Reverse Knowledge Transfer within MNCs: The Case of Knowledge-Intensive Services in the U.K.

Zhaleh Najafi Tavani [a]*, Axèle Giroud [a1], Rudolf Sinkovics [a2]

a Manchester Business School, Marketing, International Business and Strategy Division, Booth Street West, Manchester, UK

Abstract

The role of subsidiaries within MNCs has changed dramatically; acting as senders of knowledge and competencies to either headquarters or sister companies instead of being mere receivers of knowledge. Many subsidiaries have gained a creative role by generating new resources depending on the comparative advantage of the location in which they operate, and through the process of reverse knowledge transfer, they subsequently contribute to the competence upgrading of the multinational network. In reviewing the extant literature on MNC Knowledge Transfer (KT) and in particular Reverse Knowledge Transfer (RKT), this paper unleashes several gaps, notably in the understanding of how subsidiary (sender) characteristics and relationship characteristics relate to the process of RKT in the services sector. Borrowing concepts from the knowledge-based and network views, we test a series of hypotheses using the result of an online survey amongst subsidiaries operating in knowledge-intensive services based in United Kingdom. Results show that subsidiary willingness and transmission channels are the most important factors explaining RKT in the service industry.

Keywords: Multinational Corporations (MNCs), Knowledge, Reverse Knowledge Transfer (RKT), Internal Embeddedness, and External Embeddedness.

* Corresponding author. Tel: +44 (0) 161 275 6382
Email addresses: Zhaleh.NajafiTavani@postgrad.mbs.ac.uk (Z. Najafi Tavani), Axele.Giroud@manchester.ac.uk (A. Giroud), Rudolf.Sinkovics@manchester.ac.uk (R. Sinkovics)
[1] Tell: +44 (0) 161 275 6492
[2] Tell: +44 (0) 161 306 8980

INTRODUCTION

In recent studies of multinational corporations the role of knowledge as one of the most, if not the most, vital resources of the firm; is well recognized (2006, Kogut and Zander, 1993, Grant, 1996, March, 1991, Szulanski, 1996). MNCs sustain and improve their competitive advantages by integrating and combining diverse sources of knowledge, some being generated internally within the multinational network, others originating from the external environment (Buckley and Casson, 1976, Grant, 1996, Teece, 2000, Kostova, 1999, Lane et al., 2001). Increasingly, new knowledge creation occurs at the level of individual subsidiaries, particularly when those exhibit responsibility for certain product or lines of business within the corporation as a whole (Cantwell and Mudambi, 2005, Forsgren et al., 2006) . Over time, subsidiaries become less dependent on headquarters for competence development and the local business environment becomes increasingly important for the subsidiary's development of competences (Fratochi and Holm, 1998). As a result, intra-firm Knowledge Transfer, and notably Reverse Knowledge Transfer (the transfer of knowledge from subsidiary to parent company), is expected to play a pivotal role in the survival of MNCs (Gupta and Govindarajan, 2000, Ambos et al., 2006, Håkanson and Nobel, 2000, Håkanson and Nobel, 2001).In the context of international business, there is an extensive body of literature on the relevance and importance of knowledge transfer from parent company to subsidiaries (Simonin, 2004, Kogut and Zander, 1993, Szulanski, 1996, e.g. Gupta and Govindarajan, 2000). Many of these studies provide useful insights into the factors that facilitate or hinder the process of knowledge transfer. Some contributions focus on the characteristics of knowledge as a hindrance for such transfer (Reed and DeFillippi, 1990, Simonin, 1999b, Simonin, 1999a); others emphasize the characteristics of the sender, the receiver and those of the relationship between both as influential factors on this phenomenon (Foss and Pedersen, 2002, Minbaeva, 2007, Szulanski, 1996, Zahra and George, 2002, Pak and Park, 2004).

Despite the increasing role of subsidiaries as resource providers to the multinational, few contributions investigate the process of RKT and as a result, there remains uncertainty as to factors facilitating or impeding this process (e.g. Håkanson and Nobel, 2000, Håkanson and Nobel, 2001,

Gupta and Govindarajan, 2000, Ambos et al., 2006, Kogut and Zander, 1993, Frost and Zhou, 2005, Yang et al., 2008). Such a gap in the literature is partly explained by the assumption that the competitive advantage of MNCs lies only in accessing host country local resources and markets. Yet, according to Doz and Santos (1997:4), "leveraging internationally the know-how advantages derived from a home country competence cluster is no longer sufficient to underpin competitive advantage unless the home base remains the only crucible of new technologies, competencies and leading customers". Acknowledgement of the importance of reverse knowledge transfer for a multinational corporation has resulted in some valuable contributions trying to understand reverse knowledge transfer. Among them, Gupta and Govindarajan (2000) contribution is one of the most comprehensive studies. In their research, Gupta and Govindarajan(2000) simultaneously focus on hieratical and vertical knowledge transfer from a subsidiary to other parts of multinational corporation, and they found a positive relationship between subsidiary knowledge outflow and the value of the subsidiary's knowledge stock, motivational disposition of the sender, and the richness of transmission channels. Moreover, while Noorderhaven and Harzing (2009) demonstrated that there is a positive relationship between MNC's knowledge flow and social interactions, Schulz (2001) looked at the process of organizational learning and its implications on subsidiary knowledge outflow (horizontal and vertical). However what is missing in these researches, with few exceptions (i.e. Håkanson and Nobel (2001)), is the demonstration of the correlation amongst the antecedents of subsidiary knowledge transfer. Therefore the first contribution of this study is to addresses this gap in the literature by focusing on subsidiaries as the unit of analysis to better understand reverse knowledge transfer, identifying factors influencing this phenomenon, and by investigating the possible correlation amongst the antecedences of this process.

The second key contribution of this paper lies in the lack of research on the services sector. FDI in the service sector has increased dramatically over the past decade; services are comprised a majority of economic activities in developed countries and half of GDP in many developing host countries (UNCTAD, 2008). However, since the nature of service industries is considerably complex and diverse (Clark and Rajaratnam, 1999), there are few researches tried to develop a valid theory, and

propose conceptualized framework that is generalizable across service industries(Knight, 1999). In the literature on international knowledge transfer there are few researches, with few exceptions (e.g. Grosse, 1996, Lindsay et al., 2003), that explicitly focused on the knowledge and knowledge transfer within multinational services. Most of these studies took the perceptive of forward knowledge transfer rather than reverse knowledge transfer. However, the role of subsidiaries within their multinational network has evolved, and one can assume that they have now developed sufficient competences to contribute resources back to their parent companies. To authors best knowledge reverse knowledge transfer has never been investigated directly within the context of international services until now. The prior researches on reverse knowledge transfer mostly focused on manufacturing sectors (e.g. Håkanson and Nobel, 2001), and only few of them (e.g. Gupta and Govindarajan, 2000) compared RKT across two sectors: manufacturing versus service sectors. However, the knowledge resulting in creation of competitive advantage in service industries is completely different compared to manufacturing sectors. While the competitive advantages of manufacturing sectors are often based on "proprietary products", the competitive advantage of service industries is based on "soft technology" (e.g. managerial know-how, market know-how, and etc) (Grosse, 1996). Therefore, as the nature of knowledge in services is completely different compared to other sectors, knowledge management and, specially knowledge transfer, is different (Grosse, 1996). For the aforementioned reasons, the focus in this paper is explicitly on the service sectors.

