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## Organizational structure and knowledge-practice diffusion in the MNC

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## **Organizational Structure and Knowledge-Practice Diffusion in the MNC**

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**Structured Abstract:**

**Purpose** – This study examines the interaction of formal and informal cross-border knowledge sharing practices of four large multinational corporations (MNCs) in aerospace, software, IT services, and telecommunications industries. The goal was to determine the manner in which coordination and control mechanisms facilitated knowledge transfer.

**Design/methodology/approach** – Case studies comprised of secondary data and semi-structured interviews with corporate headquarters and subsidiary managers in large multinational companies conducted in the United States, Canada, Mexico, China, India and Eastern Europe.

**Findings** – The primary finding of this study is that knowledge transfer mechanisms arise as a result of both formal and informal structure of the MNC. Formal structures which create either mutual dependencies or occasions for knowledge exchange facilitate transfer. Formal structure which inhibits knowledge transfer can be overcome by knowledge brokers and evaluation metrics.

**Research limitations/implications** – These findings suggest that knowledge transfer is more informal than formal, but that MNC headquarters does play a role, intended or not, through shaping the interdependencies amongst geographically distributed units. Managers should be mindful of both the manner in which tasks and the organization are structured as these have an indirect impact on the development of knowledge channels.

**Originality/value** – This paper investigates the role of organizational structure and its effect, both intended and unintended, on the transfer of knowledge-based practices. While knowledge transfer has been heavily researched, this study examines the phenomenon at a finer-grained level of analysis.

**Keywords:** Knowledge- practices, knowledge transfer, integration, coordination, mutual interdependency, organizational structure, multinational corporations.

**Article Classification:** Research paper

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# **Organizational Structure and Knowledge-Practice Diffusion in the MNC**

## **1. Introduction**

Knowledge management is a cornerstone of competitive advantage in international business, as multinational corporations (MNCs) strive to internationally leverage location-bound knowledge and competencies (Mudambi and Swift, 2011; de Pablos, 2002). Subsidiaries therefore assume active, contributory roles in MNC innovation and strategic rejuvenation through new technology development, including products, production and administrative practices (Birkinshaw, Hamel and Mol, 2008; Cantwell, 1995; Dunning, 1994). As MNCs deploy their knowledge intensive functions abroad, they gradually shift the motive for geographic expansion from economies of scale to leveraging local knowledge and opportunities. As a result, managers must deal with increasingly complex processes of integration and coordination amongst geographic locations (Cantwell and Janne, 1999; Papanastassiou and Pearce, 1997; Pearce, 1999; Zander 1999). Contemporary knowledge management research can also benefit from a shift in focus towards challenges inherent in diffusing knowledge in the context of global networks.

Within MNCs, there are many idiosyncratic, institutionalized, knowledge practices guiding value creation. While globally leveraging 'best practices' is appealing, what is best in practice is seldom clear and may reflect regional differences (Kostova and Roth, 2002).

Knowledge based theory (KBT) suggests that organizations are more efficient than market mechanisms for knowledge transfer (Fransson, Håkanson and Liesch, 2011; Grant, 1996; Kogut and Zander, 1992), a claim which has been supported in prior research (e.g. Almeida, Song and Grant, 2002). Yet numerous studies have also highlighted that knowledge practices do not transfer seamlessly; they are 'sticky' (Jensen and Szulanski, 2004; Szulanski, 1996),

particularly in the case of cross-border transfer (Riege, 2007). This study builds theory on the transfer of knowledge practices which allow geographically dispersed subsidiaries to contribute to MNC strategy.

This study was guided by the question: how do knowledge-based practices diffuse within the MNC? The authors found that a consistent theme amongst MNCs and their subsidiaries is that HQ plays a more or less direct role, depending in part on organizational structure, and substantial diffusion occurs without direct HQ intervention. Based on these observations, a set of insights as to how different types of formal structure indirectly influence knowledge practice diffusion within the MNC are provided. Three modes of diffusion were found, which are referred to here as *central administration*, *brokering* and *organic diffusion*. These modes and the prevalence of their occurrence are influenced by organizational structure, which in turn increases or reduces barriers to communication between subsidiaries.

