Manag Int Rev (2012) 52:461–488
DOI 10.1007/s11575-011-0097-9

RESEARCH ARTICLE

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Management
International Review

Mediating Effects in Reverse Knowledge Transfer Processes

The Case of Knowledge-Intensive Services in the U.K.

Zhaleh Najafi-Tavani · Axèle Giroud · Rudolf R. Sinkovics

Abstract:

- Building upon knowledge-based and network views, this paper seeks to examine how subsidiary characteristics (subsidiary willingness and subsidiary external embeddedness) and relationship characteristics (internal embeddedness, socialization mechanisms and shared values) impact the extent of Reverse Knowledge Transfer (RKT).
- A survey was carried out to build a database of 178 subsidiaries operating in Knowledge Intensive Business Service (KIBS) sectors in the United Kingdom.
- Our analysis indicates that willingness and socialization mechanisms are the most significant determinants of the extent of RKT. Further, the impacts of shared values and internal embeddedness are mediated by subsidiary willingness. The results also highlight the significant association between socialization mechanisms and internal embeddedness. Contrary to our expectation, external embeddedness has a negative influence on the extent of RKT.

Keywords: Multinational corporations (MNCs) · Reverse knowledge transfer (RKT) · Internal embeddedness · External embeddedness

Received: 05.03.2010 / **Revised:** 09.10.2010 / **Accepted:** 03.05.2011 / **Published online:** 27.10.2011

Lect. Dr. Z. Najafi-Tavani (✉)
Department of Marketing, Leeds University Business School, Leeds, UK
e-mail: Z.Najafitavani@Leeds.ac.uk

Prof. R. R. Sinkovics · Sen. Lect. Dr. A. Giroud
Manchester Business School, University of Manchester, Manchester, UK
e-mail: Rudolf.Sinkovics@manchester.ac.uk

Introduction

In recent studies of multinational corporations (MNCs), knowledge is well-recognized as one of the most, if not the most, vital resources of the firm (Grant 1996; Kogut and Zander 1992). Subsidiaries have access to diverse sources of new ideas and knowledge (originating from their local environment) and they are increasingly engaged in developing knowledge (Birkinshaw and Hood 1998; Cantwell and Mudambi 2005). The results of contemporary contributions indicate that the winners in today's market place are those MNCs that have superior ability in integrating and combining the diverse sources of knowledge residing in their networks of subsidiaries (Nonaka and Takeuchi 1995; Vernon 1979). Within different categories of intra-firm knowledge transfer, our research focuses on Reverse Knowledge Transfer (RKT). In this study, RKT refers to the extent to which a subsidiary transfers its knowledge to its parent company. The purpose of our study is to add to the literature on international knowledge transfer (Bresman et al. 2010; Buckley et al. 2003; Inkpen and Tsang 2005; Kotabe et al. 2003; Simonin 2004; Szulanski 2000; Tsai 2001) by contributing to under-researched areas, namely the role of network ties in RKT, and the importance of the willingness of the subsidiary to engage in RKT, and by focusing on the service sector.

While previous studies on RKT provide valuable insights on its determinants (Björkman et al. 2004; Buckley et al. 2003; Frost and Zhou 2005; Gupta and Govindarajan 2000; Noorderhaven and Harzing 2009; Yang et al. 2008), with a few exceptions (Frost 1998; Håkanson and Nobel 2001; Mu et al. 2007; Schulz 2001), most of these contributions are founded on the knowledge-based view. Since the assumption underlying this perspective is that knowledge already exists within a company's boundaries, most of these studies disregard the key role of network ties in RKT. This is regrettable since the competitive advantages of a subsidiary, and therefore its ability to contribute to the knowledge base of the MNC, depend greatly on the existence and strength of the subsidiary's network ties with local actors (Andersson et al. 2001; Håkanson and Nobel 2001). Grounded in the network view of the firm, this research contributes to the extant literature by considering the joint impacts of internal and external embeddedness on RKT.

Further, the literature on traditional knowledge transfer has acknowledged the close relationship between the willingness of the knowledge holder and knowledge transfer (Simonin 1999a; Szulanski 1995). The implications of this factor, however, remain relatively unexplored within the context of RKT (Gupta and Govindarajan 2000). Willingness has been recognized as one of the key drivers of international knowledge transfer (Dyer and Singh 1998; Minbaeva 2007; Szulanski 1996). We argue that, to contribute to the knowledge base of the parent company, the subsidiary must have enough incentive to allocate the resources associated with knowledge transfer. This research furthers our understanding of knowledge transfer from a subsidiary to its parent company by investigating, firstly, the association between willingness and the extent of RKT and, secondly, how the willingness of the sender mediates some of the relationships between RKT and its antecedents.

Another significant limitation of the current literature on RKT is the lack of research on the service sector. Foreign Direct Investment (FDI) in the service sector has increased dramatically over the past decade and service companies dominate the economies of

developed countries. Surprisingly, however, there are few studies that contribute to the theory, or propose conceptualized frameworks, which are the service industries (Grosse 1996; Knight 1999; Lindsay et al. 2003). For Grosse (1996), the competitive advantages of the manufacturing sector are primarily based on "proprietary products", whereas those of service industries tend to be based on "soft technology" (e.g. managerial know-how, market know-how, etc.). In a similar vein, Yamin (1999) showed that the process of innovation transfer from subsidiaries to their parent firms differs between the manufacturing and the service sectors. Yamin argues that the importance of internal and external sources of knowledge on the innovativeness of the subsidiary is different for these two industries. For the manufacturing sector, the key determinant of subsidiary knowledge development is the parent company, while for service companies the main antecedent of innovativeness is the local environment. In addition, compared to manufacturing firms, service companies rarely engage in the process of RKT (Yamin 1999). The innovativeness of subsidiaries in the service sector heavily depends upon the extent of their local embeddedness; thus, the transfer of such innovation is considerably harder, if not impossible. It is not clear, therefore, whether the findings of the prior studies on manufacturing can be generalized for the service industry. This study adds to the literature on cross border knowledge transfer by investigating whether the key determinants explaining RKT identified in previous studies on the manufacturing sector apply to the KIBS sector.

The remainder of this article is organized as follows: we begin by reviewing the existing literature and developing our hypotheses on the factors influencing RKT. We then describe the research methodology in Sect. 3. In the fourth section, we outline the empirical results, and we conclude with a discussion and conclusion.

Knowledge-Intensive Business Services and the Determinants of Reverse Knowledge Transfer

While traditional knowledge transfer has its own implications, RKT is proved to play a pivotal role in the effectiveness and efficiency of MNCs. Competences developed in the home country are no longer the sole source of knowledge for the MNC, nor are they sufficient in explaining the competitive advantages possessed by the corporation (Doz and Santos 1997). Foreign subsidiaries have access to a variety of external knowledge and develop new competences themselves; by sharing this knowledge with the parent company and other units within the network, they contribute to the creation of the MNC's competitive advantages (Ambos et al. 2006; Ghoshal et al. 1994; Håkanson and Nobel 2001). There are, nonetheless, relatively few contributions investigating RKT or identifying the factors facilitating or impeding this process (Foss and Pedersen 2002; Mu et al. 2007; Schulz 2001; Yang et al. 2008).

To explain RKT, some studies have tried to understand how the closeness of the relationship between the subsidiary and its parent company (internal embeddedness) contributes to the knowledge of the MNC (Håkanson and Nobel 2001). With regards to subsidiary-parent company relationships, rather than internal embeddedness, some scholars focus on the association between shared values and RKT (e.g. Ambos et al. 2006), while others examine the impact of socialisation mechanisms on subsidiary knowledge transfer (e.g.