To fill the existing gaps in the literature on reverse knowledge transfer, particularly in the services sector, the paper presents the results of a large-scale survey conducted amongst foreign subsidiaries operating in knowledge-intensive services located in the United Kingdom. We aim to assess first the extent of RKT from subsidiaries to parent companies, variation in RKT depending on subsidiary entry mode and age and finally, to identify other key factors facilitating this transfer. We begin with the theoretical justification behind this research, focusing on the knowledge-based view and the network theory. Existing literature is subsequently presented to develop a series of hypotheses to better understand and explain the factors influencing RKT by foreign subsidiaries to their parent companies.

Section 3 presents the methodology and models. Section 4 includes a discussion of the results and concludes the paper.

REVIEW OF THE LITERATURE

Theoretical Consideration of Knowledge Flows within MNCs

One of the main theoretical orientations having made a valuable contribution on explaining the existence of MNCs is the Knowledge-Based view of the firm. According to this view, knowledge is by far the most important resource of the firm and it exists amongst firm members (Grant, 1996, Kogut and Zander, 1993). Grant (1996) argues that the main advantage of firm over market is the provision of a condition under which the integration of individuals' knowledge takes place with lower cost and risk. Align with this view, some scholars portrayed MNC as a social community which can create competitive advantages by utilizing its ability to integrate and combine knowledge embedded in different parts of organization (Hymer, 1976, Teece, 1979). Parallel to the knowledge based view of the firm; the multinational network theory highlights the importance of nodes and ties as instrumental to internal knowledge transfer amongst geographically dispersed units which operate with different languages, cultures, organizational routines and strategies (Tsai, 2001, Andersson et al., 2005, Andersson et al., 2001). In this study, MNCs are considered as a bundle of knowledge generated both at home and abroad, where knowledge can be transferred, integrated and combined depending on inter-units ties, providing the corporation with a sustainable competitive position.

Reverse Knowledge Transfer and its Determinants

The analysis of knowledge transfer within MNCs leads to consideration of hierarchical transfers, either considering the parent firm as the central pivotal point for knowledge exchange, or other units of the firms with strong network ties and key positions within the overall network of intra-firm relationships. This paper focuses on RKT from foreign subsidiaries and their parent companies, and as such does not address other types of intra-firm knowledge flows. The rationale for focusing on such RKT is that internationalization in the service sector is still a relatively new phenomenon. As such, before equal balance is achieved amongst various entities of the multinational service firm, the

relationship between the parent company and its foreign subsidiaries will be of prime importance, before further inter-units relationships are established.

While traditional knowledge transfer has its own implications, reverse knowledge transfer 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 firm and other units within the network, they contribute to the creation of competitive advantages for the MNC (Ambos et al., 2006, Ghoshal et al., 1994, Håkanson and Nobel, 2001).

In contrast to the extensive knowledge on traditional knowledge transfer, there are few contributions investigating the reverse knowledge transfer (particularly in the services sector) or identifying factors facilitating or impeding this process (Frost and Zhou, 2005, Gupta and Govindarajan, 2000, Håkanson and Nobel, 2000, Håkanson and Nobel, 2001, Ambos et al., 2006, Schulz, 2001, Yang et al., 2008, Foss and Pedersen, 2002). To explain reverse knowledge transfer, some studies tried to understand how the closeness of the relationship between a subsidiary and parent company could promote this phenomenon. Håkanson and Nobel(2001) used the term “integration” to show the strength of the relationship between subsidiary relationship, and they demonstrated that “integration” is one of the factors of RTK. Some contributions did not directly focus on internal embeddedness, instead they emphasized on the effects of transmission channels on RKT. Noorderhaven and Harzing (2009), for instance, asserted that “social interaction” is an inevitable part of knowledge transfer and it will moderate the effects of other factors on RKT. Similarly, in their empirical study, Gupta and Govindarajan (2000) demonstrated that the existence and richness of transmission channels would significantly affect subsidiary knowledge inflow and outflow. In addition to the characteristics of a relationship between sender and receiver, one of the other determinants which consistently proved to influence RKT is the characteristics of a subsidiary. In this regard, Håkanson and Nobel(2001)

illustrated that the external embeddedness significantly affects reverse technology transfer. Along with other factors, Schulz (2001) also looked at the impacts of accessing to external knowledge on subsidiary knowledge outflow. Motivation of knowledge holder to disperse its knowledge is proved to play a pivotal role in RKT. Foss and Pedersen (2002) argued that some factors such as owning "monopoly knowledge" could prevent a subsidiary to share its knowledge, thus subsidiary motivation to transfer its knowledge is one of the requirements of RKT.

Combining the key contributions, we focus on two core groups of factors explaining RKT from foreign subsidiaries to their parent company. The focus will be on characteristics of the subsidiary, and characteristics of the relationship with the parent firm

Characteristics of the Subsidiary (Sender)

Subsidiary's Willingness to Transfer Knowledge

The importance of the willingness of the knowledge holder on the process of knowledge transfer has been highlighted by many contributions (Gupta and Govindarajan, 2000, Simonin, 2004, Szulanski, 1996). For instance, in his contribution, Cyert (1995) argues that companies having unique know-how are less interested in sharing their knowledge, simply because they want to enjoy "information monopoly" within the corporation. Moreover, in some cases the consequences of transferring knowledge could be destructive (Gupta and Govindarajan, 2000). According to Szulanski (1996), fear of losing ownership, wish to remain superior, fear of not being sufficiently rewarded for sharing hard-won success, or unwillingness to allocate time and resources needed for transferring knowledge are amongst the main explanation behind the knowledge holder's protectiveness to share its knowledge with other units of the MNC. Without sufficient incentives, the knowledge holder will employ defensive actions to minimize knowledge transfer; especially when the knowledge is unique and only few companies possess it (Gupta and Govindarajan, 2000, Simonin, 2004). Willingness 0f the knowledge holder matters to the propensity to transfer knowledge. Therefore, we posit that the willingness of the subsidiary to transfer its knowledge positively influences the degree of RKT.

H1. The more the subsidiary is willing to transfer its knowledge, the more the subsidiary will engage in the process of Reverse Knowledge Transfer.

External Embeddedness:

One of the most crucial factors affecting the ability of a subsidiary to transfer knowledge is the degree of its external embeddedness (Andersson et al., 2005, Frost, 2001, Håkanson and Nobel, 2001). Anderson et al (2005, , 2002) defined external embeddedness as the strength or closeness of the relationship between a company and other business actors (i.e. relationship with local suppliers, customers, universities, research institutions and etc). According to Håkanson and Nobel (2001), the strongly embedded subsidiaries are those that have a regular and significant interactions with their local actors '(Håkanson and Nobel, 2001). These relationships are the main channels of attaining information for a company which sometime might results in the creation of new knowledge (Gulati, 1998) . Generally, MNCs are conceptualized as a network of different geographically dispersed units (Andersson et al., 2005, Gupta and Govindarajan, 1991) and therefore, each unit has access to different sources of knowledge. However, the ability of a subsidiary to access and gain local knowledge depends solely on its ability to build and maintain its external network (Andersson et al., 2005). According to Håkanson and Nobel (2001), the subsidiaries that are strongly embedded have greater opportunity to absorb and combine new knowledge as a result; they are more capable of contributing to existing products/services, or even to develop new services, technologies, or products. Hence,

H2. The more embedded the subsidiary is in the host economy; the more the subsidiary will engage in Reverse Knowledge Transfer.

