2b. A higher level of acquired explicit knowledge from the foreign parent is associated with a greater performance only for mature IJVs, but not for young ones.

4. Data and methods

4.1. Sample and data collection

We tested our model using survey data from a sample of 334 Korean international joint ventures. South Korea is one of the fastest-growing OECD countries, experiencing GDP growth of more than 4% per year over the last 10 years (OECD Publications, 2012), and is one of the preferred locations for direct investments by Western and Japanese multinational firms (Park et al., 2012). Korea provides an appropriate context to investigate the effects of knowledge transfer in IJVs on performance, mainly because in the last two decades Korean companies and their joint ventures with foreign partners have achieved world-class status in a variety of knowledge-intensive industries.

We designed a questionnaire to explore the relationship between the IJVs and their foreign partners, which was complemented by secondary sources of data to investigate the validity of our performance variable. The questionnaire was designed in English, translated into Korean, and back-translated to check its accuracy (Brislin, 1970). The survey included several published scales as well as some additional items designed specifically for our research purposes. We conducted a pretest with ten managers of IJVs through face-to-face interviews to ensure the survey items were appropriate.

The sample for our study was comprised of IJVs between MNEs and Korean local firms. These particular IJVs were selected from the *Foreign Investment Statistical Yearbook*, which is published by the Korean Ministry of Knowledge Economy and has also been utilized as a source for previous studies that have examined Korean IJVs (Choi & Beamish, 2004; Park et al., 2012).

Since IJVs are not yet fully operational during their first few years, and the nature of the knowledge transfers is substantially affected by the setup of the organization, our target sample was limited to IJVs which had been operating for at least 3 years. Furthermore, to focus on knowledge transfers toward IJVs and

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Table 1a
Sample characteristics.

IJV age	Number	Percent (%)
3–5 years	64	19.2
6–10 years	111	33.2
11–15 years	30	9.0
16–20 years	48	14.4
More than 21 years	81	24.3
Total	334	100.0
Average age	14.05	

Country of origin of partner firm

Continent	Country	Number	Percent (%)
Europe	Netherlands	7	2.1
	Germany	24	7.2
	U.K.	6	1.8
	France	16	4.8
	Switzerland	4	1.2
	Luxemburg	3	0.9
	Italy	2	0.6
	Norway	4	1.2
	Austria	2	0.6
Asia	Japan	149	44.6
	China	15	4.5
	Pakistan	2	0.6
	Hong Kong	4	1.2
	Singapore	13	3.9
	Taiwan	6	1.8
North America	US	53	15.9
	Canada	1	0.3
Oceania	Australia	3	0.9
Others	Others	20	6.0
Total		334	100.0

Table 1b
Sample breakdown by industry and knowledge intensity.

Intensity	Industry	#	%
High–Tech	Telecommunication	2	0.6%
Medium–High	Chemical	46	13.8%
	Transportation machinery	28	8.4%
	Finance & insurance	7	2.1%
	Electronics	43	12.9%
	Machinery	32	9.6%
Medium–Low	Nonmetal	5	1.5%
	Metal	22	6.6%
	Retail & distribution	61	18.3%
	Real estate	2	0.6%
	Business service	33	9.9%
	Construction	2	0.6%
	Logistics	25	7.5%
	Lodging	4	1.2%
Low–Tech	Food	10	3.0%
	Manufacturing	5	1.5%
	Paper	3	0.9%
	Textile	4	1.2%
	Total	334	100.0%

Knowledge Intensity breakdown of the industries is based on the guidelines established by the OECD in their 2003 Science, Technology and Industry Scoreboard publication (OECD, 2003).

avoid any confounding effects that may be unique to intra-firm knowledge flows, we only included IJVs that had 30–70% of foreign equity. To carry out data collection, we hired a company specialized in doing surveys, which distributed and collected all the questionnaires. This company provided support to the respondents while they were completing the survey, including clarification of the concepts used in the questionnaire, such as the distinction between tacit and explicit knowledge. After doing the pilot test, we provided detailed information to the survey company about the variables that we wanted to measure and the possible sources of confusion in the items.