Gupta and Govindarajan 2000; Noorderhaven and Harzing 2009). In addition to the characteristics of relationships between sender (subsidiary) and receiver (parent company), other determinants of the extent of RKT are comprised of various characteristics of the subsidiary itself. For instance, the willingness of the knowledge holder to disperse its knowledge plays a pivotal role in RKT (Foss and Pedersen 2002; Gupta and Govindarajan 2000). The extent of external embeddedness (that is the embeddedness between a subsidiary and its local actors such as customers, suppliers and universities) also influences the extent of RKT. Embedded relations constitute knowledge gathering devices (Foss and Pedersen 2002), and as such are considered to be a key source of knowledge and new ideas. Frost (1998, 2001) found that the ability of subsidiaries to innovate and contribute knowledge to their parent companies depends heavily on the existence of embedded relations with both their parent firm and their local environment ('dual embeddedness'). The importance of internal and external relations differs depending on the subsidiary's attributes, the characteristics of the subsidiary's innovation, and the parent company's technical presence in the host country (Frost 1998).

The majority of the aforementioned contributions investigate RKT within the context of the manufacturing sector. Lahti and Beyerlein (2000), however, declare that it is worthwhile to investigate knowledge transfer within service companies since the success of this industry is highly dependent on knowledge transfer activities. Moore and Birkinshaw (1998) assert that the competitive advantage of service sector firms depends on the cross-border transfer of intangible assets. Among various types of service, we are interested in the KIBS sector, since this is one of the fastest growing sectors (Koch and Strotmann 2008). Miles (2005, p. 40) defines knowledge-intensive business services (KIBS) as companies that are "mainly concerned with providing knowledge-intensive inputs to the business processes of other organizations". These firms are considered as 'bridges of innovation' between science and manufacturing (Czarnitzki and Spielkamp 2003; Koch and Strotmann 2008). The knowledge existing in KIBS companies is highly application-oriented and consequently intangible in nature (Johannisson 1998). According to prior studies (e.g. Beaverstock 2004; Doloreux et al. 2008; Windrum and Tomlinson 1999), inter-personal interactions and integration with external and internal actors are the key factors in knowledge creation and sharing within service firms.

Building on the perspective of the knowledge-based view and the network perspective, and combining the key contributions of prior studies, we suggest that for RKT to happen, firstly, the subsidiary/sender must be willing to share its knowledge, otherwise it will be reluctant to allocate the time and resources needed for knowledge transfer. Secondly, subsidiaries need to nurture a high level of external embeddedness to be able to develop new knowledge and therefore contribute to the competitive advantage of MNCs. Finally, building on Nahapiet and Ghoshal's (1998) typology of relationships and other prior studies (Gupta and Govindarajan 2000; Noorderhaven and Harzing 2009), shared values, internal embeddedness, and socialization mechanisms are considered to be important characteristics of the relationship between the subsidiary and its parent company. Shared values and internal embeddedness not only increase the ability and motivation of the subsidiary to contribute knowledge to its parent company, but also help parent companies to better recognize and understand the value of the knowledge existing in the subsidiary. Similarly, it has been shown that the use of socialization mechanisms by the

subsidiary and its parent company positively influence RKT (Gupta and Govindarajan 2000; Noorderhaven and Harzing 2009). These mechanisms facilitate the extent of RKT through their positive effect on internal embeddedness and shared values' creation.

Subsidiary's Willingness

The importance of the knowledge holder's willingness to engage in RKT has been highlighted in many previous contributions (Empson 2001; Gupta and Govindarajan 2000; Minbaeva 2007; Simonin 2004; Szulanski 1996). Szulanski (1996), for instance, argues that the fear of losing ownership, a desire to remain superior, and an unwillingness to allocate the time and resources needed for transferring knowledge, are the key explanations behind the knowledge holder's protectiveness.

According to Empson (2001), a fear of not being sufficiently rewarded for sharing strategically important knowledge, is one of the key impediments to knowledge transfer between professional service firms. The knowledge of KIBS companies is generally embedded in the experiences and skills of their employees, and thus it is highly tacit (Buckley et al. 1992; Johannisson 1998). Transfer of such knowledge is considerably time and resource consuming (requiring for example physical interaction) which might decrease a subsidiary's willingness to contribute to the knowledge base of its parent company. Given that there are no formal mechanisms (such as patenting) to protect innovation in the service sector (Grosse 1996), the consequences of transferring knowledge could even be destructive to KIBS companies. Consequently, without sufficient incentives, the knowledge holder will employ defensive actions to minimize knowledge transfer, especially when the knowledge is unique and possessed by only a few companies (Gupta and Govindarajan 2000; Simonin 2004).

Lahti and Beyerlein (2000) argue that possessing knowledge is not sufficient for knowledge transfer to happen; the knowledge holder must have enough motivation to share its competences with the rest of the corporation. The willingness of the knowledge holder contributes to the propensity to transfer knowledge. Therefore, we posit that the willingness of the subsidiary to transfer its knowledge positively influences the extent of RKT.

Hypothesis 1: The greater the willingness of the subsidiary, the greater the extent of Reverse Knowledge Transfer.

External Embeddedness

One of the most crucial factors affecting the ability of a subsidiary to develop new knowledge is the extent of its external embeddedness (Andersson et al. 2005; Frost et al. 2002; Håkanson and Nobel 2001). Andersson et al. (2002, 2005) define external embeddedness as the strength or closeness of the relationship between a company and the external actors (i.e. local suppliers, customers, universities, research institutions etc). According to Håkanson and Nobel (2001), strongly embedded subsidiaries are those that have regular and significant interactions with their local actors (Håkanson and Nobel 2001).

The extent of external embeddedness could influence both positively and negatively the extent of subsidiary knowledge transfer. On the one hand, the high level of embed-

dedness might negatively affect the extent of RKT through decreasing the subsidiary's willingness to contribute constructively to the transfer process. Generally, subsidiaries deal with two main pressures: (a) demand from the local environment to customize activities and (b) pressure from parent companies to integrate with other parts of the MNC (Rosenzweig and Singh 1991; Yamin 1999). Subsidiaries that are highly integrated into their local environment might be diverted from the main agenda of the whole corporation, which could in turn create conflict (Asakawa 2001). This conflict then negatively influences the extent of RKT not only through impeding the co-operation required for the exchange of knowledge, but also through decreasing the willingness of the subsidiary to engage in the process of RKT. Furthermore, embedded relations may decrease the ability of the subsidiary to innovate by creating a "competency trap" wherein the subsidiary is satisfied with adopting the current activities rather than taking a risk by engaging in a new set of activities (Levinthal and March 1993; Yamin 1999). According to Andersson et al. (2002), the more the subsidiary is externally embedded, the more the knowledge developed is context-specific. Unlike products, services are highly intangible in nature. For this reason, we expect that companies in the KIBS sector adapt knowledge more to their local environment than companies in the manufacturing sector. Such context-specific knowledge is likely to be difficult to transfer, and may not be applicable to the parent company. The difficulties and the costs associated with the transfer of such knowledge then decrease the willingness of a subsidiary to engage in knowledge transfer activities. Consequently, it is expected that:

Hypothesis 2a: The more embedded the subsidiary is in the host economy, the less willing the subsidiary is to transfer its knowledge to its parent company.