Characteristics of the Relationship

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. In the same vein, Lane et al (2001) argue that the similarity between the two units is positively associated with the learning capacity of a receiver as it helps a receiver to understand a transferred knowledge correctly especially when it comes to transfer of new developed knowledge.. Reversely, a lack of similarities has a negative effect on the effectiveness and efficiency of inter-unit knowledge transfer (Ambos et al., 2006). Hence, we suggest that shared values between the subsidiary and its parent company positively influence the degree of RKT.

H3a. There is a positive association between shared values and Reverse Knowledge Transfer.

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

H3b. The more is the shared values between subsidiary and its headquarter, the more will be subsidiary willingness.

Transmission Channels

According Nahapiet and Ghoshal (1998) the relationship between two units has three dimensions, structural, relational, and cognitive. They argue that the characteristic of the relationship to some extent depends on the interaction ties between the sender and the receiver, and their ability to establish integration mechanisms. As transmission channels play a key role in the process of knowledge transfer, so it is assumed it will also be important for RKT. For instance, Szulanski (1996) demonstrates that knowledge transfer, especially transfer of tacit knowledge, requires 'numerous individual exchanges'. Gupta and Govindarajan (2000) divide transmission mechanisms into formal and informal integrative mechanisms and illustrate the effects of employing such mechanisms on the subsidiary knowledge outflow. Moreover, some authors (Noorderhaven and Harzing, 2009, Ghoshal and Bartlett, 1988) argue that social interactions are the vital factor of knowledge transfer which also

mediate the relationship between knowledge inflow/outflow and its antecedents. We expect that the more a subsidiary employs both formal and informal transmission channels, the more will be the interaction between two units and therefore the stronger will be the inter-unit ties. This integration has several implications: firstly, according to Håkanson & Nobel (2001), Reverse Knowledge Transfer only happens when the knowledge is available and parent company is aware of the potential benefits of applying that knowledge in a home country. Secondly, based on Capability-based theories and product innovation literature the higher the degree of integration, the more other units (in this paper, essentially parent companies) are aware of the value of knowledge (Subramaniam and Venkatraman, 2001) and therefore the more the subsidiary facilitates knowledge outflow (Gupta and Govindarajan, 2000). Finally, as a result of increased interaction between subsidiaries and their parent company, a common value and language emerges which promotes and eases knowledge transfer from subsidiary to parent company (Håkanson and Nobel, 2001), thus:

H4a.There is a positive relationship between employment of both formal and informal transmission channels and the embeddedness between a subsidiary and headquarter.

H4b.The more the formal and informal transmission channels are employed; the more the subsidiary will engage in Reverse Knowledge Transfer.

Internal Embeddedness

One of the most important drivers of knowledge transfer is the characteristics of the relationship between the sender and the receiver (e.g. Andersson et al., 2005, Mowery et al., 1996, Zahra et al., 2000). At individual level, a good relationship facilitates the process of knowledge transfer (Reagans and McEvily, 2003). According to the MNC network-based view, MNCs are created from a network of different geographically dispersed organizations which are related to each other through interpersonal ties. Therefore, the probability of transferring knowledge within MNCs is increased when there is a strong tie and trust between different units of the organization and there are common values and priorities amongst units (Andersson et al., 2005, Nahapiet and Ghoshal, 1998).

Scholars use various terms to describe the quality of the relationship between units, 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 quality of inter-unit relationships as *internal embeddedness (following Andersson et al., 2005, Forsgren et al., 2006)*. It is expected that the more the subsidiary develops profound and extensive relationships with the parent company, the more it will exchange knowledge with its headquarters (Andersson et al., 2001). Therefore,

H5a. The more the subsidiary is embedded in its internal environment, the more the subsidiary will engage in the process of Reverse Knowledge Transfer.

Successful Knowledge transfer especially when it comes to the transfer of tacit knowledge should encompass a commitment of both sender and receiver. Knowledge holder should allocate considerable amount of time and resources to transfer its knowledge to sender. The vital factor of this commitment is the motivation of knowledge holder, and according to incentive based perspective, the existence of a good relationship will increase a willingness of a knowledge holder to share its knowledge, thus:

H5b. There is a positive relationship between the extent of embeddedness and willingness of a subsidiary to transfer its knowledge.

Moderating effects: the role of entry mode and subsidiary age

The previous relationships are likely to be moderated by subsidiary entry mode and the age of a subsidiary. The effect of entry mode on subsidiary's knowledge outflow has been emphasized by many researchers (e.g. Bresman et al., 1999, Håkanson and Nobel, 2001). According to Belderbos (2003), accessing to new knowledge make acquired subsidiaries more desirable, particularly when an acquired subsidiary has a knowledge that is hard, time consuming or costly to achieve or duplicate. Compared to greenfield subsidiaries, acquired subsidiaries' stock of knowledge is more since they are based on previously existed organization and they have already established relationships with their local environment. Thus, as Gupta and Govindarajan (2000) argued, acquired subsidiaries can

contribute better to the knowledge base of MNC since their knowledge is less duplicative compared to greenfield subsidiaries.

On the other hand, the importance of a subsidiary age on RKT has been consistently highlighted by many contributions (Dhanaraj et al., 2004, van Wijk et al., 2008). According to Håkanson and Nobel (2001), as subsidiaries become older, the integration between subsidiary and parent company will become stronger which facilitates reverse knowledge transfer. Other scholars (i.e. Håkanson and Nobel, 2001) believe that by aging the level of subsidiary's local integration will be increased therefore it will have more stock of knowledge and as a result, older subsidiaries are more capable of transferring knowledge. Thus, for more comprehensive understanding of reverse knowledge transfer it is important to investigate the effects of these factors on the specified relationships.

In the next section, the methodology adopted to test the model and hypotheses is described in detail.

RESEARCH METHODOLOGY

The model is tested using data collected by means of a web based survey amongst the largest foreign subsidiaries in the knowledge-intensive services sector in the U.K. The survey method has been employed in other studies on knowledge transfer (for instance Ambos et al., 2006, Chini, 2004, Gupta and Govindarajan, 2000, Minbaeva, 2007, Simonin, 2004), enabling researchers to develop firm-level measures to assess reverse knowledge transfer and grasp the complexity of relationships between subsidiaries and their parent company.