Overall, a total of 347 surveys were obtained for a response rate of 16.5%. After deleting the unusable responses, there were 334 IJVs in the final data sample. The typical respondent was an IJV general manager, or sometimes a manager in the Korean parent firm responsible for the IJV's operations. Responses from managers whose appointments in the IJV were for less than one year were deleted from the sample in order to ensure that all

Table 2
Measurement model: standardized parameter estimates.

Measurement items	Estimate	SE	*t*-value
Constructs			
Explicit knowledge transfer (Cronbach's Alpha: 0.929)			
Written knowledge about the technology	.865		
Procedural manuals or technical manuals	.953	.039	25.649
Written knowledge about management techniques	.899	.042	23.149
Tacit knowledge transfer (Cronbach's Alpha: 0.956)			
Managerial techniques	.925	.028	33.415
New marketing expertise	.956		
Knowledge about foreign cultures and tastes	.928	.028	33.742
Performance (Cronbach's Alpha: 0.933)			
Key managers in the Korean parent would rate the IJV's performance as.....	.861		
Key managers in the foreign parent would rate the IJV's performance as.....	.950	.042	25.162
You would rate the IJV's performance as.....	.918	.044	23.812
Controls			
Relational capital (Cronbach's Alpha: 0.939)			
Understanding each other	.873		
Expected not to pursue its interest	.853	.050	19.899
Informal agreements have the same as formal contracts	.868	.049	20.450
Exchange interaction (Cronbach's Alpha: 0.935)			
Emphasis is placed on dealing with cultural obstacles	.864		
Managerial interaction is closely monitored	.906	.044	22.825
There is strong two-way communications	.907	.048	22.875

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respondents had adequate knowledge to complete the survey. The average number of employees for the IJVs in the sample was 140, with 2000 people in the largest firm. Tables 1a and 1b show descriptive characteristics of age and country of origin, industry, and technological intensity for the IJVs in the sample.

4.2. Main variables

The survey collected data for the following variables. As shown in Table 2, all of them obtained acceptable levels of reliability based on their Cronbach's alpha and the measurement model estimated through structural equations modeling later on (Table 2). Detailed wording of the scales in the questionnaire is shown in Appendix A.

4.2.1. IJV age

The IJV's age is measured as the logarithm of the number of years the IJV had operated in South Korea up to the time the respondents were interviewed. As mentioned earlier, only IJVs with a minimum presence of three years in Korea were contacted. We used the log form to account for the fact that the distribution was clearly skewed to the right.

4.2.2. Tacit knowledge

Before rating the items concerning tacit knowledge, interviewers were informed that tacit knowledge is usually defined as the type of knowledge where you "know more than you can explain," knowledge that can be acquired mainly through observations and interactions with those possessing it (Polanyi, 1966). Then, they were asked to rate the specific items in the scale for tacit knowledge transfer from their foreign partner. The three items selected for this scale, developed by Dhanaraj et al. (2004), refer to managerial and marketing expertise as well as knowledge about foreign cultures and tastes.

4.2.3. Explicit knowledge

As we did with tacit knowledge, interviewees were informed that we wanted to measure explicit knowledge transfer, defined as containing information that is well articulated and can be learned from written manuals and other written materials. We also used the instrument from Dhanaraj et al. (2004) to measure explicit knowledge transfers to the IJV. The items refer to (1) written knowledge about technology, (2) procedural or technical manuals, and (3) written knowledge about management techniques.

4.2.4. Performance

To obtain a well-rounded measure of IJV performance, we asked the respondent to evaluate, in his/her opinion, satisfaction with the IJV's performance from the perspective of the Korean parents, the foreign parents, and the IJV's management with regard to sales revenues, market shares, and profit increases. These items are based on the measures of IJV performance used by prior research in the literature (Dhanaraj et al., 2004; Lyles & Salk, 1996). To test the external validity of these measures of IJV performance, we used the sales growth rate in the year prior to our study as an alternative objective indicator of performance and examined its correlation with the perceptual measure used in the study (Park et al., 2012). As many IJVs did not want to report their sales growth rate, we also obtained this data from the Korean Chamber of Commerce and Industry's databases, which include financial information from IJVs in Korea. We found that the self-reported perceptual measure of IJV performance was highly correlated with its previous year's sales growth.