The approach used in this study, grounded in case studies of four MNCs, contributes to international knowledge management by finding associations between knowledge transfer mechanisms and formal structure. Managers should be mindful of these mechanisms, the authors argue, as they influence the ease with which knowledge transfers. This mindfulness, in turn, underpins an understanding of how to manipulate these mechanisms for transferring knowledge based practices if so desired.

## **2. Literature review**

It is generally accepted that knowledge is one of the key competitive resources of contemporary organizations (Argote & Ingram, 2000; Grant, 1996). One of the MNC's purported advantages over purely domestic firms is the ability to draw upon geographically

dispersed knowledge resources and leverage them globally (Bartlett and Ghoshal, 1998; Hedlund 1986, 1994; Hedlund and Rolander, 1990; Kogut and Zander, 1992). Hence, subsidiaries can and often do contribute meaningfully to MNC new value creation and strategic rejuvenation (Cantwell and Mudambi, 2005). Although knowledge has traditionally flowed from HQ, subsidiaries are sometimes viewed as the new, or emerging ‘center’ of the MNC as economic growth in developing countries outstrips that of larger markets. In light of this phenomenon, scholars are presently reinterpreting the role of the modern MNC headquarters (Ambos and Mahnke, 2010).

Building from the personal (Polanyi, 1975) and the collective characterization (Wittgenstein, 1958), Tsoukas and Vladimirou (2001, p. 983) define knowledge as “the individual capability to draw distinctions, within a domain of action, based on an appreciation of context or theory, or both”, and organizational knowledge as “the capability members of an organization have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting a set of generalizations...whose application depends on historically evolved collective understanding and experiences.” Scholars have identified knowledge characteristics (e.g. subjectivity, values and assumptions: Nonaka and Takeuchi, 1995; codifiability and complexity: Rogers 1983), and developed taxonomies (e.g. tacit vs. explicit: Polanyi, 1975; know-what vs. know-how: Kogut and Zander, 1992). Knowledge differs from data and information in that it incorporates the role of values and beliefs, and directs action (Davenport and Prusak, 1998; Nonaka and Takeuchi, 1995). Hence, organizational knowledge shapes the interaction amongst organizational members. These characteristics and implications of organizational knowledge render it strategically valuable to the modern MNC.

This study is specifically concerned with knowledge-based practices rather than knowledge in general. Following institutional theorists (e.g. Meyer & Rowan, 1977; Zucker, 1991), Kostova and Roth (2002, p.216) define these practices as: “an organization’s routine use of knowledge for conducting a particular function that has evolved over time under the influence of the organization’s history, people, interests, and actions” (see also Kogut and Zander, 1992; Kostova, 1999; Szulanski, 1996). Practices are institutionalized and thus relatively homogenous within a particular grouping (e.g. an organizational subunit). There is always the possibility that practices will be adapted during transfer, intentionally or otherwise, but they are nonetheless relatively discrete as compared to general knowledge, and thus transfer is easier to observe and evaluate. The institutional aspect of knowledge practices suggests some semi-permanent change in procedures, normally with a view to increasing organizational efficiency and/or effectiveness. The goal of this research was to elucidate organizational mechanisms which facilitate cross-border knowledge transfer.

Studies of international knowledge transfer and organizational context have that found expatriate staffing can enhance transfer effectiveness (Fang, Jiang, Makino and Beamish, 2010; Hébert, Very and Beamish, 2005). Another factor that facilitates transfer is level of integration, which refers to the frequency and depth of interaction between a subsidiary and other units of the MNC. Transfers between horizontally integrated subsidiaries or vertically integrated subsidiaries and headquarters tend to be more fluid (Foss and Pedersen, 2002; Gupta & Govindarajan, 2000; Kurokawa, Iwata and Roberts, 2007). Being integrated within the overall MNC innovation network enables adaptations of practices to more readily diffuse as subsidiaries have greater influence (Mudambi and Navarra, 2004), and greater requirements for coordination (Garcia-Pont, Canales and Naboia, 2009).