Data, Method and Measures

Data

The study focused on the knowledge-intensive service industry. Firms in this industry produce "non-material", "intangible", and "highly customized services" (Koch and Strotmann, 2008). The survey was implemented amongst "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. Since the main focus of survey's questions were on cross organization activities such as reverse knowledge transfer, and also it contains organizational overall issues such as the strength of the relationship between a company and its internal and external environment, the questionnaire was addressed to managing directors, CEOs or general managers of subsidiaries.

The survey design and implementation were based on the tailored design method approach (Dillman, 2000), and it was administered online to increase the response rate (it is noted that to avoid unwanted responses, respondents could only access the survey through a given link). Researchers also emphasized personalization (see Dillman's *tailored design methodology*); each respondent was first contacted directly by phone, and a covering letter was emailed to those who agreed to collaborate in the research (Dillman, 2000). Out of 523 top managers who agreed to participate in the research, 209 (178 usable cases) responses were received, which results in a very high response rate of 39 percent. The response rate was even more satisfying considering the sensitive nature of some questions and the profile of respondents. Out 0f 178 usable cases, nearly half of the headquarters were located in Europe (44.9%), 43.2% were located in America, 10.8% were located in Asia, and only 1.1% of headquarters were located in Africa.

Measures

Dependent Variables

Reverse Knowledge Transfer: Our measures of reverse knowledge transfer were taken from Gupta and Govindarajan(2000) and Yang et al. (2008). However, due to the focus of our study we only distinguish four types of knowledge, namely Sale and Marketing Know-how, Strategy Know-how (knowledge about customers, suppliers and competitors), Distribution Know-how, and Management Systems and Practices Know-how. Reverse knowledge transfer was operationalized with a 7-item

scale ranging from "not at all" to "to a very great extent". Respondent were asked to address the following question “To what extent, during the last three years, did your company transfer … to its headquarters?”. Cronbach’s alpha for this scale was 0.89.

Internal Embeddedness: Embeddedness is usually measured as the extent of mutual adoption of practices/activities (Lane and Lubatkin, 1998, Andersson et al., 2005, Forsgren et al., 2006). On 7-point scale (ranging from "not at all" to "great extent" or “Never” to “very frequently”), respondents were asked to address the following question: “The extent to which the relationship between a subsidiary and a parent company has caused mutual adaptation concerning a-sale and marketing practices, b- distribution practices and c- management practices”. Alpha reliability of this scale was 0.86.

Willingness: In order to measure the subsidiary willingness, following questions were asked: “the extent to which subsidiary saw benefit 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 a subsidiary to transfer its knowledge”. The measurements were developed using Simonin (2004) contribution, and all of them were based on 7-point scale ranging from "not at all" to "to a very great extent". Alpha reliability of this scale was 0.85.

Independent Variables

Shared values: Building on previous contributions, a four-item construct was formulated to capture different aspects of shared vision. Based on 7-point scale ranging from “fully disagree” to “fully agree”, the respondents were asked to rate the similarities between a subsidiary and headquarter in terms of a- business practices, b- range of services, c- organisational culture, d- organizational goals. Håkanson (1995); Nahapiet & Ghoshal (1998); Tsai & Ghoshal (1998), Bolino et al. (2002); and Ambos et al. (2006) contributions were used to develop the aforementioned constructs. Cronbach’s alpha for this variable was 0.83.

Transmission channels: Transmission channels was operationalized with a 7-point scale (ranging from "not at all" to "great extent"), building on the contributions of Bresman et al. (1999), Bjo¨rkman (2004), Noorderhaven and Harzing (2009); Gupta and Govindarajan (2000), Inkpen (2008). The respondents were asked to indicate the prevalence of a- participation of employees/top managers in joint training programs, b- movement of employees/top managers between both firms (for at least one month), c-visits to your company by your headquarters' top managers. d- visits to parent company by your company's top managers, e- top managers/employees from both units participate in corporate inter-unit committees/ teams/ task forces. Cronbach's alpha for this scale was 0.84.

External embeddedness: To measure external embeddedness; the respondents were asked to indicate "the extent to which the subsidiary's most important external relationships has caused mutual adaptation concerning a-sales and marketing practices, b-distribution practices and management system and practices". The questions were developed using Andersson et al. (2005) study and were based on 7-point scale ranging from "not at all" to "to a very great extent". Alpha reliability of this scale was 0.76.

Empirical Analysis

Table1 illustrates the means, standard deviations, t-value, factor loadings, and fit indices of the sample.

The specified relationships were tested using LISREL8 program (Jo¨reskog and So¨rbom, 2001). Prior to the hypothesis testing measures were assessed using the convergent validity and discriminant validity. To assess convergent validity we examined construct loadings, average variance extracted and construct reliability. According to the results convergent validity was not a problem as all of the loadings are above .5 (with few exceptions most of them are above 0.7.), the average variance extracted (AVE) of all constructs were more than 0.5 (ranging from 0.51 to 0.68), and all CRs were above 0.7 (ranging from 0.72 to 0.89).We also tested the discriminant validity, all variance extracted

(AVE) were larger than the corresponding squared inter-construct correlation estimates (SIC); therefore, the six construct CFA model demonstrates discriminant validity.

Insert Table 1 about here

Results

Hypotheses were tested through structural equation modeling via the use of LISREL 8 (Jo¨reskog and So¨rbom, 2001). Figure 1 presents the resulting model. The fit statistics for the combined sample provided a good support for the proposed model (n=178, χ^2=370.90, df=178, CFI=0.94, NNFI= 0.93, GFI=0.85). First of all, there is a strong and highly significant relationship between the willingness of a subsidiary and the reverse knowledge transfer (t-value of 4.37). Hypothesis 1 is therefore supported, the higher the subsidiary's willingness to share its knowledge, the more will knowledge be transferred from a subsidiary to its headquarters.

Insert Fig 1 about here

Hypothesis 2 stated that the more is the external embeddedness of a subsidiary the more it would contribute to the knowledge of MNC. However, according to the results there is a negative relationship between the extent of external embeddedness and RKT.

As can be seen in Figure 1, there is a weak positive relationship between shared value and reverse knowledge transfer. Although this relationship is positive (t-value= 1.79), the result is not significant, therefore Hypothesis 3a is rejected. Hypothesis 3b is strongly supported (t-value=11.05), indicating a a positive link between similarities and the willingness to share knowledge. We find that "similarity" does not affect RKT but it has a indirect effect on subsidiary knowledge transfer (see Figure 1).

The results yield strong support for both H4a and H4b with t-value = 4.24 and 3.87 respectively. According to H4a and H4b the employment of transmission channels increases a- the ties between a subsidiary and headquarter and b- the extent of reverse knowledge transfer. Moreover, while the result illustrated a positive association between internal embeddedness and reverse knowledge transfer, it is not significant (t-value=0.40). Finally, with t-value equal to 2.87, we found a positive link between internal embeddedness and willingness of a subsidiary to share knowledge.

