In the right place at the right time! The influence of knowledge governance tools on knowledge transfer and utilization in MNEs

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IN THE RIGHT PLACE AT THE RIGHT TIME!: THE INFLUENCE OF KNOWLEDGE GOVERNANCE TOOLS ON KNOWLEDGE TRANSFER AND UTILIZATION IN MNES

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This article examines the utilization of knowledge transferred between sending and receiving subsidiaries within multinational enterprises. A model was developed and tested on 169 specific knowledge transfer projects. The model explains the utilization of knowledge subject to transfer in terms of hierarchical governance tool efficacy and lateral relationships within the multinational enterprise. The results show that headquarters' involvement during knowledge development does not have any significant impact on subsequent knowledge utilization in the receiving units and, in fact, hierarchical governance forms have a negative impact on knowledge utilization. However, lateral relationships are positive stimuli to building subsidiary capabilities in the knowledge transfer process that enhance receiving unit knowledge utilization.

INTRODUCTION

In this article, we analyze knowledge transfer effectiveness between sending and receiving subsidiaries within multinational enterprises (MNEs) in terms of utilization of transferred knowledge at the receiving unit. Viewing and measuring knowledge transfer as a discrete event, rather than an aggregate of knowledge in- and outflows enables teasing out the knowledge transfer effectiveness in terms of use and adoption at the receiver.[1] This is an important contribution of our study, as only knowledge that has been adopted and is used can have a genuine impact on capability development. The conceptual framework of this article builds on the knowledge-based view and integrates both hierarchical governance tools and lateral relationships for understanding knowledge transfer effectiveness. The knowledge-based view highlights integrating isolated knowledge (Almeida, Song, and Grant, 2002; Foss and Pedersen, 2004; Song, Almeida, and Wu, 2003). We contribute to the knowledge-based view by making manifest hierarchical and lateral factors facilitating, or impeding, firms' *de facto* knowledge integration. Put differently, the knowledge-based view is extended by explaining antecedents to the use and adoption of geographically dispersed knowledge by focusing on effective knowledge transfer.

Given knowledge's prominence as a fundamental competitive resource, a key firm activity is knowledge governance, that is, the development and leverage of knowledge throughout the firm (Argote and Ingram, 2000; Foss, 2007). Managers at different firm levels orchestrate knowledge processes with varying degrees of difficulty: for example, the more geographically dispersed the firm is, and the more dissimilar the activities of its subsidiaries are, the greater the obstacle to knowledge transfer (Agrawal, Kapur, and McHale, 2008;

[1] Effectiveness reflects the utilization of knowledge that has been transferred to a receiving unit. As the adoption and use of transferred knowledge is what influences organizational learning, this is the goal when transferring knowledge between units in an MNE. The 'cost efficiency,' that is, the number of people, hours, and amount of financial resources employed in the transfer process, can, of course, compromise the benefits of adopting and using the transferred knowledge, but it does not in itself influence organizational capabilities. Previous research has found that knowledge transfer drives performance, but the issue of use and adoption has been left relatively unexplored.

Tallman and Phene, 2007). The MNE, which can be viewed as a bundle of resources that are geographically dispersed (Bartlett and Ghoshal, 1989; Penrose 1959), therefore constitutes a particularly important laboratory in which to study knowledge governance (Foss, 2006). Geographically dispersed knowledge and associated sources may benefit the MNE due to location heterogeneity, but, at the same time, it may be difficult to integrate (Foss and Pedersen, 2004). However, a core idea of the knowledge-based view is that MNEs can transfer this knowledge efficiently (Kogut and Zander, 1993), but at the same time it may be difficult for the recipient to utilize the transferred knowledge effectively (Barney, 1991). This conundrum is rarely discussed within the knowledge-based view; by focusing on the use and adoption of transferred knowledge, we address this gap in the literature.

The struggle between internal consistency and local adaptation is apt to be more pronounced in MNEs as compared to domestic firms, thus complicating the knowledge transfer process. MNE managers at both the subsidiary and the headquarters level can employ different governance mechanisms to influence knowledge transfer processes (Foss, Husted, and Michailova, 2010)—hence, the need to understand the various tools at the managers' disposal. We focus on specific knowledge transfer projects with particular reference to the role of headquarters in the process—the relationship between subsidiaries and specific managerial actions taken to ensure effective knowledge transfer (Foss and Pedersen, 2004; Grant, 1996; Kogut and Zander, 1992, 1993; Martin and Salomon, 2003; Szulanski and Jensen, 2006).

Firms are not only important and efficient governance structures, but are also a locus for learning (Ghoshal and Moran, 1996; Madhok 1996, 1997; Tallman and Chacar, 2011; Teece, 1990) and cultivate routines as coordinative devices (Nelson and Winter, 1982; Williamson, 1999). Previous research has primarily focused on characteristics of the knowledge transferred or subsidiaries' absorptive capacity , that is, cognitive aspects (Mahnke and

Pedersen, 2004), whereas hierarchical intervention has attracted less attention, especially at the subsidiary level. Relational governance, defined as, 'a social institution that governs and guides exchange partners on the basis of cooperative norms and collaborative activities' (Poppo, Zhou, and Zenger, 2008: 1197) seems to be a promising perspective in analyzing the utilization of transferred knowledge, i.e., transfer effectiveness, as it encompasses hierarchical governance tools and lateral relationships.

This article also addresses the important question, discussed by Foss and Pedersen (2004), of how MNE managers at both the subsidiary and headquarters level can orchestrate knowledge transfer activities in the MNE network and how this affects knowledge transfer effectiveness. The link between organizational processes and knowledge transfer is still under-researched (Foss, 2006). This article connects actions taken by headquarters with more micro-features associated with subsidiaries engaged in knowledge transfer, that is, the social structures of inter-subsidiary relationships (Szulanski, Cappetta, and Jensen, 2004) that can help explain knowledge transfer effectiveness. While extant research has looked at knowledge transfer in MNEs from different viewpoints, most has looked at 'flows of knowledge' as an aggregated quota that is transferred, which makes it inherently difficult to tease out the actual effect of the knowledge transfer effort at the recipient unit. The focus on flows of knowledge obscures the success of individual transfer projects in terms of adoption and use in the receiving units. It also makes the influence of different knowledge governance tools on knowledge transfer effectiveness ambiguous. In the present study, we address this important gap in the existing knowledge transfer literature.

The findings are based on a questionnaire administered through structured face-to-face interviews with subsidiary managers involved in 169 specific intra-MNE knowledge transfer projects. The knowledge transaction was used as the unit of analysis (Foss, 2007). The specificity of the data from these 169 transfer projects adds to the quality of the findings,

since research has found that MNEs apply different control strategies depending on the context in which the subsidiaries operate (Nohria and Ghoshal, 1994). By looking at specific transfer projects, a fine-grained understanding of both hierarchical and lateral relationships is attained, thereby contributing to an increased understanding of knowledge governance and the knowledge-based view. This is directly related to Grant's (1996) conceptualization of the firm as a knowledge integrator.

The remainder of the article is organized as follows: the theoretical background is outlined in the next section. This is followed by a section outlining five hypotheses that address how hierarchical governance tools and lateral relationships affect the utilization of transferred knowledge. Subsequently, the data and methods are presented, followed by the results of the study. The results are then discussed with limitations pointed out and suggestions made for future research.