On the other hand, the findings of the majority of previous studies highlight the importance of close relations with local actors, particularly for the success of KIBS companies (Doloreux et al. 2008; Muller and Zenker 2001). Doloreux et al. (2008, p. 484) consider "market sources" (e.g. customers, competitors, suppliers, etc.) as one of the key components of KIBS innovation. KIBS companies co-create new knowledge via interactions with their customers (Bettencourt et al. 2002; Windrum and Tomlinson 1999). Some scholars (Eriksson et al. 1999) reason that, even the perceived quality of the services provided by KIBS companies, depends on the existence of strong and close relationships with external actors. These relationships are the main channels for a firm to identify and attain new knowledge from its local environment (Andersson et al. 2007; Gulati 1998; Miles 2005). Håkanson and Nobel (2001), assert that subsidiaries that are strongly embedded have a greater opportunity to absorb and combine new knowledge, and as a result, they are more capable of contributing to existing products/services, or even of developing new services, technologies, or products.

As the literature emphasises the link between knowledge development within the KIBS sector and external embeddedness, and given that subsidiaries should be capable of developing competitive advantages to contribute to the knowledge base of their parent company, we anticipate a positive relationship between external embeddedness and the extent of RKT. Hence,

Hypothesis 2b: The more embedded the subsidiary is in the host economy, the greater the extent of Reverse Knowledge Transfer.

Shared Values

Shared values refer to the degree of fit between two units in terms of organizational goals, ambitions and context (Tsai and Ghoshal 1998). According to Dyer and Nobeoka (2000), shared values are formed within the process of socialization, in which a common understanding of reality is formed. The knowledge of KIBS firms is very soft in nature (Doloreux et al. 2008) and the competitive advantages of the services depend on the international transfer of the firms' tacit knowledge (Moore and Birkinshaw 1998). Lane et al. (2001) argue that the similarity between two units (sender and receiver) is positively associated with the learning capacity of the receiver, as it helps the receiver to understand the knowledge correctly, especially when it comes to the transfer of newly developed knowledge. In contrast, a lack of shared values has a negative impact on the extent of inter-unit knowledge transfer (Ambos et al. 2006). Hence, we suggest that shared values between KIBS subsidiaries and their parent companies positively influence the extent of RKT.

Hypothesis 3a: The greater the shared values between a subsidiary and its parent company, the greater the extent of Reverse Knowledge Transfer.

As argued above, shared values are postulated to have a positive direct effect on the extent of RKT. At the same time, shared values are also expected to be an antecedent of a subsidiary's willingness to share its knowledge. That is, the more shared values the two units have, the easier and cheaper the transfer of knowledge will be which increases the willingness of the knowledge holder to transfer its knowledge, thus:

Hypothesis 3b: The greater the shared values between a subsidiary and its parent company, the greater the willingness of the former to transfer its knowledge to the latter.

Socialization Mechanisms

Socialization mechanisms include joint training programs, visits, task forces, and informal communications (Noorderhaven and Harzing 2009). Gupta and Govindarajan (2000) divide socialization mechanisms into formal and informal integrative mechanisms and illustrate the effects of employing such mechanisms on subsidiary knowledge outflow. Based on capability-based theories and product innovation, knowledge transfer only happens when knowledge is available and the parent company is aware of the potential benefits of applying that knowledge in the home country (Subramaniam and Venkatraman 2001). The utilization of socialization mechanisms facilitates RKT through increasing the parent company's managers' awareness of the competences existing in their subsidiaries (Katz and Tushman 1979; Monteiro et al. 2008). Moreover, as a result of the increased interaction between a subsidiary and its parent company, common values and language

emerge, which not only promote and ease RKT (Dyer and Nobeoka 2000; Håkanson and Nobel 2001), but also strengthen the relationship between the two units.

Socialization mechanisms are also considered to be necessities for exchanging tacit/soft knowledge across professional service firms (Beaverstock 2004). According to Lahti and Beyerlein (2000), the employment of socialization mechanisms results in the development of group knowledge, which facilitates the development of organizational knowledge. Grosse (1996) considers the employment of expatriates, training programs, and visits, to be the main mechanisms for knowledge transfer across service companies. Lindsay et al. (2003) further argue that socialization mechanisms ease cross-border knowledge transfer by improving the quality of the relationship between a parent company and its subsidiary, thus:

Hypothesis 4a: The more socialization mechanisms are employed, the more the subsidiary is internally embedded.

Hypothesis 4b: The more socialization mechanisms are employed, the greater the extent of the shared values between the subsidiary and its parent company.

Hypothesis 4c: The more socialization mechanisms are employed, the greater the extent of Reverse Knowledge Transfer.

Internal Embeddedness

Scholars use various terms to describe the attributes of the inter-firm relationship, such as arduous relationship (Szulanski 1996), internal embeddedness (Andersson et al. 2005; Forsgren et al. 2006), integrity (Håkanson and Nobel 2001), or network strength (Lee et al. 2008). In this paper, we refer to the attributes of inter-unit relationships as internal embeddedness (Andersson et al. 2005; Forsgren et al. 2006; Granovetter 1985; Gulati 1998; Uzzi 1996). At an individual level, a good relationship facilitates the process of knowledge transfer (Reagans and McEvily 2003). At an organizational level, according to Lane and Lubatkin (1998), inter-organizational ties facilitate learning by increasing the willingness and ability of firms to exchange knowledge. In general, close relations facilitate the exchange of resources (Eriksson et al. 1999). Szulanski (1996), states that close relations ease the process of international knowledge transfer by reducing motivational and cognitive problems.

Compared to arm's length relations, firms with embedded relationships are considerably more capable of transferring highly tacit knowledge (Hansen 1999; Uzzi 1996). Embedded relationships enable bilateral interactions between the sender and the receiver (Andersson et al. 2001). Therefore, given that the knowledge residing in the service industry, and in particular the KIBS sector, is mainly embodied in the employees, one of the most important drivers of cross-border knowledge transfer is the existence of an embedded relationship between the sender and the receiver (Beaverstock 2004; Windrum and Tomlinson 1999). According to Buckley et al. (1992), individual relationships are vital in explaining knowledge flow in services because of the nature of knowledge in this industry. As a result, we expect that a high level of internal embeddedness is positively related to the extent of RKT:

Hypothesis 5a: The more embedded the subsidiary is internally with the parent company, the greater the extent of Reverse Knowledge Transfer.

Successful knowledge transfer, especially when it comes to the transfer of tacit knowledge, encompasses the commitment of both sender and receiver. The sender must allocate a considerable amount of time and resources in order to transfer successfully its knowledge to the receiver. The vital component of this commitment is the motivation of the knowledge holder. According to the incentive-based perspective, the existence of a close relationship will increase the willingness of a knowledge holder to share its knowledge. According to Nelson and Winter (1982, p. 112), '*in the motivational role, embeddedness allows for the social infrastructure that is needed for absorbing new information*', thus:

Hypothesis 5b: The more embedded the subsidiary is internally with the parent company, the more willing the subsidiary is to engage in Reverse Knowledge Transfer.