4.3. Control variables

In addition to the main variables described above, we also used a number of variables to control for the possible impact of confounding factors that could influence explicit and tacit knowledge transfers from foreign parents.

IJV size, measured as the total number of employees in the IJV, was included as a control because the size of an organization may contribute to its inertia and thus inhibit knowledge transfer (Lane et al., 2001).

Cultural distance, measured as the Euclidean distance in terms of Hofstede's (1983) cultural dimensions (Kogut & Singh, 1988), was included because it may be associated with the level of transaction costs in cross-cultural interactions and communications (Lin & Germain, 1998; Pothukuchi, Damanpour, Choi, Chen, & Park, 2002).

We used an industry control variable to capture high or low *Knowledge intensity* sectors since firms operating in high-technology, knowledge-intensive domains are likely to deal with transfers of complex explicit knowledge, while firms operating in industries with lower levels of technology (e.g., retail marketing) tend to rely more on transfers of tacit knowledge concerning management and marketing practices (Lane et al., 2001). As shown in Table 1b, we divided the IJV's industries in which these IJVs were participating between high-tech, medium-high, medium-low, and low-tech, according to the guidelines established by the OECD in their 2003 *Science, Technology and Industry Scoreboard* publication (OECD, 2003). The distribution by industrial sector of the firms in our sample highlights the prevalence of IJVs in sectors such as electronics, chemicals, and machinery, where transfers of technology are important; this distribution also shows a large number of IJVs occurring in low technology sectors such as retail and distribution. Thus, we used one control variable to reflect the IJV's technological level, which proxies their incentive to learn from foreign parents in their industry.

We also controlled for *Relational capital* between the parent and the IJV as operationalized by Dhanaraj et al. (2004). These authors use a scale with the following three items based on a 7-level Likert scale of agreement: (1) As we have been doing business for so long, we can understand each other well and quickly; (2) The strongest side is expected not to pursue its interest at all costs; (3) Informal agreements have the same significance as formal contracts. We included this variable because the quality of the relationship is likely to influence how much knowledge is transferred between the two parties.

We also measured the degree of *Exchange interaction* in their relationship, which is a three-item scale that reflects the intensity of interparty communications and obstacles, adapted from Kale et al. (2000). Interactions are facilitated by strong two way communications and management commitment to remove cultural obstacles, as well as constant monitoring and quick resolution of any impediments to interactions and communications between the partners (Park et al., 2012). Thus, we included this variable to control for the different ease of interaction that could affect the exchanges of knowledge between parent and IJV.

4.4. Statistical analysis and common method bias

We used structural equations modeling (SEM) to test our model with AMOS statistical package. As we were interested in the differences between young and old IJVs regarding knowledge flows from their foreign parent and their impact on performance, we also conducted multi-group analysis to investigate the moderating effect of IJV age. The tested model is shown in Fig. 1 and the results are reported in the following section. Following usual practice, we depict observed variables as rectangles and latent variables as ovals.