Diffusion of practices to more established subsidiaries, however, often occurs in the presence of established practices which may impede transfer. The sources of these impediments range from the necessity of the subsidiary to ‘unlearn’ old practices (Bettis and Prahalad, 1995), the political power afforded it by its strategic importance to the MNC (Andersson, Forsgren and Pedersen, 2001), the legitimacy afforded it by its integration within the local environment (Chan and Makino, 2007), or because the practice to be transferred is incongruent with existing practices. While subsidiaries are generally expected to take on larger mandates over time, the reverse is also possible as a result of failure to develop required capabilities (Birkinshaw and Hood, 1998), strategic initiatives of the headquarters, or through acquisition, which may reduce the subsidiary’s strategic importance to the MNC (Delany, 2000). It is furthermore important to appreciate that the types of practices transferred to and from a subsidiary are, in part, a function of headquarters’ intentions for the subsidiary, as well as the motivation and ability of the subsidiary to draw resources from the MNC network and from external sources (Andersson, Björkman and Forsgren, 2005; Kurokawa et al 2007; Phene and Almeida, 2008).

Taken together, there is a fair amount of evidence that context matters when it comes to transferring knowledge. The authors therefore respond to a recent call (George, 2014) for bringing context back into focus in order to explore and perhaps expand the boundary conditions applicable to knowledge transfer research. As a result, this research found that knowledge practices tend to transfer within the MNC via a variety of modes - *central administration, brokering* and *organic diffusion* - and that the types of channels that exist are often not formally prescribed. Hence, this research reports on an observed interplay between organizational structure and knowledge dissemination mechanisms which have not been extensively documented in prior literature.

### **3. Methodology**

The case study approach chosen for this research enabled better discernment between the phenomenon of knowledge and transfer and the context in which it occurs (Yin, 2009).

Knowledge management is a particularly context-bound phenomenon as its outcomes are not easily isolated from the historical and social processes which produce them. By examining multiple instances of knowledge transfer within multiple firms, the authors were able to make use of ‘replication logic’ (Yin, 2009) in which insights emerging from one case are tested against observations from another in order to confirm or disconfirm prior inferences (e.g. Brown and Eisenhardt, 1997). Furthermore, case study research is especially suited for studies which investigate processes (such as knowledge practice transfer) (Corbin and Strauss, 2008; Eisenhardt, 1989). Examples of related process research using case study methodology include studies of organizational routines (e.g. Costello, 1996; Feldman, 2000; 2003; Feldman and Pentland, 2003) and the emergence of knowledge based practices (Anand et al, 2007).

#### *3.1 Research design*

The research was conducted using a semi-structured, phased approach (Parkhe, 1993). Data collection and analysis were guided primarily by the principles of inductive research, within the boundaries of the objective to study knowledge transfer in MNCs. In total, 40 interviews ranging from 30 to 70 minutes each were conducted with managers at both indigenous and multinational companies based in Canada, China, India, UK and USA from a variety of industries including consulting, telecommunications, consumer goods, software development and services, automobile design and manufacturing, energy, pharmaceuticals, and semiconductors. Table 1 describes these interviews.

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Insert Table 1 about here  
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During many of the initial interviews, several examples of knowledge practices were discussed. Some of these were in use across the entire MNC, and likely originated elsewhere in the network, others seemed to be common within industries, diffused by consultants or certification institutes, and still others appeared idiosyncratic to the organization itself. A multiple, nested case study approach was used in the next phase to collect and analyze data from the latter four cases (Telecom, Aero, Software and IT Services) in Table 1, which form the basis of the findings reported here. Semi-structured interviews were conducted with headquarter and subsidiary managers at these four MNCs. Each MNC represented a single case, and within each, general and specific instances of knowledge transfer were examined. To the extent possible, managers in multiple business units were interviewed in order to compare perspectives and triangulate inferences. Questions were posed regarding the influence of national institutional factors, organizational factors, interaction with other subsidiaries within the MNC innovation network, as well as descriptions of knowledge transfer instances. In addition, questions were posed regarding the outcomes of knowledge transfer within the MNC network, and capability development of organizational subunits. The goal of this stage was to build theory and make refinements according to the evidence gathered. To achieve this, data were analyzed as they were collected.