THEORETICAL BACKGROUND

Transfer of knowledge

Knowledge management is at the forefront of MNE research (cf. Agrawal *et al*., 2008; Grant, 1996; Gupta and Govindarajan, 2000; Kogut and Zander, 1992, 1993; Szulanski, 1996; Tallman and Phene, 2007). The MNE is conceptualized as a superior vehicle for knowledge development and transfer because it is a social community (Kogut and Zander, 1993) rather than a market transactor of knowledge. Teece (1986) conceptualized innovations as bearers of knowledge. Thus, in this article, knowledge is captured by analyzing different innovations that embody knowledge. The transfer of knowledge is an attempt to close gaps between what is known and what is currently being used throughout the organization (Cool, Dierickx, and Szulanski, 1997; Pfeffer and Salancik, 1978; Pfeffer and Sutton, 2000; Repenning, 2002). This may be described as 'additive complementarity' (Buckley and Carter, 1999). Still, the knowledge transfer activity needs to be managed and coordinated, that is, governed. In

essence, this suggests a framework where both the formal power of headquarters and the informal social relationships formed by subsidiaries—where much of the actual network influence may reside (Forsgren, Holm, and Johanson, 2005)—are taken into account.

The rationale behind knowledge transfer in MNEs arises because it is costly to develop new knowledge and the organization has an interest in making use of existing knowledge elsewhere in the MNE, although transfer also has a cost (Teece, 1977). This is in accordance with Penrose's (1959) assertion that the competence of a firm is connected to its ability to leverage its resources. By transferring knowledge, the performance observed at one location in the organization can potentially be enhanced in another location, either by generating new knowledge or by economizing on existing knowledge (Schulz, 2001; Szulanski *et al*., 2004). This implies that there is both cost and gain from knowledge transfer. The cost-benefit balance is dependent on the transfer process performance; more specifically, echoing Teece (1977) and Penrose (1959), the transferred knowledge has to be *utilized* at the recipient. If transferred knowledge is not used, it seems inept to engage in transfer at all, since costs are incurred but no effect is achieved in terms of upgrading the competencies and competitive advantage in the receiving unit. Making sure that what is developed in one location is transferred to another is core for knowledge governance and the knowledge-based view, and usage may lead to an improved competitive position for the receiving unit.

Knowledge transfer performance

Extant research has by and large focused on knowledge transfer measured as an outflow from a sender or inflow to a receiver (Gupta and Govindarajan, 2000; Haas and Hansen, 2005; Norderhaven and Harzing, 2009; Schulz, 2001). However, this literature offers limited insights as to whether the knowledge transferred is being implemented and used at the receiving subsidiary. There have been some voices arguing that this might not be the case (Argote and Ingram, 2000; Kostova, 1999), for example, knowledge being ceremonially

adopted (Kostova and Roth, 2002). Hence, our knowledge is limited regarding whether or not knowledge really is adopted by the receiving subsidiary. In this respect, our understanding of knowledge transfer effectiveness is underdeveloped.

Studying knowledge transfer performance requires investigating individual transfer projects. We capture individual project performance variance and elucidate the associated underlying reasons in an approach similar to Szulanski (1996) and Kostova and Roth (2002), where knowledge transfer was suggested to be a distinct experience related to specific projects. In this article, knowledge transfer effectiveness is defined as a distinct measure related to the receiving subsidiary's knowledge implementation and usage (Ciabuschi, Dellestrand, and Kappen, 2011a; Kostova, 1999; Leonard-Barton and Sinha, 1993). As proposed by Foss (2007), we use the specific knowledge transaction as the unit of analysis in this study.

Organizational processes at different levels can affect MNE knowledge transfer performance in general. Though efficiency and effectiveness are inter-related, this article focuses on effectiveness rather than efficiency, that is, the transfer cost (Daft, 1992). Knowledge that is used by the recipient is key, since it is only then that the transferred knowledge has implications for the functioning of the recipient subsidiary. The following two sections elaborate on hierarchical governance and lateral relationships by focusing on the discrete event of individual knowledge transfer projects. Both are distinct organizational governance dimensions and do not exclude the other—rather they are complementary forces influencing the degree of the receiving unit's transferred knowledge utilization.[2] The variables included in this analysis are associated with key concepts in the discussion of hierarchy and lateral relationships and illuminate the emerging knowledge governance

[2] Indeed, there is a multitude of knowledge management tools available, but for our model, we emphasize the direct interventions linked to a specific knowledge transfer project and not other activities that may be ongoing within the MNE, such as employee training, conferences, acculturation, etc. These are activities that may be initiated by headquarters for fostering a general positive knowledge-sharing environment, but since they do not directly relate to the transfer project, we do not consider these activities in this study.

approach (Foss, 2007; Grandori, 2001). Our approach is also consistent with the horizontal and vertical dimensions of the knowledge-based view (Grant, 1996).

HYPOTHESIS DEVELOPMENT

Hierarchical governance and knowledge transfer

Ghoshal and Bartlett (1990) and Birkinshaw (2001) argued that headquarters is potentially very influential in managing knowledge flows between MNE units. Headquarters can be thought of as a knowledge webmaster (Tallman and Koza, 2010), occupying a special position within the MNE network as the unit with formal authoritative power. Headquarters has a holistic role that entails a strategic responsibility to identify needs and solutions in the organization, i.e., top management has an important role in identifying, creating, and sharing knowledge (Markides, 2002; Markides and Williamson, 1994), which relates to the transfer process in filling gaps where knowledge resides at other organization locations. For headquarters, this involves participating in subsidiary-level activities, as well as using formal monitoring and evaluation criteria. The level of hierarchical involvement in subsidiary activities is not equal for all organizations and, even within one organization, the degree to which governance mechanisms are employed can vary (Nohria and Ghoshal, 1994); that is, there is a unique configuration of the headquarters-subsidiary control problem in every relationship.

Headquarters' role during innovation development

Headquarters' involvement can affect how knowledge—and the subsidiary developing the knowledge—is perceived within the organization. If headquarters pays attention to specific innovation projects (Williamson, 1992), a corollary is that the subsidiaries related to this project gain visibility, receive legitimacy (Ambos, Andersson, and Birkinshaw, 2010), and are perceived to be important players (Andersson, Forsgren, and Holm, 2007). This is also true for the specific knowledge developed, i.e., not only is the subsidiary developing the

knowledge perceived as important, but so is the specific knowledge *per se*. Consequently, innovations subject to transfer that have received headquarters' attention through its direct involvement during the development stage are, by definition, allocated resources and prioritized by headquarters (Ciabuschi, Dellestrand, and Martín Martín, 2011b). By involving itself in the innovation's development, for instance by specifying requests, the outcome of the development process is affected and the developed innovation is more suitable for other MNE subsidiaries. Headquarters' involvement in development also encompasses adding specific competencies and knowledge as well as actively participating in the development process (Ciabuschi *et al.*, 2011b). By doing so, headquarters steers knowledge development toward internal consistency with the result that it is easier for a receiving subsidiary to adopt and integrate the knowledge transferred to it (Schulz, 2001; Yang, Mudambi, and Meyer, 2008). For headquarters, involvement in development indicates a commitment that is likely to be reflected in the subsequent transfer and signals that the innovation should be utilized at a recipient once transferred. Also, if headquarters has influenced the outcome of the development process via its involvement by, for instance, specifying requests, this will increase the perceived relevance of the knowledge subject to transfer (Yang *et al*., 2008) and, as a corollary, positively influence the adoption and use of the transferred knowledge. Consequently, the following hypothesis is proposed:

> *Hypothesis 1 (H1): Greater headquarters involvement in the development of an innovation will positively affect the utilization of the transferred knowledge.*

Headquarters control and monitoring of knowledge transfer processes

One of headquarters' objectives in upgrading subsidiary capabilities is to make sure that knowledge is transferred between them (Dellestrand and Kappen, 2012). If knowledge is not transferred within the MNE, opportunities may be lost and the organization may lose an advantage. The role of headquarters in MNEs has been conceptualized as avoiding the

negative (losses), as well as taking on an entrepreneurial role (value creation) (Foss, 1997). Headquarters can be thought of as an MNE network orchestrator (Dhanaraj and Parkhe, 2006), where it identifies critical knowledge and points out transfer opportunities to subsidiaries. This resonates with headquarters taking action and becoming a visible hand within the MNE by issuing commands without directly controlling the transfer process (Tallman and Koza, 2010). Such hierarchical governance can create ill feelings among the subsidiaries and instigate ceremonial adoption of knowledge (Ghoshal and Moran, 1996; Kostova and Roth, 2002). The parties engaged in the transfer process may feel forced into a costly and time-consuming activity and, consequently, perceive little value in it, which negatively influence the process of adoption and integration at the receiving unit.