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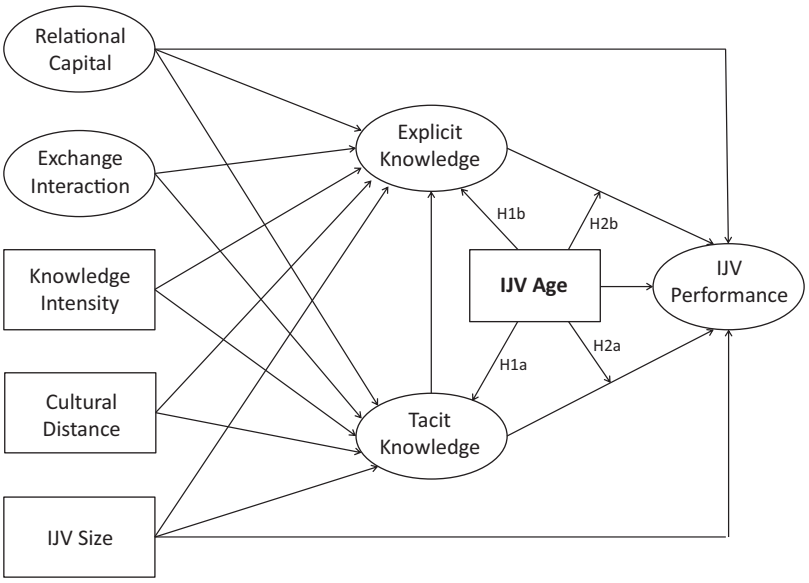

Fig. 1. Model for age, knowledge transfer, and performance.

There is a possibility that common method bias could affect the results since the data have been collected from the same respondents. We examined the common method variance in two different ways. First, we use Harmon's one-factor test (Podsakoff & Organ, 1986) using principal component analysis of all the items. No dominant factor emerged, and the first factor accounted for only 16% of the 76.2% explained variance. Second, we conducted a test for potential common method bias using the method recommended by Cote and Buckley (1987). We estimated the following three models:

(1) M1 was a method-only model in which all items were loaded on one factor.

($\chi^2(90) = 1930.632$, $p = 0.000$; CFI = 0.63, TLI = 0.57; RMSEA = 0.248)

(2) M2 was a trait-only model in which each item was loaded on its respective scale.

($\chi^2(80) = 137.463$, $p < 0.001$; CFI = 0.98, TLI = 0.98; RMSEA = 0.046)

(3) M3 was a trait and method model in which a common factor linking to all the measurement items was added into M2.

($\chi^2(24) = 49.583$, $p < 0.001$; CFI = 0.99, TLI = 0.98; RMSEA = 0.040)

The results indicated that M3 and M2 show much better fit than M1, and the fit of M3 is slightly better than that of M2. Therefore, we concluded that common method bias did not pose a major threat to the study.

5. Results

We followed the two-stage approach suggested by Anderson and Gerbing (1988) for SEM analysis. The structural model was first estimated to confirm that the latent variables were reliable and valid before testing the hypotheses. Later on, we tested the hypothesized structural relationships.

Table 2 shows the standardized loadings for the measurement model, which obtained a satisfactory fit ($\chi^2 = 192.456$ (120), CFI = .986, NNFI = .964, IFI = .986, RMSEA = .043). Although the chi-square statistic is significant, the other indexes provide clear evidence that the model fits well the observed variance-covariance structure among observed variables. It should be noted that the ratio of chi-square to degrees of freedom is 1.60 and a value of less than 3 indicates a good fit and justifies the tests to be conducted (Carmines & McIver, 1981). All factor loadings were found to be statistically significant at the 1% level and they exceeded the usual 0.5 standard (Fornell & Larcker, 1981), which provides support for adequate convergent validity of the scales in the study.

We also examined the discriminant validity of each construct following the recommendations of Fornell and Larcker (1981), who suggest that the square root of the average variance extracted (AVE) value of the construct must be greater than any of its correlations with other constructs to assure proper discriminant

Table 3
Correlation of latent constructs and discriminant validity.

	Age	Explicit	Tacit	Perform.	Relation	Interaction	Size	Culture
Age	**1**							
Explicit	0.063	**0.907**						
Tacit	0.011	0.651	**0.936**					
Performance	0.053	0.546	0.565	**0.910**				
Relation	0.079	0.633	0.548	0.582	**0.865**			
Interaction	0.048	0.742	0.617	0.582	0.772	**0.893**		
Size	0.497	0.138	0.165	0.310	0.086	0.146	**1**	
Culture	−0.181	−0.103	−0.146	−0.063	−0.118	−0.078	−0.184	**1**

Note: Diagonal terms (in bold) are the AVE values (Square root of the average variance extracted) Off-diagonal terms are the correlation of latent variables. The diagonal terms must be greater than any of the elements in the row or the column corresponding to that number to test the discriminant validity of the construct (Fornell & Larcker, 1981).