Each of the four MNCs reported in this research were chosen for their theoretical relevance, as they are all in what would be considered ‘knowledge-intensive’ industries (Mudambi, 2008), namely aerospace, information technology, software, and consulting. By choosing firms according to this criterion, the interviewers were able to discuss knowledge based practice transfer with respondents in greater depth, as it occurred more frequently than it

would in less knowledge-intensive industries. Each of the four MNCs was quite large, with the number of employees ranging from 40,000 to 160,000, and had presence in at least ten other countries. Hence, there was ample opportunity for knowledge exchange and cross-border interaction. Table 2 lists data pertaining to practices transferred in the four MNCs discussed in the results. Pseudonyms for each MNC are used to maintain confidentiality.

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Insert Table 2 about here  
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### *3.2 Data collection and analysis*

According to the replication logic involved in multiple case study methodology, data collection and analysis occurred in tandem (Yin, 2009). Initial descriptive frameworks were used to guide the data collection during the execution of the case studies, and interview questions were adapted based on the findings in each subsequent round of data collection. This enabled the researchers to adapt and refine the interview protocol as the research progressed. The primary data source consisted of semi-structured interviews conducted with middle and upper level managers, department and/or department heads at each MNC or its subunits. These were supplemented with company documents and news releases to better understand the context and terminology discussed in the interviews.

A discussion guide containing high level questions concerning knowledge practice transfer modes, challenges, and outcomes was used to steer interviewees towards the phenomenon of interest. This guide helped to keep the discussion focused on knowledge practice transfer, while allowing ample room for adaptation to the specific details respondents were most familiar with. Using descriptions of different modes of transfer was found to be helpful in getting a general sense of how information flowed within each MNC, from the perspective of the respondent. The first of these modes was ‘hub and spoke’, meaning that information

flowed uni-directionally from headquarters to all organizational subunits. Other modes were hub and spoke with substantial adaptation of knowledge practices at the subunit level, multi-directional knowledge transfer between subunits within the organization, and limited ad-hoc transfer, resulting in little commonality between knowledge practices used in different units within the MNC. Following this, respondents were asked to identify the units with which they interact, and for what purposes, the modes of knowledge transfer that were common, challenges faced and how/whether they were overcome, how roles for different subunits are established, and so forth. During each interview, the participant was asked to explain their initial expectations when participating or observing knowledge practice transfer, and what outcomes were actually obtained. The interviewee was also asked about the various challenges that were faced in transferring practices, in terms of resistance from subunit employees if any, learning challenges, difficulties in obtaining shared understanding of the purpose of the practice, and so forth. This stage of the interviewing was semi-structured and many probing questions were used to uncover the linkages between challenges, benefits and the national and organizational institutional elements which may influence these processes. While most interviews exceeded the scope of questioning described here, at a minimum all interviews covered these topics in ample depth. Interviewees were able to speak from personal experience in each case, citing specific examples of typical knowledge practice transfer events.

The interview approach used was partially based on ethnographic interview techniques (Spradley, 1979) to allow interviewees to explain knowledge transfer in their own words. This approach enhances the credibility of the results by not providing definitions to the informant, allowing them to instead describe phenomenon in their own words, based on their own understanding (Guba and Lincoln, 1989). Hence, each interview began with questions

related to the experience of managers in transferring knowledge within the MNE network, asking the interviewee for specific examples of the type of activities they themselves mention in the interview. The questions were then adapted using language consistent with that of the interviewee. This also allowed for the identification of other informants who were personally involved in the transfer process and management of other subsidiaries.

Table 2 provides a summary of knowledge practice transfers discussed during the interviews from the perspective of the unit which provided the process, the recipient, and a basic characterization of the practice. Many of the practices discussed are not designated by general label as they are idiosyncratic to the MNC in question. Furthermore, in some subsidiaries, groups of practices are often transferred together, instead of individually. Additional data pertaining to the industry and firm in question were gathered from secondary sources such as annual reports and company websites, as required, to enhance identification and understanding of contextual factors.

During this final phase of the study, data were analyzed as it they were collected, with the emerging insights helping to shape subsequent rounds of data collection. All interview transcripts were analyzed with the assistance of nVivo© version 9 software.