Moreover, the knowledge that headquarters possesses regarding the subsidiaries' local business network is often shallow (Forsgren *et al*., 2005). If headquarters actively involves itself in knowledge transfer and governs this process by formal demands and evaluation systems, it can be perceived as ignorant because of its lack of relationship-specific knowledge This can create a negative disposition toward adopting and using the knowledge at the subsidiary level (Forsgren, 2008). Hence, the effects of headquarters governance mechanisms may be detrimental and social activities at the subsidiary level become important for knowledge transfer (Kostova and Roth, 2003). This negative side of headquarters' governance could be mitigated by the fact that it possesses formal power to exert influence over subsidiaries, and direct transactional involvement of headquarters can mean additional resources for the subsidiary. However, even if headquarters provides a knowledge-directing function within the MNE, it may be biased toward cost efficiency and not effectiveness of the transfer processes. This is because cost efficiency is a dimension more easily measured and monitored at a distance (Kostova and Roth, 2002). A focus on efficiency can be detrimental for utilization of the transferred knowledge since adoption takes more time and understanding

than simply transferring knowledge in a cost-efficient manner (Ciabuschi *et al.*, 2011a). In line with this reasoning, the following is suggested:

> *Hypothesis 2 (H2): Greater use of formal hierarchical governance tools by headquarters in the innovation transfer process will negatively affect the utilization of the transferred knowledge.*

Subsidiary control mechanisms in knowledge transfer

One way to govern the transfer process is by using expatriates from the sending subsidiary to the receiving subsidiary, which can facilitate lateral relationship building (Minbaeva, 2008). The use of expatriates can further facilitate knowledge flows between the technology-sending subsidiary and other MNE units (Gupta and Govindarajan, 2000) and is one way of governing knowledge transfer processes laterally (Edström and Galbraith, 1977). Expatriates from the sending subsidiary collaborate with colleagues at the receiving subsidiary, and this will facilitate the creation of communities of practice and the establishment of social ties that facilitate learning (Tallman and Chacar, 2011). Consequently, expatriates can facilitate the process of integrating new knowledge at the receiving subsidiary and help overcome problems during the transfer phase (Tsang, 1999). Using expatriates specifically for a knowledge transfer project is costly and can be seen as an investment by the organization, but should have a positive impact on the understanding and adoption of the knowledge subject to transfer. Put differently, the communities of practice established by individuals (e.g., expatriates) also have implications for establishing networks of practices between subsidiaries (Tallman and Chacar, 2011). This is likely to positively influence knowledge transfer.

Furthermore, expatriates can understand the value added of the transferred knowledge, have direct experience in handling the knowledge, and help explain complicated tacit knowledge dimensions when it is used at the receiving unit (Björkman, Barner-Rasmussen, and Li, 2004; Moran 2005). Hence, the following hypothesis can be formulated:

Hypothesis 3 (H3): Greater use of expatriates from the sending subsidiary to the receiving subsidiary during the transfer will positively affect the utilization of transferred knowledge.

Subsidiary networks and knowledge transfer

In the intraorganizational MNE network, indistinct formal boundaries exist between subsidiaries (Ghoshal and Bartlett, 1990), and subsidiaries develop (more informal) collaborations and cooperate with each other (Andersson *et al*., 2007; Forsgren *et al*., 2005). Previous (voluntarily) developed relationships between subsidiaries have, due to prior exchange and collaboration, enhanced the social capital between them (Tsai, 2000). Social capital provides cohesiveness and makes the firm strive toward a common goal (Adler and Kwon, 2002). Value is generated by building social capital due to the facilitation of the exchange process of resources and through providing access to extended network relationships (Inkpen and Tsang, 2005; Moran, 2005; Nahapiet and Ghoshal, 1998). This implies that social capital entails both personal connections and network structures at the unit level that often transcend organizational boundaries (Granovetter, 1985; Moran, 2005; Mäkelä, Andersson, and Seppäle, 2012) and help govern knowledge transfer.

In established relationships, where the actors have previously cooperated, the perceived risk of engaging in a new project is decreased since knowledge pertaining to the functioning of the relationship has already been built, behavior has been experienced, and trust has been developed (Inkpen and Tsang, 2005; Uzzi, 1997). Further, processes and routines are in place for future interaction, which will facilitate collaboration and cooperation (Kostova and Roth, 2003) and thereby knowledge transfer, connecting to what constitutes 'relational governance' (Poppo *et al*., 2008). Through social ties, a common identity is created (Håkansson and Snehota, 1995) and since many knowledge transfer processes are complicated to explain during the transfer phase, this will take time and is more likely to be effective in a relationship where a closeness between the individuals partaking in the transfer exists (Moran, 2005).

Expressed differently, social ties between a sender and a receiver will facilitate the utilization of the knowledge transferred. Moreover, in a relationship where the actors know each other, the search process for relevant knowledge is facilitated. Consequently, the knowledge transferred in such a relationship will entail more relevant knowledge for the receiver; and the sender will be more understanding of the needs of the receiver. This will affect the utilization of transferred knowledge positively (Szulanski *et al*., 2004; Yang *et al*., 2008). This line of reasoning implies that social capital can be built by repeated interaction (Buckley and Casson, 1988); if the transfer partners are experienced, their capabilities for conducting such processes are enhanced (Cyert and March, 1963; Eisenhardt and Martin, 2000; Zollo and Winter, 2002) and routines are established for transferring and incorporating knowledge. Therefore, the following hypothesis is postulated:

> *Hypothesis 4 (H4): An established relationship between the sending and receiving subsidiaries will positively affect the utilization of transferred knowledge.*

From the logic about relationships, it follows that relationship building between the sending and the receiving units enhances social capital, where social capital is understood as, 'the relational resources attainable by individual actors through networks of social relationships' (Tsai, 2000: 927). More specifically, relationship building within MNEs corresponds to knowledge management tools such as temporary training, forming task forces, and face-to-face meetings. However, it is important to keep in mind that this study focuses on actions related to specific knowledge transfer projects and associated relationship-building efforts. This relates to utilization and effectiveness because the opportunity to explain complex issues and reduce errors during the transfer process increases. As such, building relationships will facilitate the learning and the understanding of the knowledge transferred (Lane and Lubatkin, 1998; Tallman and Phene, 2007). In other words, the actors have a common basic understanding of the knowledge subject to transfer, which facilitates adoption and use of the

transferred knowledge (Kogut and Zander, 1992, 1993). Social interaction will also increase the knowledge transparency, which further facilitates integration and adoption of knowledge (Tallman and Phene, 2007). Consequently the following hypothesis is proposed:

> *Hypothesis 5 (H5): Relationship building between the sending and receiving subsidiary will positively affect the utilization of transferred knowledge.*

DATA AND METHODS

The data used in this research was collected from 2002 to 2005 and covers 169 intra-MNE innovation transfer projects in great detail. Innovations in subsidiaries were identified through snowball sampling, which is appropriate when the population is difficult to define and no comprehensive listing exists (Hair *et al*., 2006). The data can be traced back to 72 innovation development projects hosted by 63 subsidiaries belonging to 23 different MNEs headquartered in the U.S. and Europe. The sending subsidiaries span 14 countries and the receivers 31 countries.[3] Different industries are represented in the sample, for example, manufacturing, telecommunications, transportation, and the steel industry. The innovation selection criterion was based on the novelty and specific value to the organization. This follows the 2005 OECD definition of innovations, that is, 'the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations' (OECD, 2005: 47). This selection was done by the innovating/developing subsidiary. Moreover, the innovations had to have the potential of being transferred and they also had to have been completed one to 10 years prior to the interview. Sampling innovations that have transfer potential means that the dataset contains some innovations that have not been subject to transfer. These innovations are excluded in the present analysis.

[3] More specifically, the senders are located in: Sweden, Taiwan, Italy, France, the U.K., the U.S., Germany, Belgium, Finland, Austria, Czech Republic, Denmark, the Netherlands, and Switzerland.

One potential sample bias is that it only contains successful innovations, in terms of having been developed. However, given the question at hand, this bias is almost intrinsic since the transfer of unsuccessful innovations is highly unlikely and would not add anything to the MNE's competitive advantage. 'Successful' in this sense does not imply subsequent market success.

The data was collected through face-to-face interviews on site at the subsidiaries where the respondent answered a structured questionnaire—an approach similar to surveys, but with the advantage of being able to target the respondent in person and knowing exactly who answers the questionnaire. The respondents had been involved in the innovation development and were usually R&D managers, project managers, or subsidiary CEOs. In relation to the transfer projects, even if the data was collected at the sending subsidiary, the innovations had been transferred to more than one receiver (on average, the innovations in our sample were transferred to 2.35 receivers). This allows respondents to compare, for instance, transfer effectiveness across projects. The questionnaire had been pretested in two pilot interviews, and minor changes were made in order to eliminate ambiguous questions and phrasings as well as to exclude erroneous indicators. By having access to managers with detailed knowledge of the specific innovations, a deeper understanding could be gained (Denrell, Arvidsson, and Zander, 2004), and we could discuss the questions with the respondents. This approach allows targeting the appropriate respondent and detecting inconsistencies in the answers during the interview, hence increasing reliability and face validity of the data.

Measures

The advice of Boyd, Gove, and Hitt (2005) was followed and single-measure indicators were avoided. Multiple indicators were used in both the dependent and independent variables. This approach minimizes measurement error, is parsimonious, and offers a multifaceted representation of the underlying construct (Hair *et al*., 2006). Additionally, as recommended

by Cox (1980), seven-point Likert-type scales were used to obtain the data on innovation transfer in MNEs. Besides the subjective estimations by the respondents, distance measures using secondary data, patenting, and size were included as control variables. The constructs were identified in an iterative process, where coefficient alphas as well as theoretical issues were considered (Churchill, 1979; Nunnally, 1978). The constructs were theoretically valid and empirically verified. Subsequently, factor analysis was used in order to confirm the constructs' discriminant validity.

Dependent variable

The dependent variable—knowledge transfer effectiveness—reflects the adoption and use of the transferred knowledge within the receiving unit. The responses focused on circumstances related to completeness, ease, and timeliness of the adoption and use and follows previous recommendations and discussions in the literature (Kostova and Roth, 2002; Leonard-Barton and Sinha, 1993; Repenning, 2002; Szulanski 1996). Compared to earlier studies concentrating on the *extent* of knowledge flows between firm subsidiaries, our method of depicting transfer performance is the degree of transfer *effectiveness* in terms of investigating the actual adoption and use of the innovation at the receiving subsidiary (Ciabuschi *et al.*, 2011a). This reflects key ideas in the knowledge-based view (Grant, 1996) and reflects utilization of transferred knowledge.

Transfer performance effectiveness is measured as a four-item construct where the respondents were asked to indicate on a scale from 1 (totally disagree) to 7 (totally agree) whether: (1) the performance of the innovation transfer was very satisfactory; (2) the counterpart adopted the innovation very quickly; and (3) the innovation has been very easy to adopt by this counterpart. One final item was included in this construct and was measured on a similar scale from 1 (not at all) to 7 (very high): (4) to what extent the innovation transfer has been completed. The internal construct reliability was good, with a coefficient alpha of

0.817, exceeding the recommended level of 0.7 (Nunnally, 1978). These four items were summed and averaged to form the dependent variable in the statistical analysis. The dependent variable is distinct from other variables in the analysis, as Table 1 shows.[4]

Independent variables

The first dimension of headquarters' subsidiary-level influence is whether or not they have been involved in the innovation development of the innovation subject to transfer and build on and extend the attention-based view (Bouquet, Morrison, and Birkinshaw, 2009; Ocasio, 1997). *Headquarters' involvement in innovation development* is captured in a four-item construct where the respondents were asked to indicate, on a scale from 1 (totally disagree) to 7 (totally agree) whether: (1) the MNE HQ has participated closely in developing this innovation; (2) the MNE HQ has brought competence of use for the development of this innovation; (3) the MNE HQ has been important through specifying requests; and (4) the MNE HQ has taken important initiatives for developing the innovation. The four indicators were summed and averaged in order to form the construct used in the regression analysis. Internal construct reliability was high, with a coefficient alpha of 0.908.

The use of formal hierarchical governance tools and sanctions by headquarters is captured by four items and is similar to measures employed by Gates and Egelhoff (1986) and Tsai (2002). The respondents were asked to indicate, on a scale from 1 (totally disagree) to 7 (totally agree), to what extent: (1) the MNE HQ has formally instructed you to share this innovation with the counterpart; and (2) the transfer of the innovation has occurred without any sanctions by HQ with the counterpart (reversed). Moreover, the respondents were asked to indicate on a scale from 1 (not at all) to 7 (very much) whether the transfer of the

[4] Since the research project and data collection effort aimed at capturing both MNE subsidiary development and transfer activities, the primary data collection target was the developing/sending subsidiary. We worked under the assumption that respondents involved in development and transfer of the specific projects will have a good knowledge of associated structures and processes, and the face-to-face data collection increased data quality. Subsequent to the initial data collection, we collected data from 23 receivers. We have matched data corresponding to the item 'the performance of the innovation transfer was very satisfactory,' and when performing a t-test between answers, no significant differences can be found. This signals that senders and receivers estimate the transfer performance similarly.

innovation was driven by: (1) requirement from HQ; and (2) HQ evaluation system. These four items were summed and averaged to form the construct. The coefficient alpha of this construct is 0.632, which is below the recommendation as set by Nunnally (1978). Since this construct employs relatively few indicators, it is not uncommon to find that alpha tests, given that they generally are conservative, return a lower coefficient than the recommended level. Reliability increases the more items a scale contains (Nunnally, 1978). With the same average inter-item correlation and the inclusion of additional variables, the alpha value will increase (Carmines and Zeller, 1979). When a low alpha is found, it is appropriate to check the mean inter-item correlation (MIC). The optimal range for the MIC is 0.2 to 0.4 (Briggs and Cheek, 1986). The MIC for this construct was 0.295, thus meeting the stipulated criterion. This, plus the construct being identified as distinct from others in a principal component factor analysis (see Table 1), where both the factor loadings and communalities extracted for the items were adequate, indicate the appropriateness of using this construct.