Moderating Effects: The Role of Entry Mode and Subsidiary Age

The relationships discussed above are likely to be moderated by subsidiary entry mode and age. The effect of entry mode on a subsidiary's knowledge outflow has been emphasized by many researchers (e.g. Gupta and Govindarajan 2000; Håkanson and Nobel 2001). According to Belderbos (2003), accessing new knowledge makes acquired subsidiaries more desirable, particularly when an acquired subsidiary has knowledge that is difficult, time consuming or costly to develop or duplicate. Compared to greenfield subsidiaries, acquired subsidiaries' stocks of knowledge are larger since they are based on previously existing organizations and have already established relationships with their local actors. Thus, acquired subsidiaries can contribute better to the knowledge base of MNCs because their knowledge is less duplicative than that of greenfield subsidiaries (Gupta and Govindarajan 2000). However, given that acquired subsidiaries existed before the acquisition, they have their own organizational cultures and structures. As a result, acquired subsidiaries are often reluctant to develop close relations with their parent company. In contrast, as greenfield subsidiaries are established by parent companies, structural and cultural similarities exist between these units. Greenfield subsidiaries depend considerably on the knowledge base of their parent company, which can facilitate the development of close relations between them (Håkanson and Nobel 2001). For these reasons, we investigate the effect of mode of entry on the proposed model.

The importance of subsidiary age on the extent of RKT has been highlighted in the literature (Bresman et al. 2010; Dhanaraj et al. 2004; Wijk et al. 2008). As subsidiaries become older, the integration between subsidiary and parent company becomes stronger, which facilitates RKT (Håkanson and Nobel 2001). Over time, some 'relationship-specific assets' emerge. This, in turn, creates shared understanding and eases knowledge transfer Kotabe et al. (2003) Squire et al. (2009). According to Minbaeva et al. (2003), older subsidiaries are more capable of developing knowledge. This is mainly due to the fact that over time the level of a subsidiary's local embeddedness will increase, and the

subsidiary will have more access to new ideas and knowledge (Håkanson and Nobel 2001; Zander 1999). Older companies have accumulated more intangible resources and have more experience; thus, they are more capable of contributing to the knowledge base of other companies (Lee et al. 2008). Longer relationships also facilitate knowledge transfer through developing shared values and decreasing the possibility of opportunistic behaviors (Squire et al. 2009), increasing the absorptive capacity of the receiver (Cohen and Levinthal 1990), and developing essential knowledge transfer mechanisms (Cavusgil et al. 2003). Dhanaraj et al. (2004) found that the relationship between relational embeddedness and knowledge transfer is mediated by the age of the subsidiary. The same authors show that the impact of relational embeddedness on the transfer of explicit knowledge is stronger in young subsidiaries than in mature ones. In sum, the age of the subsidiary will influence the extent of knowledge transfer.

For a more comprehensive understanding of RKT, we investigate the effects of these factors on specified relationships. However, instead of developing detailed hypotheses, an explanatory approach is employed. In the next section, the methodology adopted to test the model and hypotheses is described in detail.

Research Methodology

This section comprises information on the sample of firms analyzed, data collection processes, the operationalization of constructs, and the data analysis method. We adopt two steps to analyze the data. Firstly, the validity of the measurements is assessed (i.e. common method variance, convergent, discriminant, and nomological validity); secondly, we test the hypotheses through structural equation modeling.

Sample

The population for this study consists of UK subsidiaries that have a non-UK parent company. The study focuses on the knowledge-intensive business service industry. Firms in this industry produce “non-material”, “intangible”, and “highly customized services” (Koch and Strotmann 2008). The survey was implemented among “computer services”, “research and development”, “economic services”, “technical services” and “advertising” companies, as these sub-sectors qualify as being the most knowledge-intensive business services (KIBS) (Simmie and Strambach 2006). The list of companies was built using the FAME database (which provides company information for UK public and private companies). Data was collected in early 2009. The primary focus of the questions in the survey is on cross-organization activities, such as RKT, and on overall organizational issues, such as the strength of the relationship between a company and its internal and external environments. Given the breadth of these questions, the questionnaire was addressed to the managing directors, CEOs or general managers of the subsidiaries.

The survey design and implementation were based on the tailored design method (Dillman 2000). To check its relevance and clarity, the questionnaire was pre-tested on 50 subsidiaries, fifteen PhD students, and selected academics. The pre-tested questionnaire was then administered online (it is noted that, to avoid unwanted responses, respondents

could only access the survey through a given link). Respondents were first contacted directly by phone, and, after that, a personalized covering letter that contained a link to the survey was emailed to them. Out of the 523 surveys emailed, we received 209 (178 usable cases) responses, equating to a very high response rate of 39%. This response rate is considered very high given the sensitive nature of some of the questions and the profile of the respondents. 31 cases were found to be unusable, some of which contained more than 15% missing values, and some did not have a non-UK parent company. Out of the 178 usable cases, 45% of the parent companies are located in Europe, 41% in North America, and the rest in Asia, Australia, South America and Africa. The subsidiaries' sizes lie between 10 and 55,000 employees (with a mean of 5,000) and, on average, these subsidiaries have been in operation for 15 years (ranging from 1 to 60 years).

Constructs and Indicators

Endogenous Variables

Reverse Knowledge Transfer. Our measures of RKT were taken from Gupta and Govindarajan (2000) and Yang et al. (2008). Due to the focus of our study, however, we concentrate on four types of knowledge; Sales and Marketing Know-how, Strategy Know-how (knowledge about customers, suppliers and competitors), Distribution Know-how, and Management Systems and Practices Know-how (Gupta and Govindarajan 2000; Schulz 2001). RKT was operationalized with a 7-item scale ranging from "not at all" to "to a very great extent". Respondents were asked to address the question "To what extent, during the last three years, did your company transfer … to its parent company?" This question relates to the ability of the subsidiary to contribute new knowledge to its parent company and differs from mutual adaptation practices that result from internal embeddedness. The final Cronbach's alpha for this scale is 0.89.

Internal Embeddedness. Embeddedness is usually measured as the extent of mutual adoption of practices/activities (Andersson et al. 2001, 2005; Forsgren et al. 2006; Lane and Lubatkin 1998). It should be acknowledged that this is a perceptual measure encompassing both sides. On a 7-point scale (ranging from "not at all" to "to a very great extent"), respondents were asked to indicate "the extent to which the relationship between a subsidiary and a parent company has caused mutual adaptation concerning (a) sales and marketing practices, (b) distribution practices and (c) management practices". Cronbach's alpha for this scale is 0.86.

Willingness. In order to measure subsidiary willingness, respondents were asked to indicate "the extent to which a subsidiary saw benefits in sharing its knowledge with the parent company", "the extent to which a subsidiary committed physical, financial, organizational, and logistical resources to transfer its knowledge to the parent company", and "the extent to which the parent company motivated/encouraged (financially or emotionally) a subsidiary to transfer its knowledge". Following Minbaeva (2007), we use perceptual measures for this construct since they raise the possibility that respondents will express their honest opinion. Minbaeva (2007) argues that if knowledge holders were asked directly about their behavior as regards knowledge sharing, the answers would not be reliable. In particular, since the focus of this research was on the subsidiary side, the

possibility that a subsidiary would readily admit that it did not want to share its knowledge with its parent firm was relatively low. Similar approaches have been employed by Szulanski (1996), Simonin (1999b), and Gupta and Govindarajan (2000) to operationalize closely related concepts such as a "lack of motivation", "protectiveness", and the "motivational disposition of the source unit". All measures were based on a 7-point scale ranging from "not at all" to "to a very great extent". Cronbach's alpha for this scale is 0.83.