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Table 4
Results for coefficients on hypothesized relationships.

To	From	Estimate	SE	CR	P
Hypotheses testing					
Explicit	Age	−0.030	0.056	−0.536	0.592
Tacit	Age	0.142	0.071	2.004	0.045
Performance	Explicit	0.072	0.064	1.134	0.257
Performance	Tacit	0.198	0.050	3.936	0.001
Additional paths with control variables					
Performance	Age	0.062	0.051	1.224	0.221
Performance	Size	0.167	0.047	3.546	0.001
Performance	Relation	0.303	0.106	2.855	0.004
Explicit	Tacit	0.272	0.053	5.138	0.001
Explicit	Size	0.024	0.051	0.469	0.639
Explicit	Relation	0.060	0.118	0.511	0.609
Explicit	Culture	−0.001	0.002	−0.347	0.728
Explicit	Interaction	0.615	0.113	5.421	0.001
Explicit	Industry	−0.075	0.032	−2.355	0.019
Tacit	Size	0.026	0.062	0.438	0.661
Tacit	Relation	0.192	0.143	1.343	0.179
Tacit	Culture	−0.004	0.003	−1.384	0.166
Tacit	Interaction	0.592	0.126	4.709	0.001
Tacit	Industry	0.030	0.038	0.794	0.427

Fit indices: $\chi^2 = 180.617$ (d.f. = 116, $p < 0.01$), CFI = .987, NFI = .966, IFI = .987, RMSEA = .041.
** Indicates significant at $p < 0.05$; *** indicates significant at $p < 0.01$.

validity of the construct. Table 3 shows that the square root of the AVE is indeed greater than all corresponding correlations. This result also confirms the discriminant validity of the constructs.

Having established adequate validity for the variables in the study, we proceeded to estimate the structural model and formally test the hypotheses about the effect of IJV age on the transfer of tacit and explicit knowledge from the foreign partner to the Korean IJVs. The results for the full-sample model are shown in Table 4. The overall fit statistics indicate an adequate fit of the model to the data ($\chi^2 = 180.617$, d.f. = 116, $p < 0.01$, CFI = .987, NFI = .966, IFI = .987, RMSEA = .041). The table also reports the coefficients in the structural model and the associated *t*-statistics and their *p*-values.

In the model in Table 4, both explicit and tacit knowledge are driven by IJV age and the full set of control variables, including size, relational capital, cultural distance, exchange interaction, and industry type. As the transfer of both tacit and explicit knowledge is likely to be correlated because tacit knowledge is necessary to absorb explicit knowledge, we also set free the path from tacit to explicit knowledge, following the relationship found by Dhanaraj et al. (2004). The ultimate dependent variable, IJV performance, is determined by the three key variables in the model, i.e., tacit and explicit knowledge transfers and IJV age, plus the control variables that may be associated with performance, i.e., size and relational capital.

Hypotheses 1a and 1b claim that the increasing age of an IJV will be positively associated with the extent of tacit knowledge transfer, but not with explicit knowledge transfer. As Table 4 shows, the coefficient for the link between IJV age and tacit knowledge is positive and significant ($\beta = 0.14$, $p < 0.05$), while the coefficient is insignificant for the link between IJV age and explicit knowledge ($\beta = -0.03$, $p > 0.10$). Thus, there is clear support for the idea that more mature IJVs are likely to receive more tacit knowledge from their foreign partner than younger ones, while explicit knowledge transfer does not seem to be impacted by IJV age.

The full model also shows that tacit knowledge transfers are associated with greater performance, but not so for explicit knowledge flows. This is consistent with earlier research that shows the critical relevance of tacit, but not explicit knowledge for alliance performance (Anh et al., 2006; Becerra et al., 2008). However, these results do not account for the possible interaction of IJV age. Hypothesis 2a claims that greater transfer of tacit knowledge is associated with greater performance for both young and mature IJVs. In contrast, in Hypothesis 2b we incorporate IJV age as a key variable that moderates the performance impact of explicit knowledge transfer to the IJV.