The use of *subsidiary expatriates* is reflected in a two-item construct and builds on Gupta and Govindarajan's (2000) measure and Galbraith's (1973) integrative mechanisms. The respondents were asked to indicate, on a scale ranging from 1 (not at all) to 7 (very high): to what extent, with regard to the transfer of the innovation, exchange of managers was used. The respondents were also asked to indicate, on a scale from 1 (not at all) to 7 (very much): to what extent the transfer of the innovation was driven by moving personnel between the developer and the receiver. The indicators were added and averaged to form the scale. A coefficient alpha of 0.743 indicates good internal construct reliability.

Established relationships, that is, dyadic transfer experience in the sender-receiver relationship, is a two-item construct where the respondents indicated to what extent, (besides the focal innovation discussed during the data collection) on a scale from 1 (not at all) to 7 (very much): (2) they previously had cooperated with the receiver; and (2) they previously

had shared knowledge. The indicators were summed and averaged in order to form the construct, which had a coefficient alpha of 0.738. This construct builds on literature highlighting experience's role in knowledge transfer (Ingram and Baum, 1997).

Finally, *relationship building* between the sending and receiving subsidiaries during the innovation transfer was captured using a three-item construct drawing on Ghoshal and Bartlett's (1988) framework concerning socialization mechanisms, as well as on the indicators used by Persson (2006). The respondents were asked to indicate on a scale from 1 (not at all) to 7 (very high) the level of use of: (1) temporary training at partner sites; (2) cross-unit teams, project groups, etc.; and (3) face-to-face meetings. The indicators were summed and averaged. The construct has adequate internal reliability, with a coefficient alpha of 0.732.

Control variables

In order to more fully specify the model, a number of control variables were introduced. *Age* was included since older subsidiaries are more established in their business networks and have a tendency to be more autonomous (Forsgren, 1990); they can also exhibit a higher innovative capability (Cohen and Levinthal, 1990; Foss and Pedersen, 2002). To control for age, the logarithm of the number of years the subsidiary had been operating on the market was included in the regression equation.

Size, measured as the natural logarithm of the number of developing subsidiary employees, is used as a proxy for many subsidiary-related characteristics. Research has shown that large subsidiaries have greater intrafirm bargaining power (Mudambi and Navarra, 2004), and size can also affect knowledge transfer even if the knowledge has a low relevance (Yang *et al*., 2008). Research has also used size as one indicator for valuable knowledge stock, which can be of greater overall value for the MNE (Gupta and Govindarajan, 2000).

Basic research is captured with the help of a dummy variable. If the subsidiary conducted research considered to be core, the variable was coded '1;' if the subsidiary did not

conduct any basic research, the observation was coded '0.' Knowledge developed by a subsidiary performing core activities is likely to be more easily adopted, building on absorptive capacity logic. In order to control whether *knowledge-sharing* activities are stimulated in the MNE, this was included as a single-item variable. The respondents were asked to indicate, on a scale of 1 to 7, how important knowledge sharing was in the performance evaluation made of them. This has been shown to have a positive impact on knowledge transfer flows in previous studies (Björkman *et al*., 2004). To control for the target subsidiary's knowledge-receiving ability, we employed a measure capturing *unit similarity* of the innovation transfer partners. This is a two-item construct capturing how similar the sender and receiver are regarding technological and organizational features. The respondents were asked to indicate, with regard to the receiver, on a scale of 1 (totally disagree) to 4 (neither) to 7 (totally agree) whether: (1) technical difference makes the transfer problematic; and (2) organizational difference makes the transfer problematic.[5] The indicators were summed and averaged to form the construct. Internal reliability was good, with a coefficient alpha of 0.738. A dummy variable indicating whether the innovation subject to transfer was *patented* or not was included in the model. The potential ease with which the knowledge might be transferred connects to codification, which can be proxied by patenting (Tallman and Chacar, 2011). Additionally, distances and differences between countries in which subsidiaries are located may influence knowledge transfer. Therefore, we controlled for distances in a number of dimensions. The *geographic distance* between the locations was calculated for each transfer project. The number of kilometers was calculated using MapCrow. This measure was transformed into the natural log of the distance measure and is consistent with the approach of other studies using geographic distance (e.g., Hansen and Lovås, 2004). Cultural distance was controlled for by using Kogut and Singh's 1988 index, expressed as:

[5] These items were reverse coded in order to capture the similarities between the subsidiaries involved in the knowledge transfer.

$$CD_j = \sum_{i=1}^{4} \{(I_{ij} - I_{iN})^2 / V_i\} / 4 ,$$

where CD is the cultural distance between the subsidiary host countries, I_{ij} is the score of the receiving subsidiary's country on the *i*th dimension, and I_{iN} is the score of the sending subsidiary's country in this dimension. V_i represents the score variance in the specific dimension. *Institutional distance* was measured building on the approach of Gaur *et al*. (2007) and Xu, Pan, and Beamish (2004). The institutional dimensions found in the Executive Opinion Survey of the Global Competitiveness Report (2005) were explored, and a factor analysis was conducted (principal component with varimax rotation and Kaiser normalization). The institutional environment is captured by a seven-item construct that loaded on a single factor having a coefficient alpha of 0.961. This data was matched to our data calculating the institutional distance between the host countries of the sending and receiving subsidiaries. The relative *economic differences* were captured by estimating differences in GDP per capita between the host countries of the subsidiaries (Tsang and Yip, 2007). Data was obtained through the Total Economy Database (2006). Following Tsang and Yip (2007), we created a measure for relatively more developed countries in relation to the other part of the dyad. This measure can be expressed as:

$$\ln(GDP_{sender}) - \ln(GDP_{reciever}) \text{ if } GDP_{sender} \geq GDP_{reciever} \text{ and } = 0 \text{ if } GDP_{sender} < GDP_{receiver}$$

Common method bias and multicollinearity

The use of perceptual measurements can be problematic because of social desirability and self-assessment bias. This is mitigated by the face-to-face interviews. In order to check for common method bias augmenting the relationships, Harman's one-factor test was used

(Podsakoff and Organ, 1986). All relevant indicators were included in a principal component factor analysis (principal component with varimax rotation and Kaiser normalization, see Table 1). The 0.638 KMO value exceeded the recommended 0.6 level (Tabachnick and Fidell, 2001). The Bartlett's test of sphericity was at a 0.001 significance level, indicating sufficient correlations between the indicators (Hair *et al*., 2006) and factor analysis procedure appropriateness. The factor analysis indicated data validity and reported good properties. If high common method variance is a problem, only one factor will emerge with an eigenvalue exceeding 1 or, alternatively, one of the factors extracted will account for a majority of the variance. In the principal component analysis, six factors were extracted with eigenvalues above 1. The seventh factor returned with an eigenvalue of 0.837, thus being far from meeting the latent root criterion and, consequently, not included in the analysis.