Shared values. Building on previous contributions, a four-item construct was formulated to capture different aspects of shared values. Based on a 7-point scale ranging from "fully disagree" to "fully agree", respondents were asked to indicate the extent to which they agree or disagree with the following statements. (a) "Generally, business practices are very similar across the two companies", (b) "the two companies have a shared understanding of doing business", (c) "the two companies have coherent and similar organizational culture", (d) "our company has the same goals as the parent company". Tsai and Ghoshal (1998), Simonin (1999b), and Li et al. (2007) contributions were used to develop the aforementioned constructs. Cronbach's alpha for this variable is 0.83.

Exogenous Variables

Socialization mechanisms. Socialization mechanisms were operationalized with a 7-point scale (ranging from "not at all" to "to a very great extent"), building on the contributions of Björkman et al. (2004), Gupta and Govindarajan (2000), and Noorderhaven and Harzing (2009). Respondents were asked to indicate the prevalence of (a) the participation of employees/top managers in joint training programs, (b) the movement of employees/top managers between the two firms (for at least one month), (c) visits to a subsidiary by its parent company's top managers, (d) visits to the parent company by the subsidiary's top managers, and (e) top managers/employees from both units participating in corporate inter-unit committees/teams/task forces. Cronbach's alpha for this scale is 0.84.

External embeddedness. To measure external embeddedness, respondents were asked to indicate "the extent to which the subsidiary's most important external relationships with customers, suppliers, universities, and research institutes have caused mutual adaptation concerning (a) sales and marketing practices, (b) distribution practices and (c) management systems and practices. These questions were adapted from the contributions of Lane and Lubatkin (1998), Andersson et al. (2005), and Andersson et al. (2001) and were based on a 7-point scale ranging from "not at all" to "to a very great extent". Similarly to internal embeddedness, the measures of external embeddedness are perceptual, and include both sides. Cronbach's alpha for this scale is 0.76.

Empirical Analysis

Table 1 illustrates the means, standard deviations, t-value, factor loadings, and fit indices of the sample. Prior to the hypothesis testing, measures were assessed using convergent validity, discriminant validity, and nomological validity. To assess convergent validity we examine construct loadings, average variance extracted and construct reliability. According to the results, convergent validity is not a problem since all of the loadings are

Table 1: Constructs and indicators

Indicators	Mean	SD	λ	t-value	R^2-value
Reverse knowledge transfer, α=0.89, AVE=0.665					
• Transfer of sales and marketing know-how	4.08	1.77	0.78	11.92	0.61
• Transfer of strategy know-how	3.71	1.92	0.86	13.84	0.74
• Transfer of distribution know-how	4.57	1.69	0.82	12.87	0.67
• Transfer of management systems and practices know-how	3.73	1.83	0.80	12.45	0.64
Willingness, α=0.83, AVE=0.68					
• Feeling benefit in sharing knowledge with HQ	5.44	1.67	0.74	11.06	0.55
• Allocating resources to transfer knowledge to HQ	5.65	1.27	0.97	16.24	0.94
• HQ motivating (financially or emotionally) a subsidiary to transfer knowledge	4.89	1.6	0.74	11.15	0.55
Internal embeddedness, α=0.86, AVE=0.68					
Adaptation of the following practices from parent company:					
• Adaptation in sales and marketing practices	4.53	1.6	0.83	12.54	0.69
• Adaptation in distribution practices	4.32	1.85	0.87	13.38	0.76
• Adaptation in management practices	4.71	1.53	0.77	11.53	0.59
Socialization mechanisms, α=0.84, AVE=0.542					
• Joint training programs	3.88	1.87	0.75	11.09	0.56
• Rotation of employees	3.31	1.79	0.74	10.99	0.55
• Visits from HQ	2.82	1.82	0.67	9.53	0.45
• Visits to HQ	4.13	1.79	0.68	9.79	0.46
• Participate in corporate inter-unit committees/teams/task forces	3.98	1.83	0.83	12.89	0.69
Shared values, α=0.83, AVE=0.572					
• Similarity in business practices	4.91	1.78	0.69	9.93	0.48
• Providing the same range of services	4.72	1.81	0.78	11.64	0.61
• Similarities in organizational culture	5.79	1.27	0.71	10.17	0.50
• Sharing the same goals with parent company	5.59	1.41	0.84	12.82	0.70

Table 1: (continued)

Indicators	Mean	SD	λ	t-value	R^2-value
External embeddedness, α = 0.76, AVE = 0.513					
Adaptation of the following practices from suppliers, customers, universities, and competitors:					
• Adaptation in sales and marketing practices	4.73	1.55	0.67	8.78	0.45
• Adaptation in distribution practices	4.53	1.57	0.67	8.72	0.45
• Adaptation in management system and practices	4.29	1.63	0.80	10.52	0.64

Fit Statistics: $\chi^2 = 304.96$, SRMR: 0.052, df = 174, CFI = 0.95, NNFI = 0.94, IFI = 0.94

above 0.5 (and with a few exceptions most are above 0.7), the average variance extracted (AVE) of all constructs score above 0.5 (ranging from 0.51–0.68), and all construct reliabilities (CRs) are above 0.7 (ranging from 0.72–0.89). In our test of discriminant validity, all AVEs are larger than the corresponding squared inter-construct correlation estimates (SIC); therefore, the six-construct CFA model demonstrates discriminant validity. Finally, to test nomological validity, we examine the association between two CFA constructs (RKT and internal embeddedness) and one construct that is not included in the model (subsidiary knowledge development) (Hair et al. 2009; Johnson and Rapp 2010; Kabadayi et al. 2007). Prior studies have consistently highlighted the important role of knowledge development (Håkanson and Nobel 2001) and the subsidiary's knowledge stock (Gupta and Govindarajan 2000) on its ability to contribute to the knowledge of the MNC. Furthermore, access to various sources of knowledge, including those of its parent company, can facilitate a subsidiary's knowledge development (Frost 2001). These relations can increase subsidiaries' abilities to develop knowledge by facilitating the process of knowledge transfer from parent companies to their subsidiaries. The high and significant correlation found between knowledge development and RKT ($r = 0.664$, $p < 0.05$) and between knowledge development and internal embeddedness ($r = 0.408$, $p < 0.05$) supports the nomological validity of our research.

To test for non-response bias, we compare responding against non-responding companies based on characteristics such as age, number of employees and country where the parent company is located (Gerbing and Anderson 1988). The t-test reveals no significant difference between responding and non-responding firms. In addition, following Armstrong and Overton (1977), we compare early responses with late responses with regards to the study's key variables including RKT, willingness and socialization mechanisms. We find no significant differences between early and late responses; thus, non-response bias is not problematic in our study.

Finally, since all of the measures were collected using the same survey instrument, there is the possibility of common method variance (CMV). Following Podsakoff et al. (2003) multiple remedies were employed to alleviate the concerns about CMV. Firstly, respondents were ensured anonymity, academic terms were avoided as much as possible, and in some cases explanations of ambiguous terms were included. Secondly, following Konrad and Linnehan (1995), we used Harman's one-factor test. We conducted a principal com-

ponents factor analysis on all measurements items, extracting six factors with eigenvalues above 1 (which accounted for 72% of the total variance, with the first factor accounting for 28.5% of it). As no single factor emerged as dominant, we exclude the possibility of common method variance. Following Lindell and Whitney (2001) and Malhotra et al. (2006), we also checked for CMV by introducing a marker variable. We chose the frequency of a subsidiary's interactions with its sister subsidiaries as a marker variable, since this variable is, theoretically, uncorrelated with at least one of the constructs in our model (e.g. shared values and subsidiary-parent company embeddedness). For CMV estimation, the results showed that all of the correlations that were significant before the adjustment remained statistically significant. It can be concluded, therefore, that the results cannot be accounted for by CMV (Lindell and Whitney 2001). The differences between the original and CMV-adjusted correlations were also very minor ($0.02 \leq \Delta r \leq 0.05$).