A semi-structured approach, guided by the research objectives, was used in analyzing the data as the phenomenon was deemed too complex to be addressed efficiently through a purely inductive approach (Miles and Huberman, 1994). Analysis of the data began with open coding of each transcript, keeping in mind both the research questions and constructs pertaining to practice transfer. Codes were thus partially emergent, but also consistent with area of inquiry and using language consistent with existing knowledge transfer and other organizational and managerial literature. A few examples of the many codes (and sub-codes)

developed to designate sections of the text include: conflict (process, relationship or task), interaction, governance (control, formality, hierarchy), organizational culture, strategy (priorities, internationalization, market access), and many others. As the coding scheme for the data became increasingly complex and saturated, comparisons were made across cases on different themes. Through this process, structure was allowed to emerge from the interview data, in order to derive theory (Richards, 2005). In the following section, these emergent themes and how they relate to the inferences drawn are discussed.

#### **4. Findings**

Much of the prior research on practice transfer has been conducted in the context of formal initiatives from headquarters (e.g. Jensen and Szulanski, 2004; Kostova and Roth, 2002). However, the data analyzed in this research revealed processes other than this *central administration* through which knowledge practices diffuse amongst subsidiaries without HQ involvement, and often on an ad hoc or opportunistic basis. The themes that emerged from the interview data, in which these different forms of diffusion were observed, are a) the state of the observed practice(s) prior to the transfer event, which in general either indicates the absence of an institutionalized practice or the presence of many different practices used for accomplishing largely the same tasks b) the nature of communication between organizational subunits which could range between completely absent, intermittent, or frequent, and c) the manner through which the practice tended to transfer from one subunit to the next. Instances were also noted in which there seemed to be little to no transfer of knowledge practices, even when doing so may have been beneficial. This allowed us to compare cases of non-transfer to those where similar structural barriers did not fully inhibit transfer.

Table 3 summarizes some of the observations and inferences on the relationship between practice transfer modes, the nature of the observed practices before transfer (i.e. the

precondition), the nature of communication between geographically separated organizational subunits, and some illustrative examples and explanations of the observed phenomenon. Some of the instances of practice transfer described in Table 2 are not discussed in great depth due to space constraints, and of course not all instances of practice transfer within these organizations, given the sheer size and longevity of the MNCs involved, were observed. The overall observation is that there seems to be a strong link between different modes of diffusion, the level of heterogeneity of practices prior to the transfer, and the structural barriers within which transfer occurred, or in some cases did not. There may be some relationship between discussion of central administration and the hierarchical level of the interviewee, but in most instances managers at varying levels tended to converge on their characterizations of the transfer processes. Furthermore, both central administration and other forms of diffusion were discussed by interviewees within the same MNC, suggesting that practice transfer processes are not an organizational trait. Instead, it may be concluded that all types of transfer processes can exist within the same organization, but that different forms seem to be related to specific enablers and impediments to communication between different organizational subunits. Hence, while organizational structure does appear to play a role in the type of knowledge practice transfer that occurs within the MNC, a monolithic characterization of MNC structure is not an adequate predictor of diffusion mode.

The observed modes of knowledge transfer that differed from central administration from HQ are termed here *brokering*, and *organic diffusion*. Brokering occurs when a third party acts as a knowledge transfer agent, transferring practices instituted in one organizational subunit to others. When innovation practices diffused through brokering, present in all instances in the case data, there was no formal requirement that subsidiaries adopt the practice. As stated by a VP at Software: “[subsidiaries] may, at their discretion, choose to adopt those best practices

and then that knowledge transfers over to them.” Organic diffusion of knowledge practices also occurred between organizational subunits, but without the aid of a third party as in brokering. This form of diffusion was observed to occur sporadically as different subsidiaries communicated, identified the existence of unique practices, and considered adopting them. Again there was no observed requirement that each subsidiary actually adopt the practices. They will do so only if recipients predict valuable outcomes. In the remaining portion of this section, these observations related to these different diffusion modes and processes are discussed, along with the structural conditions that appear to promote the frequency of occurrence and effectiveness of the different modes.