None of the factors explain a majority of the variance, ranging from 6.446 percent to 19.950 percent. The cumulative variance explained by the seven factors was 71.840 percent. In the rotated factor solution, a cutoff value of 0.32 was used, and only two cross-loadings appeared above this level. Factor loadings below 0.32 can be considered poor since the overlapping variance then is below 10 percent; and a factor loading of 0.45 represents 20 percent of the overlapping variance and can be considered fair (Comrey and Lee, 1992). The first cross-loading occurred for the item of headquarters' instruction to share the innovation with the counterpart on the construct of headquarters' participation during the development with a value of 0.436. The second cross-loading relates to the respondents reporting whether the innovation transfer occurred without any sanctions from headquarters (reversed), with a value of 0.324 on the construct of headquarters' participation during the development. However, both items loaded with higher values on the headquarters hierarchical governance tool construct. These two cross-loadings do not factor when interpreting the data, even though the presence of common method bias cannot entirely be ruled out.

Following Lindell and Whitney (2001), we introduced a marker variable to further test for common method variance,. This technique has been argued to be an effective tool for accounting for common method variance (Malhotra, Kim, and Patil, 2006). The marker variable should be measured by the same questionnaire as for the other variables. However, the marker variable should be theoretically unrelated to the relevant perceptual variables. From the questionnaire, the respondents' answer to the following question was used: rate the level of usage of logistics data during the development of the innovation (on a scale ranging from 1 (not at all) to 7 (very high)). This question was selected since there did not seem to be any theoretical reason why it should be related to the variables in the conceptual model. Additionally, this variable was measured in the same way as the other perceptual measures. We controlled for any effect of the marker variable on the partial correlations of the perceptual variables. All significant correlations remained the same, and the marker variable did not significantly correlate with any of the perceptual measures. Thus, this additional test for common method variance ensures that it is not likely to affect the estimation outcomes.

Insert Table I here

To investigate whether there is a correlation between two or more predictor variables augmenting the estimated R^2 of the model, the variance inflation factor (VIF) was calculated. Different acceptable VIF value sizes have been proposed, and there does not seem to be a consensus of what cutoff value to use, although 5 has been suggested as a reasonable number (Studenmund, 1992). No VIF values in any of the models exceeded 5. In Model 2, the highest calculated VIF value was 1.963, with a mean of 1.450. Consequently, multicollinearity does not seem to threaten the model estimates, and this should not distort the regression model results.

RESULTS

The mean values, standard deviations, and correlation matrix for all the variables are presented in Table 2. The highest correlation is 0.635 ($p < 0.01$) between physical and cultural distance. However, it is to be expected that the distance dimensions are highly correlated.

The article examines how different organizational mechanisms affect knowledge transfer effectiveness. In order to estimate the models, ordinary least squares regressions were used. In the second specification, all independent variables were entered. In Table 3, the standardized parameter estimates of all models are reported. The first model returned significant with an F-value of 3.519 ($p < 0.01$), and the control variables explained 24.9 percent of the variance. Model 2 is significant with an F-value of 3.915 ($p < 0.01$) and an R^2-value of 0.368. Hence, both models are significant and the explanatory value increases between model specifications (see diagnostics in Table 3). In order to control for potential industry effects, we ran a *post hoc* analysis including industry dummies. This analysis suggests that industry differences are not influencing estimate outcomes.

This supports the chosen model specifications and no VIF values are abnormally large in any of the models, indicating that multicollinearity does not augment the R^2 value or the model's predictive capability. We employed the Ramsey reset test to investigate whether nonlinear alterations of the independent variables would yield a higher adjusted R^2. The outcome suggested that the models are better without introducing power alterations. Additionally, we plotted the residuals to see if nonconstant variance was present across different independent variable values. No heteroskedasticity problem was detected.

The findings indicate a very small influence of headquarters' involvement during the development of the innovation, and the relationship is insignificant. Hence, no support is found for Hypothesis 1. Hypothesis 2, which relates to whether the transfer was driven by headquarters' hierarchical governance tools, showed a significant ($p < 0.01$) negative

relationship to transfer performance effectiveness in Model 2. Thus, Hypothesis 2 is supported. Contrary to what was postulated in Hypothesis 3, using subsidiary expatriates indicates a significant ($p < 0.01$) negative relationship to transfer performance in Model 2. Hence, Hypothesis 3 is not supported.[6] Established relationships are positively ($p < 0.05$) related to knowledge transfer effectiveness, thus lending support to Hypothesis 4. Finally, relationship building has a small positive effect on transfer effectiveness. However, this relationship is not significant and Hypothesis 5 is consequently not supported.

Insert Tables II and III here

DISCUSSION

This article set out to fill the research gap on the influence of formal hierarchical governance tools and lateral relationships on transferred knowledge utilization, that is, transfer effectiveness. A major contribution of this study is the focus on effectiveness in specific transfer projects related to hierarchy and relationships within the MNE. This allows for a better understanding of hierarchical and lateral tools for effective knowledge governance. The knowledge governance approach (Foss, 2007) holds that an organizational action to influence knowledge transfer should start with formal mechanisms since these are readily available to managers. However, informal mechanisms also affect the transfer. The idea is that the formal mechanisms influence behavior, thus enabling satisfactory transfer performance. Building on this approach, our article deals with two formal tools employed by headquarters, one formal

[6] The result pertaining to subsidiary expatriates is especially notable and opposed to our expectations. In order to further understand this result from an empirical point of view, we ran additional models as *post hoc* tests with the subsidiary expatriates variable interacting with the patenting variable, as well as with the established relationship variable. This is based on the reasoning that since expatriates may be more useful for transferring tacit knowledge, patents might moderate their value. Moreover, expatriates from a familiar source might be more useful and may, consequently, also moderate their effect. However, when running additional tests for these effects, the moderations return insignificant. Additionally, the model does not get significantly better with any of the moderation effects included. This is consistent with the results from the Ramsey reset test.

control tool employed in the sending-receiving relationship, and two lateral relationship characteristics of a more informal nature that may govern the knowledge transfer process. The results suggest that, in general, hierarchical and formal governance tools are not positively related to transfer effectiveness, but that lateral relationships affect transfer effectiveness positively. This enables us to advance the understanding of headquarters' role and function in knowledge transfer projects and the benefits of using lateral relationship building. This informs us about the role of headquarters and subsidiaries within the knowledge-based view and how this relates to knowledge governance. Moran and Ghoshal (1999: 395) highlighted the importance of facilitating, 'the continual reallocation of resources to more productive uses.' This study emphasize effective knowledge governance for realizing the value of knowledge exchange between units and, thereby, contributes to the knowledge-based view by analyzing antecedents to effective use of transferred knowledge.

Hierarchy in the MNE

In line with our expectations, a significant negative effect on knowledge utilization is found when headquarters drives the transfer process through formal tools. This may be due to actors feeling forced into action without any real motivation, and it might be irrelevant knowledge that is being transferred to the receiver, i.e., the motivational disposition of the subsidiaries toward the transfer is low, which impedes integration and use. Thus, a transfer process between subsidiaries that is initiated and required by headquarters is going to be less effective.

Even though headquarters may have both value creation and cost control in mind, its focus is more likely to be on efficiency rather than effectiveness because it is easier to measure and follow-up, thus offering one explanation of the negative result vis-à-vis effectiveness (Daft, 1992; Kostova and Roth, 2002). Another explanation may be that headquarters involves itself in problematic transfers. For managers, this points out that

classical, easily available control tools may not always be appropriate in ensuring that knowledge is adopted, integrated, and used at the receiving subsidiary. Thus, our results indicate that the role of headquarters as a knowledge webmaster tasked with assembling the global company and enabling self-renewal is indeed challenging (Tallman and Koza, 2010). Command and control seems to be an ineffective headquarters strategy with respect to knowledge transfer effectiveness.