Table 5 reports the tests for the moderating role of IJV age on the performance consequences of the two types of knowledge flows. To test the moderation effects of age, we divided the sample into two groups using the median IJV age as a cut-off point: one group of IJVs is older than 10 years (mature IJVs, $N = 158$) and another group IJVs is 10 years old or less (young IJVs, $N = 176$). Multi-group analysis was then conducted based on the IJV age subsamples. The overall fit indices for the multiple-sample analysis suggest that the model fits the data well ($\chi^2 = 325.016$, d.f. = 232, $p < 0.01$, CFI = .982, NFI = .940, IFI = .982, RMSEA = .035). Following the procedure suggested by Anderson and Gerbing (1988), we constrained all hypothesized paths to be equal across the two groups (mature and young IJVs) and then compared the fits of the constrained and the unconstrained models.

Hypotheses 2a and 2b argue that, while the impact of tacit knowledge transfer on performance should always be significant (H2a), the effect of explicit knowledge transfer on performance should only be observable for mature IJVs, but not for younger IJVs (H2b). Our findings confirm that IJV age moderates the relationship between the transfer of explicit knowledge and performance, as expected. The coefficient for the link between explicit knowledge and performance is positive (0.211) and significant for mature IJVs, but insignificant (−0.046) for younger IJVs, suggesting that the relationship is significantly weaker in younger IJVs than in mature IJVs. The significant chi-square difference ($\Delta\chi^2 = 3.736$, $p = 0.05$) supports our claim that IJV age moderates the relationships between explicit knowledge transfer and performance. Though the transfer of tacit knowledge has been shown to have positive performance implications for IJVs in earlier research, the transfer of explicit knowledge may also have positive performance consequences for older IJVs, which presumably have the necessary complementary resources and related tacit knowledge to exploit explicit knowledge. Thus, Hypotheses 2a and 2b are supported.

Table 5
Multi-group path analysis for the IJV age subsamples.

From	To	Young IJVs ($N = 176$) Standardized Estimate	Mature IJVs ($N = 158$) Standardized Estimate	*p* value
Explicit knowledge	Performance	−0.046	0.211**	0.05
Tacit knowledge	Performance	0.235***	0.172**	0.52

Fit indices: $\chi^2(232) = 325.016$ ($p < 0.01$); CFI = .982, NFI = .940, IFI = .982, RMSEA = .035.
** Indicates significant at $p < 0.05$; *** indicates significant at $p < 0.01$.

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6. Discussion and conclusion

Enterprises in developing countries may be limited in their ability to acquire knowledge resources since they are deprived of the benefits of knowledge spillovers because of their knowledge-poor environments. IJVs are often an important exception since they can benefit from knowledge transfers from their foreign parents. Indeed, they can provide a channel through which knowledge generated in managerially and technologically advanced countries is disseminated to developing countries. Arguably, IJVs have played an important role in facilitating knowledge transfers from technologically-advanced countries to South Korea, contributing to its exceptionally rapid transformation from a developing economy to a leading industrialized one.

Though knowledge transfers result in a change in the knowledge base of the recipient firm, neither are all IJVs equally prepared to absorb all types of knowledge from their foreign partner, nor does every change in knowledge base necessarily lead to a discernible change in IJV performance. Integrating insights from strategy and learning theories, we have developed and tested a model that examines the effect of age on the transfer of explicit and tacit knowledge, and the relationship between such knowledge transfers and improved organizational performance.