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Insert Table 3 about here  
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#### *4.1 Central administration of knowledge-based processes*

The case of Aero Co. most clearly illustrates the use of central administration of practices. Central administration of innovation practices involves the corporate or regional HQ as the initiator of the transfer process. This mode of diffusion entails the transfer of what would likely be considered ‘best’ practices, throughout the MNC network. Of all the cases, the knowledge practices at Aero are the most established and rigorously defined, owing in part to the high level of industry regulation mandated by the Federal Aviation Administration (FAA), and also the lengthy period of time over which these had been institutionalized. However, IT Services also used central administration of practices even though the attempt to formalize them was in an early stage of development:

*It's a new thing for us because software development is something we have been doing for forty years, research we've been doing for 25, 30 years, but we only started trying to formalize [research and development] in the past couple of years.*

(Lab Head, IT Services, India)

Hence, while central administration may be more likely when practices have evolved and become highly institutionalized in one area of the firm, it is also more likely that this mode of transfer is used when there is a desire to formalize functions through common processes, metrics, and reporting structure. As R&D in particular is a highly uncertain and risky endeavour, especially in the context of leveraging local knowledge resources for global markets, HQ can use these common metrics and reporting to compare amongst subsidiaries. In the case of IT Services, these comparisons could be made between newly established labs in the UK and USA, and longer tenured labs in India. Without this level of formalization, HQ would have less insight into the development of the foreign subsidiaries, and be provided with fewer opportunities to leverage local knowledge through combination with its established capabilities. By transferring these reporting practices HQ had better access to information from the subsidiaries with which to guide and direct strategy. This control may be desirable in both the Aero and IT Services cases as integration is more important than local responsiveness when serving more homogenous, global markets. Central administration of practices tends to be used in instances where HQ wants to be able to make direct comparisons between organizational subunits, and/or monitor performance over time. This is the type of transfer most commonly studied by researchers, but other types of transfer occurring alongside central administration were observed in other MNCs. Modes of practice transfer are therefore more complicated and multidimensional processes than might be concluded from some dominant streams of research.

The primacy of central administration of practices at Aero was driven more by external regulatory requirements, while at IT Services this regulation was internally driven. Unlike at Aero, inter-subsidiary communication at IT Services was first structured through the formation of a board comprised of lab heads and upper managers, in order to establish and

diffuse a common set of practices amongst dispersed subsidiaries. The common structural element of the subsidiary networks of both Aero and IT Services is that they were intentionally set up to leverage local knowledge globally. This was achieved by dividing tasks amongst the many subsidiaries while maintaining a high degree of control enabled by strong commonality in governance practices which enabled evaluation of the subunits' work. The key difference between IT Services and Software, with respect to central administration of practices, is the relative tenures of subsidiaries within the innovation network, and consequently the extent of their capability development. Practices therefore tended to be more heterogeneous at Software as they had developed with little or no communication between subunits.

**Proposition 1.**        *Knowledge practices diffuse through central administration as a result of HQ initiative and a highly coordinated assessment structure.*

#### *4.2 Brokering of knowledge-based processes*

The second mode of diffusion identified was brokering, and is most strongly evident in the case of Software Services Co. Brokering here specifically refers to the transfer of knowledge practices through an intermediary, from one subsidiary to another. However, the underlying concept is similar to that of boundary spanning in which influential individuals transfer knowledge within and between organizations (Kostova and Roth, 2002; Mudambi and Swift, 2009; Schotter and Beamish, 2011; Tushman, 1977). While Software used central administration to diffuse major changes in the way coordination was achieved, there was also evidence of brokering which entails diffusion of practices from one location to others through a common intermediary, which in this case would be an individual who works with several subsidiaries:

*I have an operations person who works in Japan. He works virtually, actually, lives here in [the US]. He talks daily to multiple people, multiple centers and multiple disciplines. He'll find different things out from somebody in Shanghai and say, "Hey, listen, have you spoken to Kim over in Korea about this because they're doing something similar".*  
(VP, Software Co., US)

The creation of mutual interdependencies amongst MNC subsidiaries and business units enhances knowledge flow (Foss and Pedersen, 2002), and ultimately capability development in a focal subsidiary. However, in the absence of these mutual interdependencies, brokering provides an alternative coordinated means for practices to diffuse throughout the MNC.