A surprising finding is the insignificant effect of headquarters' involvement during the knowledge development on the subsequent utilization of the knowledge when transferred to another unit. The involvement of headquarters can be perceived as a distinctly different governance tool compared to monitoring and control with a different rationale and performance effect. In some cases, headquarters needs to be involved and to support promising subsidiary developments (Rugman and Verbeke, 2001). Even though involvement does not have a direct effect on transfer performance effectiveness, the indirect effects of headquarters involvement may be great. For example, the foundations for organizational influence can potentially be traced back to headquarters' involvement in subsidiary-level activities. Also, the perception of the subsidiary as an important player in the MNE network is increased as a result of headquarters involvement (Ciabuschi *et al.*, 2011b). Our model does not consider this political power balance and evolution within the MNE, but it at least indicates that no significant detrimental effect of involvement during development can be found with respect to transfer effectiveness. Thus, with respect to headquarters' tools for effective knowledge governance, our findings indicate that there may be a difference between formal policy and support for innovative activities within subsidiaries compared to direct transactional governance. In some cases, headquarters interference in subsidiary operations is likely to create, rather than solve, knowledge transfer problems (Tallman and Chacar, 2011; Tallman and Koza, 2010).

Subsidiary expatriates

A surprising finding relates to the negative effect of expatriates for the utilization of transferred knowledge. In fact, correlating the individual items making up the expatriate construct with transfer effectiveness shows significant and negative correlations for both items. As discussed by Björkman *et al*. (2004), the expatriate role needs to be further researched. In their study, they found no effect of expatriates on knowledge outflow. One reason behind the current negative transfer effect may be that it is easier to evaluate financial performance and cost, that is, efficiency, than the extent to which knowledge is used and integrated, that is, effectiveness. Hence, expatriates are more likely to have a focus similar to that of headquarters rather than a subsidiary focus on implementing and using the knowledge in order to improve the operations in the long run at the recipient (Björkman *et al*., 2004). Moreover, as suggested by Tallman and Chacar (2011), knowledge transfer mechanisms should be considered at the level of communities and networks of practice, implying that social ties facilitate learning. However, the conditions for a positive outcome of such social ties are that individuals have, for instance, similar training and objectives, as well as shared professional norms. In our setting, this may translate into considering whether the 'right' or 'wrong' expatriates are used for the specific knowledge utilization setting.

As argued by Tallman and Chacar (2011), it is easy to disrupt social ties; if that is the case, a problematic situation for knowledge utilization may emerge. Our results indicate that expatriate managers do not always facilitate transfer effectiveness, as they often lack sufficient understanding about how the transferred knowledge should be implemented and used at the receiving unit. Instead, path dependencies, in terms of established relationships and unit similarity, lead to transfer effectiveness. This highlights the importance of organizational and personal relationships that are established over time (Buckley and Carter, 1999, 2004). Parachuting 'strangers' into a social process does not appear to be successful.

Our *post hoc* test does not, however, indicate a significant positive moderation effect between expatriates and established relationships. For research on expatriates, it seems important to consider what an appropriate expatriate in a particular setting is in order to create communities and networks of practices that facilitate conditions for learning (Tallman and Chacar, 2011).

Another explanation of this notable finding might be the receiving subsidiary's increasing (perceived) dependence on the sending unit when expatriates are used. In their seminal study of organizational practice transfers, Kostova and Roth (2002) found a negative relation between subunits' perceived headquarters dependence and practice implementation. Along somewhat similar lines of reasoning, expatriates from the sending subsidiary increase the receiving subsidiary's dependence on this unit and, therefore, make the adaption and utilization of the transferred knowledge more arduous than otherwise. As the utilization and adoption of transferred knowledge normally entail some modification and adaptation to work smoothly in a new setting, the increased dependence, implying subordination and control from the expatriates, might circumscribe the needed flexibility for utilizing and adopting the knowledge fully and, thereby, produce the negative relation between expatriates and transfer effectiveness (Kostova and Roth, 2002).

Finally, it may be that subsidiaries make use of expatriates only in transfer processes they believe will be very difficult to carry out. Thus, it may be that the additional cost of using expatriates in a transfer process for adopting and utilizing the transferred knowledge is incurred only in cases that are expected to be difficult. It is then natural to receive a negative result on performance, but we can only speculate that the negative result would have been even stronger if expatriates had not been used. This remains open for future research.

Subsidiary lateral relationships

Turning to lateral relationships, the results indicate that the utilization of transferred knowledge is achieved in situations where the transfer occurs in established relationships. It is important to cooperate with partners that the actors already know and trust and with whom they have working experience. Our results indicate that this facilitates knowledge adoption and use. Highlighting the importance of already-established relationships compared to building relationships contributes to understanding how knowledge can be governed effectively. This supplements reasoning highlighting the importance of long-standing relationships and the accumulation of specific exchange process experiences (Mayer and Argyres, 2004; Zollo, Reuer, and Singh, 2002). Hence, it becomes a matter of selecting the transfer counterparts carefully if success is to be achieved, not to transfer the knowledge to just anyone.

Selecting the transfer counterparts carefully makes better use of available resources and will help the subsidiaries govern their knowledge transfer processes. Looking at transfer performance effectiveness allows for a deeper understanding that is not gained by viewing successful transfer simply as the extent of flows between units. By cooperating with known counterparts, the subsidiary builds specific dyadic knowledge transfer experience and knowledge. The relationship partners learn how to organize and conduct knowledge transfer within the dyadic relationship, i.e., an evolutionary process of tacit capability development takes place (Nelson and Winter, 1982). This capability is connected to specific relationships and lends support to the idea of the MNE as a social community (Kogut and Zander, 1992, 1993). These findings connect well with the relational governance approach discussed by Poppo *et al*. (2008), where exchange is governed by cooperative norms and collaborative activities. Organizational economics also acknowledges informal social relationships as governance tools, often in the form of trust (Williamson, 1994; Woolthius, Hillebrand, and Nooteboom, 2005). Hierarchical governance can sometimes be substituted by or

complemented with relational arrangements (Woolthius *et al.*, 2005); in the current framework, this translates as subsidiaries' governing knowledge. Thus, relational governance can be an effective process aimed at increasing subsidiary-level capabilities, i.e., knowledge transfer effectiveness.

The disappointing nonsignificant result for relationship building may have occurred because the variables that make up this construct (temporary training, cross-units teams, and face-to-face meetings) can all be seen as precursors of long-standing relationships and may pay off only in the future. These may be considered investments in strengthening and establishing relationships that pay off in future knowledge transfer effectiveness as our result for 'established relationships' show. This has to remain an important conjecture requiring careful longitudinal investigation.

Limitations and directions for future research

One major limitation of the study is that the data originates only from the sending subsidiary. In order to estimate transfer performance in a more holistic way, dyadic data needs to be collected. However, since the sending subsidiary is actively involved during the transfer, it is reasonable to assume that the targeted respondents gave an accurate estimation of both headquarters' role, the dyadic relationship, and how well the knowledge was implemented and adopted at the receiving subsidiary.[7] Moreover, the respondent had usually been involved in multiple transfer projects (encompassing the same innovation), which allowed for cross-project comparison. Some of the measurements consist of subjective estimations made by the respondents, which can be problematic because of social desirability and self-assessment biases. However, this is mediated by the fact that our data is collected from key informants through face-to-face interviews.

[7] In fact, our t-test of one item from the dependent variable where we have dyadic data confirms this notion.