Moderating effects:

The results of group analysis shed some light on reverse knowledge transfer and its facilitators and hindrances. Group analysis was done based on age and mode of entry. Subsidiaries were divided in two groups old and young. Those companies which have been established for more than 15 years were categorize as old subsidiaries and the rest categorized as young subsidiaries. Table 2 shows that the previous results differ across groups categorised by age. For young subsidiaries willingness and transmission channels are the main factors of reverse knowledge transfer. According to the Table2 internal embeddedness and transmission channels (H4a) and shared value and willingness (H3b) are highly correlated in young subsidiaries. Moreover, the willingness of a young subsidiary is positively related to the extent of internal embeddedness (H5b). Similar to the young subsidiaries, willingness and transmission channels are the main antecedences of reverse knowledge transfer (H1 and H4b). The result shows that reverse knowledge transfer is considerably influenced by internal embeddedness in young subsidiaries. What further varies with the old subsidiaries is that there is no significant relationship between transmission channels and internal embeddedness (H4a).

Having looked at the second group, the mode of entry, we could spot some similarities as well as some differences. In both categories willingness is a vital aspect of reverse knowledge transfer, and shared value indirectly affects subsidiary knowledge transfer (H3b). The internal embeddedness of acquired and greenfield subsidiaries is significantly linked to the employment of transmission channels, therefore H3b is supported in both categories. External embeddedness negatively affecting reverse knowledge transfer in both types of subsidiary, however this relationship is not significant for

acquired subsidiaries. While in acquired subsidiaries transmission channels considerably increase subsidiary knowledge transfer, this relationship is not supported in case of greenfield subsidiaries (H4b).

Insert Table 2 about here

DISCUSSION AND CONCLUSIONS

Discussion

The key aim of this research is to further knowledge on RKT, by investigating the case of the knowledge-intensive sector in the United Kingdom. Using an extensive database, we demonstrate the influence of willingness, external embeddedness, and relationship (internal embeddedness, transmission channels and shared value) characteristics on RKT.

First subsidiary characteristics positively influence RKT. The importance role of willingness on knowledge transfer has been recognized by many contributions (i.e. Gupta and Govindarajan, 2000). Consistent with previous studies, we found a strong relationship between willingness of a subsidiary to share its knowledge and reverse knowledge transfer. We also found that the existence of strong ties and also similarities between sender and receiver does not necessarily result in high degree of reverse knowledge transfer. A subsidiary and parent company might have very close relationships but at the same time a subsidiary might lack enough motivation to allocate time and resources to transfer its knowledge to parent company. These results have implications for headquarters, given the importance role that the willingness plays in reverse knowledge transfer. Due to the nature of service industries, most of knowledge exist in a subsidiary has a tacit nature, and thus it may be costly and time consuming to transfer such a knowledge. Therefore, without enough willingness, the transfer of such knowledge will be very hard if not impossible.

The importance of shared values on knowledge flows amongst various units of the firm is well documented in knowledge management studies (i.e. Bhagat et al., 2002, Tenkasi, 2000), yet such values were not shown significant in the case of services firm. Looking at RKT, other recent contributions (Ambos et al., 2006, Zhou and Frost, 2003) also found no influence of shared values on RKT. The lack of no direct influence may however hide other routes through which shared values are important. Therefore we checked whether shared value could influence reverse knowledge transfer indirectly via willingness. We found a positive association between shared value and willingness. One of the rationales behind this finding is that the existence of shared values enhances communications and trust between the headquarters and foreign subsidiaries, which in turn would positively influence the willingness of the subsidiary to engage in RKT.

With regards to the importance of transmission channels on RKT, we found a very strong support for H4a. Previous studies on RKT did emphasize the strong positive influence of transmission channels; and clearly these processes remain significant in the case of service sector firms (e.g. Noorderhaven and Harzing, 2009). We were also interested to check whether there is any interaction between employment of transmission channels and internal embeddedness. The results showed a highly significant relationship between these two factors. Thus we could conclude that the employment of transmission channels could result in more RKT and at the same time it could increase the strength of the relationship between sender and receiver.

According to Nahapiet and Ghoshal (1998); social capital plays a pivotal role in knowledge transfer. Transfer of knowledge especially tacit knowledge is easier through embedded relationships as close social relationships ease the hindrance of knowledge transfer. Those subsidiaries that maintain frequent and significant interactions with their parent company (Håkanson and Nobel, 2001) exhibit high degree of knowledge exchange and therefore contribute more to the knowledge base of parent company. However, surprisingly the results were not in line with this view. As mentioned earlier two units might have a very close relationship, yet knowledge holder might not be willing to share its knowledge with other units. Thus we checked whether willingness is mediating the relationship

between internal embeddedness and reverse knowledge transfer. The results demonstrated that there is a positive significant relationship between these two variables, and internal embeddedness indirectly affects RKT through willingness.

While Prior studies (Andersson et al., 2005) found a positive link between subsidiary knowledge creation and the extent of its external embeddedness; unexpectedly, we found no support for the influence of external embeddedness on RKT. Among others, four potential explanations can be given to this result. Firstly, it can be assumed that the external environment is less crucial for the service sector because subsidiaries would need to adapt their services to better suit the local market and there would be less need to transfer this locally-embedded knowledge back to the parent company. Secondly, the use of perceptual measures to assess the level of external embeddedness has weaknesses as senior managers might underestimate the influence of external partners in their firms' ability to generate new knowledge in the first place. Another explanation lies in the timing of the study. Data was collected in early 2009 in the U.K. when economic prospects were extremely negative, influencing the perception of managers of the external environment in which they were operating. It is likely that many business deals have been strongly influenced by the crisis. Thus, the lack of a possitive relationship between RKT and external embeddedness could be related to the timing of the study. Finally, another possible explanation is that the more a subsidiary embeds in its local environment, the higher would be the context specificity of the relationships and therefore it will allocate more resources in relation-specific activities which might stop a subsidiary to allocate enough resources to contribute to the knowledge of a headquarter (Andersson et al., 2002).

Conclusions

Reverse knowledge transfer plays a pivotal role in improving and sustaining the competitive advantage of MNCS. The main aim of this research was to shed light on factors impacting the process of Reverse Knowledge Transfer within the context of service sectors. Our results therefore contribute to the body of knowledge on RKT by demonstrating that willingness, and transmission channels are one of the main indicators of reverse knowledge transfer within the context of knowledge intensive

services. We understood that willingness is a fundamental factor of subsidiary knowledge transfer, and it mediates the effect of other factors on RKT. One could suggest that because data was collected during the economic crisis which has hit the British services sector very strongly explains why we did not find a positive relationship between RKT and external embeddedness.

Our research adds to literature by investigating the process of Reverse Knowledge Transfer within the context of knowledge intensive service industries. Most previous studies focus on the manufacturing sector. One of the key contributions of this study, therefore, is to shed light on factors explaining RKT in the case of knowledge-intensive services. The nature and activities of service industries differ from those of the manufacturing sector, and in the discussion we did provide some explanation as to how and why some of the factors influence RKT differently in services. Our results therefore contribute to the body of knowledge on RKT and will be useful for managers in the service sector. In particular, managers will be keen to further comprehend what influencing RKT and how they can further influence the position of the subsidiary within the multinational network. In reverse, managers within headquarters will better understand the potential benefits to be gained from subsidiaries located overseas.