Our study provides clear empirical evidence for the important role of an IJV's age as facilitator of the different types of knowledge transfers and its performance implications. More precisely, we contribute to the IB literature on knowledge transfers by showing that IJV age is a key moderator of the relationship between transfers of explicit knowledge and performance, which had not been shown to be significant by earlier research. Our findings uncover an important dilemma for young IJVs. They encounter significant barriers when attempting to absorb tacit knowledge transfers and thus tend to be discouraged from investment in such knowledge transfers, despite the fact that tacit knowledge once absorbed is an important factor in the development of competitive advantage. Instead, they may be tempted to invest in transfers of explicit knowledge because they are more easily absorbed, though this type of knowledge transfer may not lead to better performance. This dilemma can be mitigated through rebalancing the efforts of parent firms associated with the transfers of knowledge by providing support to improve the ability of young IJVs to absorb tacit knowledge and ensure that complementary resources are made available after explicit knowledge has been transferred.

Our empirical analysis shows that IJV age is a key determinant of knowledge transfer and its effective deployment to improve performance, though its impact is quite different for tacit vs. explicit knowledge. Our paper studies the transfer of tacit and explicit knowledge as distinct but linked processes, and the results confirm that IJV age has a positive impact on the amount of tacit knowledge that IJVs are likely to absorb, but no significant impact on the absorption of explicit knowledge. Prior studies obtained mixed results about the relationships between age and knowledge transfers (Van Wijk et al., 2008), probably because researchers have not distinguished between different types of knowledge transfers or failed to control for the impact of some confounding variables since age was used only as a control variable in these studies.

Furthermore, we also found support for the idea that age provides a clear advantage in the utilization of explicit knowledge and its performance implications for IJVs. It has widely been acknowledged that tacit knowledge can be a strategic resource with clear performance effects for organizations and IJVs in particular. However, the potential positive effect of explicit knowledge transfers on IJV performance has not been uncovered before. Our results confirm that age is a critical moderator that allows explicit knowledge to generate performance consequences after it has been absorbed, though only for older IJVs. The deployment of new explicit knowledge (e.g., implementing a technological innovation) requires complementary assets and related tacit knowledge, such as knowledge of customization practices and problem-solving heuristics that IJVs are likely to develop only through maturation. It is not enough to receive and use explicit knowledge to actually profit from it. Younger IJVs may lack necessary complementary resources and hence the exploitation of explicit knowledge received from the foreign partner may only lead to performance improvements when the IJVs have developed those resources. Thus, though we find evidence for the greater importance of tacit knowledge, explicit knowledge transfer also matters, especially for older IJVs.

The distinction between the ways tacit and explicit knowledge are acquired by IJVs from their parents is critical to understanding their implications for IJV performance. It is possible that transfers of tacit knowledge to young IJVs are likely to entail a higher level of active involvement by parents, while tacit knowledge transfers to mature IJVs may involve parents in a more passive way because of their presumed greater absorptive capacity. Active transfers of tacit knowledge require both senders and recipients to commit resources to the transfer process, but they are compensated with important performance improvements. The patterns and interactions between active and passive transfers of tacit knowledge are relatively unexplored, theoretically and empirically, and offer a fertile area for new research. Similarly, future research may also develop further the distinction between related and generic tacit knowledge and the corresponding concepts of related and generic absorptive capacities. These distinctions are important to understand the circumstances under which knowledge possession may contribute to a temporary or a sustainable competitive advantage.

Clearly, our study is not without limitations. First, the study is confined to one country, and thus generalization of our findings is uncertain, though it serves to complement earlier research from other countries. Second, our study remains silent about the transfer of knowledge from the IJV to the foreign parent. We have only focused on how IJV age influences the inflow of tacit and explicit knowledge from foreign parents, but it seems reasonable to expect that IJV age may play a different role in knowledge outflows from IJVs to foreign parents. This is a clear opportunity for future research on knowledge transfers in international business; future studies could focus on the parent company's perspective and why they are more likely to receive and profit from the knowledge provided by the IJVs.