In terms of future research, the interplay between efficiency and effectiveness needs to be better understood, as does the indirect effects of headquarters' involvement in subsidiary-level activities. The role of expatriates and incentive systems and their potential contribution to transfer performance needs to be further investigated since prior studies found mixed results (Björkman *et al*., 2004; Gupta and Govindarajan, 2000). This study is cross-sectional, and longitudinal research is required to test the dynamic proposition that relationship building leads to future knowledge transfer effectiveness through establishing strong relationships.

CONCLUDING REMARKS

The contribution of this article is twofold; first, a more in-depth knowledge transfer performance measure (effectiveness in terms of adoption and use) is employed compared to previous studies that have focused more on aggregated knowledge flows (Agrawal *et al*., 2008; Gupta and Govindarajan, 2000; Haas and Hansen, 2005; Schulz 2001). We have analyzed the performance variation in individual knowledge transfer projects and shed light on the reasons for this variation. Second, we show the importance of considering both hierarchical governance tools and lateral relationships, as they influence knowledge utilization simultaneously and in different ways. This directly contributes to an enhanced understanding of knowledge governance and the knowledge-based view.

The results indicate that headquarters' involvement during knowledge development does not have any impact on subsequent transfer effectiveness, whereas more formal hierarchical governance forms have a negative impact. We suggest that relational characteristics are preferable for building subsidiary capabilities in knowledge transfers. Similarly, the use of expatriates may be disruptive to an essentially social process. Consequently, this article augments the understanding of knowledge governance and integration in large international organizations.

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Table 1. Factor analysis with varimax rotation

Variable	Factor loading		Communality
Factor 1: HEADQUARTERS INVOLVEMENT IN DEVELOPMENT			
The MNE HQ has participated closely in developing this innovation	0.913		0.872
The MNE HQ has brought competence of use for the development of this innovation	0.864		0.814
The MNE HQ has been important through specifying requests	0.899		0.832
The MNE HQ has taken important initiatives for developing the innovation	0.785		0.678
Eigenvalue		3.790	
% Variance		19.950	
Factor 2: TRANSFER PERFORMANCE EFFECTIVENESS			
The counterpart adopted the innovation very quickly	0.649		0.512
The innovation has been very easy to adopt by this counterpart	0.836		0.720
The performance of the innovation transfer was very satisfactory	0.811		0.692
To what extent the innovation transfer has been completed	0.813		0.688
Eigenvalue		3.154	
% Variance		16.600	
Factor 3: HEADQUARTERS HIERARCICHAL GOVERNANCE TOOLS			
The MNE HQ has formally instructed you to share this innovation with the counterpart	0.526		0.519
The transfer of the innovation has occurred without any sanctions by HQ with the counterpart (Reversed)	0.561		0.610
Requirement from HQ	0.811		0.716
HQ evaluation system	0.686		0.575
Eigenvalue		2.350	
% Variance		12.367	
Factor 4: RELATIONSHIP BUILDING			
Temporary training at partner sites	0.790		0.729
Cross-unit teams, project groups, etc.	0.806		0.764
Face-to-face meetings	0.761		0.679
Eigenvalue		1.847	
% Variance		9.720	
Factor 5: ESTABLISHED RELATIONSHIP			
They previously cooperated with the receiver	0.867		0.811
They previously had shared knowledge	0.823		0.801
Eigenvalue		1.284	
% Variance		6.757	
Factor 6: SUBSIDIARY EXPATRIATES			
To what extent, with regard to the transfer of the innovation, exchange of managers, was used	0.881		0.837
To what extent the transfer of the innovation was driven by moving personnel between the developer and the receiver	0.817		0.802
Eigenvalue		1.225	
% Variance		6.446	
Total variance explained		71.840	

Table 2. Correlation and descriptive statistics

	MEAN	S.D.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Transfer performance effectiveness	5.211	1.312	1															
2. Age	3.528	0.903	0.036	1														
3. Size	5.414	1.590	0.041	0.112	1													
4. Basic research	0.555	0.498	0.132	0.402**	0.224**	1												
5. Knowledge sharing	4.148	1.774	0.147	0.081	0.272**	0.173*	1											
6. Unit similarity	5.557	1.55271	0.465**	-0.213**	-0.158	-0.060	0.002	1										
7. Patent	0.569	0.496	-0.111	-0.102	-0.212**	0.019	-0.240**	0.093	1									
8. Physical distance	5.735	3.578	-0.001	-0.008	0.024	-0.035	-0.062	0.016	0.051	1								
9. Cultural distance	0.618	0.809	0.015	0.049	-0.148	-0.012	-0.023	0.052	0.106	0.635**	1							
10. Institutional distance	0.491	0.572	0.041	-0.114	0.059	-0.025	-0.147	-0.057	-0.070	0.464**	0.379**	1						
11. Economic differences	0.052	0.124	0.067	-0.067	0.060	-0.008	0.209**	0.052	-0.007	0.391**	0.270**	-0.042	1					
12. Headquarters involvement in dev.	2.110	1.580	-0.147	-0.350**	-0.149*	-0.182*	0.005	0.099	0.024	0.073	0.080	-0.057	0.150	1				
13. Headquarters hierarchical tools	2.601	1.569	-0.039	0.056	0.324**	0.228**	0.169	-0.054	-0.180*	0.048	0.123	-0.020	0.150	0.348**	1			
14. Subsidiary expatriates	1.893	1.472	-0.390**	-0.042	-0.064	-0.137	0.032	-0.264**	0.034	-0.049	-0.037	-0.026	-0.150	0.081	-0.098	1		
15. Established relationship	4.777	1.660	0.289**	0.085	0.046	0.007	0.151	0.255**	0.074	-0.110	0.009	-0.202**	0.002	-0.039	0.108	-0.028	1	
16. Relationship building	4.025	1.753	-0.004	0.000	-0.016	-0.020	-0.056	-0.037	0.012	-0.138	-0.167*	-0.059	-0.185*	0.241**	0.093	0.175*	0.256**	1
VIF value	1.450	-	-	1.597	1.629	1.433	1.277	1.310	1.271	1.963	1.585	1.409	1.478	1.508	1.528	1.185	1.336	1.246

Spearman's correlation

** Correlation is significant at the 0.01 level (two tailed).

* Correlation is significant at the 0.05 level (two tailed).

Table 3. Results from the ordinary least squares regression analysis [a]

Regressor	Model 1		Model 2	
	β	s.e.	β	s.e.
Age	0.068	0.143	-0.006	0.145
Size	0.038	0.079	0.085	0.083
Basic research	0.129	0.256	0.114	0.250
Knowledge sharing	0.055	0.070	0.062	0.066
Patent	-0.153†	0.244	-0.202*	0.236
Unit similarity	0.471***	0.075	0.368***	0.077
Physical distance	0.015	0.042	-0.019	0.041
Cultural distance	-0.065	0.166	-0.010	0.162
Institutional distance	0.011	0.224	0.071	0.216
Economic differences	0.053	1.035	0.075	1.020
Headquarters involvement in development	-	-	-0.002	0.081
Headquarters hierarchical governance tools	-	-	-0.240**	0.082
Subsidiary expatriates	-	-	-0.239**	0.077
Established relationship	-	-	0.211*	0.072
Relationship building	-	-	0.039	0.066
Diagnostics				
N	169		169	
R^2	0.249		0.368	
Adj.R^2	0.178		0.274	
Δ R^2	0.249		0.118	
F-statistics	3.519***		3.915***	

[a] Values are standardized parameter estimates.
†p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.