Results

The hypotheses were tested through structural equation modeling via the use of LISREL 8 (Jöreskog and Sörbom 2001). Figure 1 presents the resulting model. The Chi-Square for the measurement model is 370.90 (178 degrees of freedom, p-value < 0.001). The Chi-Square is sensitive to sample size and slight departures from multivariate normality (Bollen 1989; Jöreskog 1977). As a result, it should be considered as a relative rather than absolute assessment of fit, wherein a large X^2 represents a bad fit and a small value a good fit. The ratio of X^2 to degrees of freedom provides a good guide to determine whether the Chi-Square is large or small. This ratio should be less than 3, which is the case in this research (Bollen 1980; Hu and Bentler 1999; Marsh et al. 1988). Other fit statistics for the combined sample provide good support for the proposed model ($n = 178$, CFI = 0.95, NNFI = 0.94, IFI = 0.94) (Bagozzi and Yi 1988; Byrne 2001). In addition, RMSEA = 0.069 and SRMR = 0.055 are acceptable since they are below the cutoff points of 0.08 and 0.09 respectively (Hair et al. 2009; Kline 2005). CFI and RMSEA have been used by prior studies as criteria to test nomological validity (Eriksson and Chetty 2003; Jöreskog and Sörbom 1993). It can be concluded, therefore, that our model is nomologically valid since these fit indices are satisfactory.

As to the hypothesized relationships between the endogenous and exogenous variables, first of all, there is a strong and highly significant relationship between willingness and RKT (t-value of 4.31). Hypothesis 1 is, therefore, supported.

In Hypothesis 2a we anticipate that the extent of external embeddedness decreases subsidiaries' willingness to transfer knowledge to their parent company. However, the results show that while this association is significant, it is positive. As a result, Hypothesis 2a is rejected (t-value of −3.77). Hypothesis 2b predicts that the external embeddedness of a subsidiary would positively impact the extent of RKT. The results show, however, a negative significant relationship between the extent of external embeddedness and RKT. Thus, Hypothesis 2 is rejected (t-value of −2.36).

As can be seen in Fig. 1, there is a weak positive relationship between shared values and the extent of RKT. Although this relationship is positive (t-value = 1.69), the result is not significant and, therefore, Hypothesis 3a is rejected. Hypothesis 3b is strongly supported (t-value = 3.57), indicating a positive link between shared values and willingness

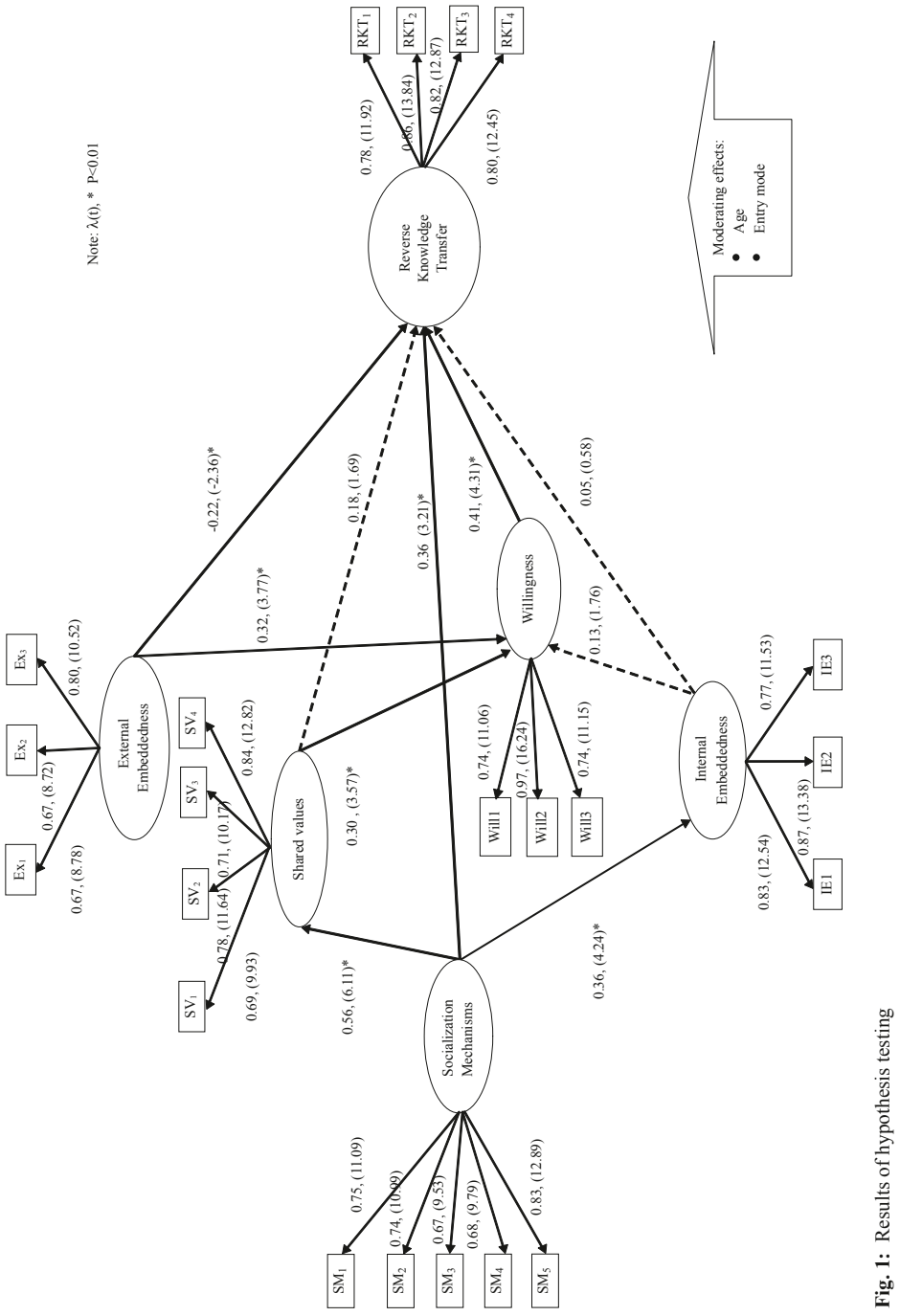

Fig. 1: Results of hypothesis testing

to share knowledge. We find that shared values do not affect the extent of RKT but have an indirect effect on a subsidiary's knowledge transfer (see Fig. 1).

The results yield strong support for both Hypothesis 4a and Hypothesis 4b with t-values of 4.24 and 6.11, respectively. Hypotheses 4a and 4b proposed that the employment of socialization mechanisms increases (a) the ties between a subsidiary and its parent company and (b) the extent of shared values. The results also indicate that socialization mechanisms positively and significantly impact the extent of RKT (t-value = 3.21). Finally, the results show a positive relationship between internal embeddedness and the extent of RKT, but this is not significant (t-value = 0.58). Hypothesis 5a is, therefore, rejected. With a t-value of 1.76, we find a positive but insignificant link between internal embeddedness and the willingness of a subsidiary to share knowledge. Hypothesis 5b is rejected.

Moderating Effects

The results of the group analysis shed some light on RKT and its facilitators and hindrances. The group analysis was based on age and mode of entry. Subsidiaries were divided into two groups: old and young. Companies that have been established for more than 15 years were categorized as old and the rest as young.