Like every contributions, our study suffers from some limitations. Firstly, the effectiveness and efficiency of Knowledge Transfer depends on the characteristics of both knowledge transferor and knowledge seeker. Due to time and resource considerations, our research only focused on the impacts of knowledge sender (subsidiary) characteristics on the Reverse Knowledge Transfer. Further research considering the "dyadic" or "systemic" level would provide deeper insight into the role of the headquarters in the process of RKT. Secondly, some of the measures included in our model are perceptual measures. Despite careful screening, there are limitations inherent to the use of such measures, notably the risk that the managers' view could be influence 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. Finally, it is possible that the lack of positive influence of external embeddedness is related to

such perceptual measures, and also to the current crisis experienced in the UK and the negative perception of managers as to the economic environment in which they operate. Timing of surveys can, indeed, influence some of the results. It would therefore be useful to repeat the survey in the future, when the global and English economic prospects are more positive.

To end this paper, we would like to point to an important avenue for further research on RKT. Research has shown that knowledge characteristics influences knowledge flows (Håkanson and Nobel, 2000, Minbaeva, 2007, Pak and Park, 2004, Simonin, 1999b, Simonin, 2004), particularly when considering knowledge tacitness, ambiguity, desirability or specificity. These concepts have not, however, been integrated within the literature on Reverse Knowledge Transfer. Including such concepts and features of knowledge within future studies would therefore contribute significantly to the existing body of knowledge.

References

AMBOS, T. C., AMBOS, B. R. & SCHLEGELMILCH, B. B. (2006) Learning from foreign subsidiaries: An empirical investigation of headquarters' benefits from reverse knowledge transfers. *International Business Review,* 15, 294-312.

ANDERSSON, U., BJORKMAN, I. & FORSGREN, M. (2005) Managing subsidiary knowledge creation: The effect of control mechanisms on subsidiary local embeddedness. *International Business Review,* 14, 521-538.

ANDERSSON, U., FORSGREN, M. & HOLM, U. (2001) Subsidiary Embeddedness and Competence Development in MNCs: a multi-level analysis. *Organization Studies,* 22, 1013-1034.

ANDERSSON, U., FORSGREN, M. & HOLM, U. (2002) THE STRATEGIC IMPACT OF EXTERNAL NETWORKS: SUBSIDIARY PERFORMANCE AND COMPETENCE DEVELOPMENT IN THE MULTINATIONAL CORPORATION. *Strategic Management Journal,* 23, 979.

BELDERBOS, R. (2003) Entry Mode, Organizational Learning, and R&D in Foreign Affiliates: Evidence from Japanese Firms *Strategic Management Journal,* 24, 235-259.

BHAGAT, R. S., KEDIA, B. L., HARVESTON, P. D. & TRIANDIS, H. C. (2002) Cultural variation in the cross-border transfer of organizational knowledge: an interative framework. *Academy of Management Review,* 27, 204-221.

BJO¨RKMAN, I., BARNER-RASMUSSEN, W. & LI, L. (2004) Managing knowledge transfer in MNCs: the impact of headquarters control mechanisms. *Journal of International Business Studies,* 35, 443-455.

BOLINO, M. C., TURNLEY, W. H. & BLOODGOOD, J. M. (2002) Citizenship behaviour and the creation of social capital in organizations. *Academy of Management Review,* 27, 505-522.

BRESMAN, H., BIRKINSHAW, J. & NOBEL, R. (1999) Knowledge Transfer In International Acquisitions. *Journal of International Business Studies,* 30, 439-462.

BUCKLEY, P. J. & CASSON, M. C. (1976) The future of the multinational enterprise. *London: Macmillan*.

CANTWELL, J. & MUDAMBI, R. (2005) MNE competence-creating subsidiary mandates. *Strategic Management Journal,* 26, 1109-1128.

CHINI, T. C. (2004) Effective Knowledge Transfer in Multinational Corporations. *New York: Palgrave Macmillan*.

CLARK, T. & RAJARATNAM, D. (1999) International services: perspectives at century's end. *Journal of Services Marketing,* 13, 298.

CYERT, R. M. (1995) Management of knowledge. *Keynote address at the Carnegie Bosch Institute's 1995 International Conference on High Performance Global Corporations. Excerpted in Global View, Newsletter of the Carnegie Bosch Institute for Applied Studies in Management, The Carnegie-Mellon University*.

DHANARAJ, C., LYLES, M. A., STEENSMA, H. K. & TIHANYI, L. (2004) Managing tacit and explicit knowledge transfer in lJVs: the role of relational embeddedness and the impact on performance. *Journal of International Business Studies,* 35, 428-442.

DILLMAN, D. A. (2000) Mail and Internet surveys: The tailored design method (2nd edition) *New York: John Wiley & Sons, Inc*.

DOZ, Y. & SANTOS, J. F. P. (1997) On the management of knowledge: From the transparency of collocation and co-setting to the quandary of dispersion and differentiation. *INSEAD working paper series,* Fontainbleau.

DYER, J. H. & NOBEOKA, K. (2000) Creating and managing a high-performance knowledge-sharing network: the TOYOTA case. *Strategic Management Journal,* 21, 345.

FORSGREN, M., HOLM, U. & JOHANSON, J. (2006) *Managing the embedded multinational: a business network view,* Cheltenham, Edward Elgar Publishing.

FOSS, N. J. & PEDERSEN, T. (2002) Transferring knowledge in MNCs: The role of sources of subsidiary knowledge and organizational context. *Journal of International Management,* 8, 49.

FRATOCHI, L. & HOLM, U. (1998) Centres of excellence in the international firm. In J. Birkinshaw, & N. Hood (Eds.), Multinational corporate evolution and subsidiary development. *London: McMillan Press*.

FROST, T. S. (2001) The Geographic sources of foreign subsidiaries' innovation. *Strategic Management Journal,* 22, 101.

FROST, T. S. & ZHOU, C. (2005) R&D co-practice and 'reverse' knowledge integration in multinational firms. *Journal of International Business Studies,* 36, 676-687.

GHOSHAL, S. & BARTLETT, C. A. (1988) Creation, adoption, and diffusion of innovation by subsidiaries of multinational corporations. *Journal of Internationul Business Studies,* 19, 365-388.

GHOSHAL, S., KORINE, H. & SZULANSKI, G. (1994) Interunit communication in multinational corporations. . *Management Science* 40, 96-110

GRANT, R. M. (1996) Toward the knowledge-based theory of the firm. *Strategic Management Journal,* 17, 109-122.

GROSSE, R. (1996) International technology transfer in services. *Journal of International Business Studies,* 27, 781-800.

GULATI, R. (1998) Alliances and networks. *Strategic Management Journal,* 19, 293.

GUPTA, A. K. & GOVINDARAJAN, V. (1991) Knowledge flows and the structure of control within multinational corporations. *Academy of Management Review,* 16, 768-792.

GUPTA, A. K. & GOVINDARAJAN, V. (2000) Knowledge flows within Multinational Corporations. *Strategic Management Journal,* 21, 473.

HA°KANSON, L. (1995) Learning Through acquisitions. *International Studies of Management & Organization,* 25, 121-158.