Finally, the cross-sectional nature of the data does not permit strong inference about causality. The use of Age as the key construct of our study has a distinct methodological advantage since it is inherently an exogenous variable that is neither stochastic nor manipulable, thus limiting the perverse effects of endogeneity. There may be, however, alternative reasons why older IJVs tend to receive more tacit knowledge than younger ones. For instance, as IJVs become more mature, their mandate within the MNC may change systematically, which could have implications for the amount and the type of knowledge that they receive from the parent, as opposed to a change in their related absorptive capacity or the parents' disseminative capacities. Thus, while we have included a large number of control variables, there is always the risk in non-experimental research that unobservable variables could be correlated with explanatory variables, which would result in biased coefficient estimates. We believe that although other explanations apart from absorptive and disseminative capacity, willingness to share knowledge, and complementary resources can be used to understand the transfer of tacit vs. explicit knowledge from foreign parents to their Korean IJVs, the empirical evidence clearly supports the important main and moderating roles of IJV age in this process.

Our study also provides managerial implications for knowledge management in MNCs that we would like to highlight. In addition to highlighting the general superiority of tacit knowledge

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acquisition from the parent over explicit knowledge acquisition in improving IJV performance, our study confirms that there are no easy shortcuts to improve the performance of younger IJVs. These young IJVs are not likely to benefit from explicit knowledge transfers early on, while tacit knowledge is more difficult to transfer because it takes time and continuous contact. In founding an IJV, foreign parents should develop opportunities for the transfer of tacit knowledge in particular. Thus, our results support the importance of transferring HQ staff to the IJVs early on for IJV performance, at a time when it is more critical for them to absorb and benefit from tacit knowledge because explicit knowledge is not likely to improve their performance early on. This makes transferring managers one of the best mechanisms to improve IJV performance in their early years, as it helps cultivate the positive effect of tacit knowledge transfer.

Furthermore, developing mentoring systems that match foreign and local employees, and creating employment exchange opportunities for IJV employees in the parent company, can provide the foundation for effective tacit knowledge transfer; these practices may be useful for both young and mature IJVs. In contrast, explicit knowledge flows can also be instrumental for improving performance, but only for more mature IJVs, which are likely to have developed the necessary complementary resources to benefit from this type of knowledge after they have absorbed it.

In sum, our research is only a modest step toward understanding the impact of context on the process of knowledge transfer between foreign parents and local IJVs, but other finer-grained contextual features that may determine the effectiveness of knowledge transfers still remain to be studied, including different ways to transfer tacit knowledge. Future research, especially longitudinal studies, may allow better assessments of causal relationships. In-depth case studies can also be useful to gain a better understanding of alternative knowledge transfer mechanisms.

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Appendix A. Scales used in the survey

	Items	Source
Explicit knowledge	*Explicit knowledge is the knowledge that has been articulated, codified, and stored. It can be learned from written materials and readily transmitted to others.* To what extent is the explicit knowledge that you have gained from your foreign parent? (7-point scale from 'Very little' to 'To great extent') • Written knowledge about the technology • Procedural manuals or technical manuals • Written knowledge about management techniques	Dhanaraj et al. (2004)
Tacit knowledge	*Tacit knowledge is the knowledge that is difficult to transfer to another by means of writing it down or verbalizing it and can be acquired mainly through observations and interactions.* To what extent is the tacit knowledge that you have gained from your foreign parent? (7-point scale from 'Very little' to 'To great extent') • Managerial techniques • New marketing expertise • Knowledge about foreign cultures and tastes	Dhanaraj et al. (2004)
Performance	(7-point scale from Very poor to Excellent) • Key managers in the Korean parent would rate the IJV's performance as…… • Key managers in the foreign parent would rate the IJV's performance as…… • You would rate the IJV's performance as……	Lyles and Salk (1996); Dhanaraj et al. (2004)
Relational capital	To what extent would you rate the following statements (7-point scale from 'Very little' to 'To great extent') • As we have been doing business for so long, we can understand each other well and quickly • The strongest side is expected not to pursue its interest at all costs • Informal agreements have the same significance as formal contracts.	Dhanaraj et al. (2004); Robson et al. (2006)

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Exchange interaction	To what extent would you rate the following statements (7-point scale from 'Very little' to 'To great extent') • Great emphasis is placed on dealing with cultural obstacles • Managerial interaction between partners is closely monitored for identifying potential conflicts • There is strong two-way communication	Kale et al. (2000); Park et al. (2012)

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