Table 2 illustrates the results of the multiple group analysis for age and mode of entry. For subsidiary age, similarly to the main results, willingness (H1) and socialization

Table 2: Structural parameter estimates and goodness-of-fit indices for two-group comparison on age and entry mode

Paths	Hypotheses	Age		Mode of entry	
		Young (n = 99)	Old (n = 79)	Acquired (n = 81)	Greenfield (n = 97)
Willingness ⇒ RKT	H1	0.393**	0.608**	0.463**	0.480**
External embeddedness ⇒ Willingness	H2a	0.474**	0.365**	0.432**	0.298**
External embeddedness ⇒ RKT	H2b	−0.179	−0.237*	−0.232	−0.217*
Shared values ⇒ RKT	H3a	0.031	0.051	0.146	0.170
Shared values ⇒ Willingness	H3b	0.249**	0.250**	0.354**	0.316**
Socialization mechanisms ⇒ Internal embeddedness	H4a	0.458**	0.137	0.475**	0.227*
Socialization mechanisms ⇒ Shared values	H4b	0.458**	0.524**	0.467**	0.614**
Socialization mechanisms ⇒ RKT	H4c	0.249*	0.344**	0.337**	0.24
Internal embeddedness ⇒ RKT	H5a	0.105	0.293**	0.173	0.21
Internal embeddedness ⇒ Willingness	H5b	0.011	0.109	0.087	0.132

**$p < 0.05$; *$p < 0.10$
$\chi^2 = 349.2$(df:200) CFI = 0.861, IFI = 0.868
$\chi^2 = 339.7$(df:200) CFI = 0.815, IFI = 0.827
$\chi^2 = 301.1$(df:200) CFI = 0.848, IFI = 0.857
$\chi^2 = 280.3$(df:200) CFI = 0.918, IFI = 0.923

mechanisms (H4c) are the main factors explaining RKT. Shared values and willingness (H3b) and external embeddedness and willingness (H2a) are highly correlated for both young and old subsidiaries. In both groups, socialization mechanisms significantly and positively impact the extent of shared values (H4b). However, the impact of shared values on RKT (H3a) and internal embeddedness and willingness (H5b) are not significant across the two groups. Differences between the two groups arise regarding the impact of socialization mechanisms on internal embeddedness (H4a), which is only significant for young subsidiaries. Conversely, the relationship between external embeddedness and RKT (H2b) and the effect of internal embeddedness on RKT (H5a) are only significant for old subsidiaries.

For the mode of entry, in both categories, willingness is a vital aspect of RKT (H1), external embeddedness and shared values significantly affect willingness (H2a and H3b), and socialization mechanisms strongly influence shared values (H4b). The extent of the internal embeddedness of both acquired and greenfield subsidiaries is significantly related to socialization mechanisms (H4a). The relationships between internal embeddedness and RKT (H5a), internal embeddedness and willingness (H5b), and shared values and RKT (H3a) are not significant in either group. Finally, some differences occur: socialization mechanisms are found to be a significant antecedent of RKT for acquired subsidiaries only (H4c), while external embeddedness negatively affects RKT only in the case of greenfield subsidiaries (H2b).

Overall, the results of group analysis reveals similar pattern across all sub-groups. First, the results show that willingness is the main facilitator of knowledge transfer from a subsidiary to its parent company. Second, external embeddedness and shared values significantly impact a subsidiary's willingness to engage in RKT related activities. Finally, according to the results, employment of socialization mechanisms increases the extent of shared values between a subsidiary and its parent company.

Discussion and Conclusion

This research aims to further the knowledge on RKT by investigating the case of the KIBS sector in the United Kingdom. Using an extensive database, we suggest that willingness and socialization mechanisms (as facilitators), and external embeddedness (as a hindrance) are the key determinants of RKT.

First, subsidiary willingness positively influences the extent of RKT. The important role of willingness on knowledge transfer has been recognized by many contributions looking at both the service and manufacturing sectors (i.e. Empson 2001; Minbaeva 2007; Moore and Birkinshaw 1998; Simonin 2004; Szulanski 1996). Our results are consistent with the previous studies; we find a strong relationship between the willingness of a subsidiary to share its knowledge and the extent of RKT. We also find that willingness mediates the impacts of internal embeddedness and shared values on RKT. The knowledge existing in KIBS subsidiaries is soft in nature and embedded in the experiences and skills of the employees (Buckley et al. 1992). The transfer of such knowledge requires physical interactions, which are costly and time consuming (Beaverstock 2004). In addition, the ineffectiveness of protection mechanisms for innovation (Grosse 1996) increases

the risks associated with knowledge transfer and thus decreases the willingness of KIBS companies to share their knowledge. Our results confirm that willingness is a key to explain RKT for KIBS firms. This is a significant finding for the parent companies

The importance of shared values on knowledge transfer is well documented in knowledge management studies (i.e. Bhagat et al. 2002; Tenkasi 2000), although some recent contributions (Ambos et al. 2006; Zhou and Frost 2003) have found no influence of shared values on RKT. Our results are in line with the latter group, shared values are not found to be significant. We checked whether shared values could influence the extent of RKT indirectly, via willingness, and found a positive significant relationship between those concepts. There are several explanations for this indirect relationship. Firstly, the existence of shared values eases communication and enhances trust; both of which are key determinants of knowledge transfer between KIBS firms (Beaverstock 2004; Empson 2001). Secondly, the knowledge that exists in KIBS firms is mostly tacit and firm-specific. The existence of shared values helps parent companies to understand better the value and applications of their subsidiaries' knowledge. Consequently, shared values augment the subsidiary's willingness by decreasing the costs associated with knowledge transfer.

Our results indicate that the use of socialization mechanisms significantly increases the extent of RKT. Socialization mechanisms increase the frequency of subsidiary-headquarter communication and interaction. One the one hand, these interactions influence inter-firm knowledge transfer because they increase the 'depth', 'breadth' and 'effectiveness' of reciprocal knowledge exchange (Lane and Lubatkin 1998). On the other hand, they decrease the possibility of 'transmission losses' (Mudambi 2002). Previous studies on RKT (e.g. Gupta and Govindarajan 2000; Noorderhaven and Harzing 2009) also emphasize the strong positive influence of socialization mechanisms and our results clearly confirm that these processes are significant in the case of the KIBS sector.

Prior contributions (Bresman et al. 1999; Lindsay et al. 2003) find that the existence of socialization mechanisms improves the quality of the sender-receiver relationship. Schleimer and Riege (2009), for example, find that socialization mechanisms increase the closeness of inter-unit relations by diminishing uncertainties. Therefore, we also checked whether there is any relation between both factors. The results show a significant relationship between socialization mechanisms and internal embeddedness, and a positive relationship between socialization mechanisms and shared values. This confirms Dyer and Nobeoka's (2000) contribution, who find that shared values emerge as a result of socialization. Thus, we conclude that within the context of the KIBS sector, socialization mechanisms are not only essential for RKT but they also improve the quality of the subsidiary-parent company relationship by facilitating embeddedness and developing shared values.

Nahapiet and Ghoshal (1998) demonstrate that social capital plays a pivotal role in knowledge transfer. Subsidiaries that maintain frequent and significant interactions with their parent company exhibit a high degree of knowledge exchange and contribute more to the knowledge base of their parent (Håkanson and Nobel 2001). In the KIBS sector, the transfer of knowledge—especially tacit knowledge—is only possible through close relationships (Beaverstock 2004; Windrum and Tomlinson 1999) since embedded relationships facilitate the exchange of resources (Empson 2001). Our results neither confirm this view, nor do they indicate a significant link between internal embeddedness and will-

ingness. The main reason for this is, perhaps, that other determinants (i.e. socialization mechanisms, shared values, and external embeddedness) prevail and thus, outperform the implications of internal embeddedness on both willingness and RKT.