HÅKANSON, L. & NOBEL, R. (2000) Technology characteristics and reverse technology transfer. *Management International Review*, 29-48.

HÅKANSON, L. & NOBEL, R. (2001) Organizational Characteristics and Reverse Technology Transfer. *Management International Review (MIR),* 41, 395-420.

HYMER, S. H. (1976) The international operations of national firms: A study of direct foreign investment. . *Cambridge,* MA: MIT Press.

INKPEN, A. C. (2008) Managing knowledge transfer in international alliances. *Thunderbird International Business Review,* 50, 77-90.

JO¨RESKOG, K. G. & SO¨RBOM, D. (2001) *LISREL8:User's Reference Guide*, Scientific Software International, Inc.

KNIGHT, G. (1999) International services marketing: review of research, 1980-1998. *Journal of Services Marketing,* 13, 347.

KOCH, A. & STROTMANN, H. (2008) Absorptive capacity and innovation in the Knowledge Intensive Business Service Sectors. *Economics of Innovation & New Technology,* 17, 511-531.

KOGUT, B. & ZANDER, U. (1993) Knowledge of the firm and the evolutionary theory of the multinational. *Journal of International Business Studies* 24, 625-645.

KOSTOVA, T. (1999) Transnational transfer of strategic organizational practices: a contextual perspective. *Academy of Management Review,* 24, 308-324.

LANE, P. J. & LUBATKIN, M. A. (1998) Relative absorptive capacity and interorganizational learning. *Strategic Management Journal,* 19, 461-477.

LANE, P. J., SALK, J. E. & LYLES, M. A. (2001) Absorptive capacity, learning, and performance in International Joint Ventures. *Strategic Management Journal,* 22, 1139-1161.

LEE, R. P., CHEN, Q., KIM, D. & JOHNSON, J. L. (2008) Knowledge Transfer Between Multinational Corporations' Headquarters and Their Subsidiaries: Influences on and Implications for New Product Outcomes. *Journal of International Marketing,* 16, 1-31.

LINDSAY, V., CHADEE, D., MATTSSON, J., JOHNSTON, R. & MILLETT, B. (2003) Relationships, the role of individuals and knowledge flows in the internationalisation of service firms. *International Journal of Service Industry Management,* 14, 7.

MARCH, J. (1991) Exploration and exploitation in organizational learning. *Organization Science,* 2, 71-87.

MINBAEVA, D. B. (2007) Knowledge Transfer in Multinational Corporations. *Management International Review (MIR),* 47, 567-593.
MOWERY, D. C., OXLEY, J. E. & SILVERMAN, B. S. (1996) Strategic alliances and interfirm knowledge transfer. *Strategic management journal,* 17, 77-91.
NAHAPIET, J. & GHOSHAL, S. (1998) Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review,* 23, 242-266.
NOORDERHAVEN, N. & HARZING, A.-W. (2009) Knowledge-sharing and social interaction within MNEs. *Journal of International Business Studies,* 40, 719-741.
PAK, Y. S. & PARK, Y.-R. (2004) A framework of knowledge transfer in cross-border joint ventures: an empirical test of the Korean context *Management International Review,* 44 417-434.
REAGANS, R. & MCEVILY, B. (2003) Network Structure and Knowledge Transfer: The Effects of Cohesion and Range. *Administrative Science Quarterly,* 48, 240-267.
REED, R. & DEFILLIPPI, R. J. (1990) Causal Ambiguity, Barriers to Imitation, and Sustainable Competitive Advantage. *Academy of Management Review,* 15, 88-102.
SCHULZ, M. (2001) The uncertain relevance of newness: organizational learning and knowledge flows. *Academy of Management Journal,* 44, 661-681.
SIMMIE, J. & STRAMBACH, S. (2006) The contribution of Knowledge-Intensive Business Services (KIBS) to innovation in cities: an evolutionary and institutional perspective. *Journal of Knowledge Management,* 10, 26–40.
SIMONIN, B. L. (1999a) Ambiguity and the transfer of knowledge in strategic alliances. *Strategic Management Journal* 20, 595-623.
SIMONIN, B. L. (1999b) Transfer of marketing know-how in international strategic alliances. *Strategic Management Journal* 20, 595- 623.
SIMONIN, B. L. (2004) An empirical investigation of the process of knowledge transfer in international strategic alliances. *Journal of International Business Studies,* 35, 407-427.
SUBRAMANIAM, M. & VENKATRAMAN, N. (2001) Determinants of transnational new product development capability: testing the influence of transferring and deploying tacit overseas knowledge. *Strategic Management Journal,* 22, 359-378.
SZULANSKI, G. (1996) Exploring internal stickiness: impediments to the transfer of best practice within the firm. *Strategic Management Journal,* 17, 27-43.
TEECE, D. J. (1979) The Multinational Corporation and the resource cost of technology transfer. *Cambridge,* MA:Ballinger.
TEECE, D. J. (2000) Strategies for Managing Knowledge Assets: the Role of Firm Structure and Industrial Context. *Long Range Planning,* 33, 35-54.
TENKASI, R. V. (2000) The dynamics of cultural knowledge and learning in creating viable theories of global change and action. *Organization Development Journal,* 18, 74-90.
TSAI, W. (2001) Knowledge transfer in intraorganizational networks: effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal,* 44, 996-1004.
TSAI, W. P. & GHOSHAL, S. (1998) Social capital and value creation: the role of intra-firm networks. *Academy of Management Journal,* 41, 464–476.
VAN WIJK, R., JANSEN, J. J. P. & LYLES, M. A. (2008) Inter- and Intra-Organizational Knowledge Transfer: A Meta-Analytic Review and Assessment of its Antecedents and Consequences. *Journal of Management Studies,* 45, 830-853.
YANG, Q., MUDAMBI, R. & MEYER, K. E. (2008) Conventional and Reverse Knowledge Flows in Multinational Corporations. *Journal of Management,* 34, 882-902.
ZAHRA, S. A. & GEORGE, G. (2002) Absorptive capacity: a review, reconceptualization, and extension. *Academy of Management Review,* 27, 185-203.
ZAHRA, S. A., IRELAND, R. D. & HITT, M. A. (2000) International expansion by new venture firms: international diversity, mode of market entry, technological learning, and performance. *Academy of Management Journal,* 43, 925-950.
ZHOU, C. & FROST, T. (2003) Centrifugal forces, R&D co-practice, and 'reverse knowledge flows' in multinational firms. *Paper presented at AIB annual meeting*.