Contrary to prior studies (e.g. Schulz 2001), our results show that external embeddedness has a negative significant impact on the extent of RKT. Among others, three potential explanations can be given. Firstly, close links between a subsidiary and its external environment might divert its efforts away from the MNC's objectives and, as a result, create tension (Asakawa 2001). This tension negatively impacts on the extent of RKT, because the coordination required for RKT is affected. Indeed, the more a subsidiary becomes embedded within its local environment, the more its relationships will be context-specific Andersson et al. (2002). The subsidiary would then allocate more resources to relation-specific activities than to the contribution of knowledge to its parent company. Secondly, the data was collected in early 2009 in the U.K. when economic prospects were extremely negative, influencing managers' perceptions of the external environment in which they were operating. It is likely that many business deals were strongly influenced by the crisis. The lack of a positive relationship between RKT and external embeddedness could, as a consequence, be related to the timing of the study. Finally, as suggested by Yamin (1999), the adoption of activities from the local environment might increase the perceived risk linked to knowledge development, since an innovation might cause "isomorphic misalignment". Therefore, instead of experimenting with new activities, subsidiaries might be more interested in adopting activities that have already been proved to be successful. In other words, the external embeddedness hinders subsidiary knowledge transfer by decreasing its ability to develop new knowledge.

Unexpected results were found when analyzing the relationship between external embeddedness and willingness. It has been shown that subsidiaries with a high level of external orientation have more bargaining power within their MNCs since they are more capable of providing valuable knowledge (Mudambi and Navarra 2004). Andersson et al. (2007) also find that external embeddedness increases a subsidiary's influence on the strategic decisions of its MNC. Therefore, while external embeddedness might create conflict, it might equally serve as a source of power. To attract parent companies' attention and attain a higher level of influence (Ambos et al. 2010), subsidiaries with strong external embeddedness may become more willing to transfer knowledge to parent company.

Specific Findings Associated with the KIBS Sector

Similar to the findings of prior studies investigating the manufacturing sector (Gupta and Govindarajan 2000; Noorderhaven and Harzing 2009), we find that the employment of socialization mechanisms considerably facilitates RKT within the context of the KIBS sector. The knowledge held by KIBS companies is highly tacit in nature because it resides in experiences and skills of employees (Buckley et al. 1992). The most efficient way of transferring such knowledge is through frequent and direct interactions between sender and receiver (Kogut and Zander 1993; Nonaka et al. 1996). We find that increasing interactions with the subsidiary-parent company through socialization mechanisms not only facilitates RKT, but it is also conducive to the creation of shared values and has a positive

effect on internal embeddedness. In line with Gupta and Govindarajan (2000), our results indicate that willingness is the strongest facilitator of RKT in the KIBS sector. The nature of knowledge in the KIBS sector means that the process of intra-firm knowledge transfer is difficult and time consuming. Thus, knowledge transfer is unlikely to be successful without sufficient willingness for transfer on the part of the subsidiary.

Our findings also point to significant differences between the manufacturing and the KIBS sector. Firstly, previous literature indicates that close relationships are a key determinant of intra-firm knowledge transfer in the manufacturing sector (Dhanaraj et al. 2004; Håkanson and Nobel 2001; Hansen 2002). In our results, however, internal embeddedness is not one of the main determinants of RKT. Secondly, studies on the manufacturing sector (Cho and Lee 2004; Dhanaraj et al. 2004) found shared values and similarities between sender and receiver to be key determinants; in contrast, we did find that shared values were important, but they impacted upon RKT by enhancing willingness to transfer knowledge. Finally, we find that within the KIBS sector external embeddedness impacts RKT in two different ways. Previous research conducted in the manufacturing sector suggests that a high degree of external embeddedness increases the subsidiary's knowledge stock and thus its ability to contribute to the knowledge base of its parent company (Andersson et al. 2001; Gupta and Govindarajan 2000; Cho and Lee 2004). In the KIBS sector, however, we find that the extent of external embeddedness significantly but negatively influences RKT. This could be because knowledge generated by KIBS subsidiaries is highly context specific, in which case, parent companies may have difficulties in understanding the value of this knowledge existing and question its applicability and use. Another explanation lies in the fact that a high degree of external embeddedness might create tensions by diverting a subsidiary away from the agenda set by the parent company (Asakawa 2001). In our results, instead of a negative relationship, we find that external embeddedness increases the willingness of the subsidiary to engage in the process of RKT. In sum, in the KIBS sector, the degree of external embeddedness positively influences the willingness of the subsidiary to transfer its knowledge. However, we find that high degree of external embeddedness hinders RKT through decreasing applicability of local knowledge to the rest of MNC.

To conclude, in the KIBS sector, the main drivers of reverse knowledge transfer are willingness and socialization mechanisms. By deploying socialization mechanisms, MNCs can create shared values and increase internal embeddedness; while external embeddedness has a positive effect on the willingness to transfer knowledge.

Limitations and Future Directions

Like every contribution, our study suffers from some limitations, some of which lead to suggestions for future research. Firstly, we would like to point to an important avenue for further research on RKT. Studies have shown that knowledge characteristics influence knowledge flow (Håkanson and Nobel 2000; Minbaeva 2007; Pak and Park 2004; Simonin 1999a), particularly when considering the tacitness and complexity of knowledge. These concepts have not, however, been integrated within the literature on RKT. Our results show that willingness and socialization mechanisms are the main explanatory

factors of RKT. One can question whether these two factors offset the negative effects of knowledge characteristics on RKT.

Secondly, the extent of knowledge transfer depends on the characteristics of both the knowledge transferors and the knowledge seekers. Due to time and resource considerations, our research only focused on the sender's (subsidiary) characteristics. Further research considering the "dyadic" or "systemic" level would provide deeper insights into the effect of the parent companies on the extent of RKT.

Thirdly, in line with previous studies (Andersson and Forsgren 2000; Andersson et al. 2007; Gupta and Govindarajan 2000; Lane and Lubatkin 1998; Noorderhaven and Harzing 2009), we conceptualized socialization mechanisms, internal embeddedness, and external embeddedness as reflective constructs. This does constitute a limitation, since following the causality rational, measures employed in our research might form instead of reflecting the application of the aforementioned constructs. Consequently, these constructs could be considered to be reflective (see, for instance, the discussion differentiating formative and reflective constructs provided by Diamantopoulos (1999) and Jarvis et al. (2003). Future studies could challenge this view and provide new approaches to theoretical testing.

Moreover, the main aim of this research was to determine the key facilitators and impediments of RKT. Some of the determinants discussed in the paper are likely to be related to each other, and it would enhance further our understanding of knowledge transfer to extend the analysis to relationships amongst various constructs.

Finally, since we collected data from one actor's (the subsidiary) perspective only some of the measures included in our model (i.e. internal and external embeddedness) are perceptual measures. Despite careful screening, there are limitations inherent in the use of such measures, notably the risk that the managers' views could be influenced by other factors and may not be accurate. These measures do, however, provide the opportunity to introduce various aspects of the knowledge being transferred, as well as measures of subsidiaries' activities. As such, they provide depth.

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