Appendixes:

Table1: The constructs and their indicators

Indicators	Mean	SD	Factor loading	t-value	R^2-value
Reverse knowledge transfer (Yang et al., 2008, Gupta and Govindarajan, 2000)					
➢ Transfer of Sale and Marketing Know-how	4.08	1.77	0.78	11.89	0.61
➢ Transfer of Strategy Know-how	3.71	1.92	0.86	13.90	0.75
➢ Transfer of Distribution Know-how	4.57	1.69	0.82	12.83	0.67
➢ Transfer of Management Systems and Practices Know-how	3.73	1.83	0.80	12.46	0.65
Willingness (Simonin, 2004)					
➢ Feeling benefit in sharing knowledge with HQ	5.44	1.67	0.72	11.05	0.52
➢ Allocating resources to transfer knowledge to HQ	5.65	1.27	0.97	16.28	0.95
➢ HQ motivating a subsidiary to transfer knowledge	4.89	1.6	0.74	11.14	0.55
Internal Embeddedness (Lane and Lubatkin, 1998, Andersson et al., 2005, Forsgren et al., 2006)					
➢ Adaptation in sale and marketing practices	4.53	1.6	0.83	12.56	0.68
➢ Adaptation in distribution practices	4.32	1.85	0.87	13.37	0.75
➢ Adaptation in management practices	4.71	1.53	0.77	11.50	0.60
Transmission channels (Bresman et al., 1999, Bjo¨rkman et al., 2004, Noorderhaven and Harzing, 2009, Gupta and Govindarajan, 2000, Inkpen, 2008)					
➢ Joint training programs	3.88	1.87	0.78	11.61	0.61
➢ Rotation of employees	3.31	1.79	0.75	11.05	0.57
➢ Visits from HQ	2.82	1.82	0.65	9.17	0.43
➢ Visits to HQ	4.13	1.79	0.68	9.06	0.46
➢ Participate in corporate inter-unit committees/ teams/ task forces	3.98	1.83	0.81	12.24	0.65
Shared values (Ha°kanson, 1995, Nahapiet and Ghoshal, 1998, Tsai and Ghoshal, 1998, Bolino et al., 2002, Ambos et al., 2006)					
➢ Similarity in business practices	4.91	1.78	0.69	9.91	0.48
➢ Providing the same range of services	4.72	1.81	0.78	11.67	0.61
➢ Similarities in organizational culture	5.79	1.27	0.71	10.18	0.50
➢ Sharing the same goals with parent company	5.59	1.41	0.84	12.81	0.70
External Embeddedness (Andersson et al., 2005, Lane and Lubatkin, 1998)					
➢ Adaptation in sales and marketing practices	4.73	1.555	0.69	8.76	0.48
➢ Adaptation in distribution practices	4.53	1.57	0.67	8.71	0.45
➢ Adaptation in management system and practices	4.29	1.63	0.80	10.50	0.64

Fit Statistics: χ^2= 304.96, SRMR: 0.052, df=174, CFI=.95, NNFI=.94, GFI=.86

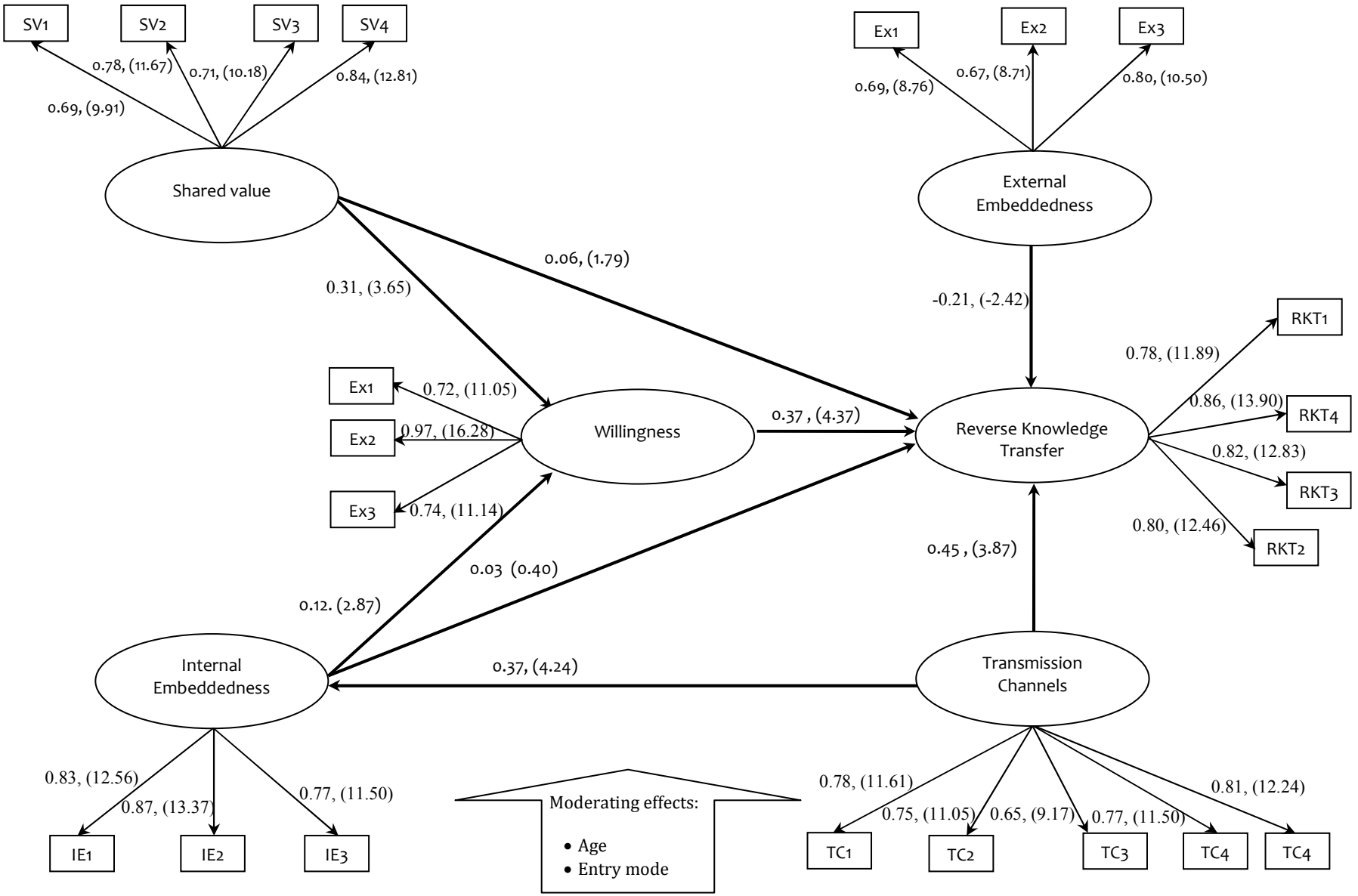

Fig 1: Results of hypothesis testing

Table2: 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	0.34**	0.59**	.39**	0.48**
External embeddedness => RKT	H2	-0.16	-0.25	-0.19	-0.23*
Shared value => RKT	H3a	0.40	0.18	-0.12	-0.20
Shared value => Willingness	H3b	0.23**	0.23**	0.34**	0.31**
Transmission channels => Internal Embeddedness	H4a	0.47**	0.16	0.48**	0.24*
Transmission channels => RKT	H4b	0.24*	0.36*	0.33**	0.28
Internal Embeddedness=>RKT	H5a	0.11	-0.29**	0.16	-0.01
Internal Embeddedness => Willingness	H5b	0.2*	0.18	0.09	0.17
Note: ** $p < 0.05$; * $p < 0.10$		CFI:0.836 χ^2=696(df:396)		CFI:0.879 χ^2=621 (df:396)	