*The challenge of our company is to get that knowledge shared with their colleagues in other regions and other market units. For example you might have somebody from India who comes up with a great idea and they don't regularly speak to someone in Brazil, so what we try to do is broker the information so that it could be syndicated and, of course, made more valuable to the corporation.*  
(VP, Software Co., US)

Brokering occurs in most organizations to some extent, but the marketing function at Software is organized as a decentralized federation of subsidiaries and there is less interaction between units than would be the case in Aero. So while major new initiatives would occasionally be centrally administered, other potentially valuable practices would remain unknown to headquarters. Likewise, individual units within the federated structure are not necessarily aware that practices they are using are unique and potentially valuable to other subsidiaries. Brokering therefore allows units to overcome the structural barriers to knowledge practice transfer.

**Proposition 2.** *Knowledge practices diffuse through brokering when structural barriers to communication inhibit either central administration or organic diffusion.*

### 4.3 Organic diffusion of knowledge-based practices

Finally, within any organization, there will be heterogeneity amongst practices used by different subsidiaries and business units separated by function, business line, geography and so forth. Telecom, partially as a result of its many acquisitions, possesses a high degree of heterogeneity of knowledge based practices. It has developed the *boards and councils* structure to address this heterogeneity and hasten the rate of innovation in and between its subunits. It also uses communication technology in order to source and rate ideas and practices from throughout the organization. The top management has also attempted to create a competitive atmosphere in which different ideas compete.

*There's a general willingness to share, and the interesting thing there is [the CEO] has made it very clear that he wants people at [Telecom] who are willing to do that, who are willing to compete but to share at the same time and be a family, first and foremost. And made it very clear that folks who are not interested in doing that, albeit they may be extremely talented, in order for [Telecom] to move forward, we need them to be here. And then created that environment to the point where folks that are not as interested in that have started to leave.*

(Engineer, Software, USA)

Organic diffusion also occurs in Software, enabled by periodic meetings between different lab heads. In these meetings, managers have an opportunity to share practices implemented at their own labs. If a lab manager feels that they might be valuable in their own organization, they will actively seek advice on establishing it in their own.

*When [managers meet], for example, let's say somebody came up with a dashboard. We basically say, "This is what we're doing in my location." And if we feel that it's good for our location we work with whoever created it and say, "How did you do it?" And we roll it out in our location. So those are the types of best practices that we share.*

(Lab Head, Software Co., Canada)

It would appear from the cases that organic diffusion is more related to structural configuration than strategic initiative per se. However, adoption of knowledge practices requires both that potential recipients are made aware of the existence of the practice, and that they deem it to be valuable, which in turn is a function of how performance is assessed within

that subsidiary. In other words, organic diffusion occurs on an ad hoc, opportunistic basis while central administration is a more objectives-driven process. If subsidiaries are assessed according to common metrics and meet at regular intervals, then practice sharing will likely occur more frequently. Hence, it is possible for HQ to indirectly promote sharing of practices within the MNC innovation network.

**Proposition 3.**        *Organic diffusion of innovation practices occurs when managers and employees communicate regularly such that potential recipients are made aware and recognize the value of practices implemented in other subsidiaries.*

## **5. Discussion**

Figure 1 graphically depicts a general model of the processes of central administration, brokering and organic diffusion of knowledge practices. As presented in the preceding propositions, these processes are related to elements of organizational structure, which in turn influences inter-subsidary communication. The necessary precondition for any transfer is either corporate or regional HQ initiative or, in both brokering and organic diffusion, the existence of heterogeneous innovation practices within the MNC innovation network.

Central administration of practices bypasses inter-subsidary communication by centralizing communication and incentives for adoption. This mode of diffusion represents the majority of innovation practice transfer at Aero where HQ mandated engineers in the US to share with subsidiaries in order to enable diffusion of a common set of compliant practices and capabilities. This does not imply that inter-subsidary communication didn't exist, but that it was not a precondition for diffusion. Instead, inter-subsidary communication was enabled subsequent to innovation practice sharing.

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Insert Figure 1 about here  
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The loosely federated structure of the marketing function of Software creates structural barriers to communication amongst subsidiaries. However, intermediaries can act as knowledge practice brokers by identifying valuable practices in one subsidiary, and attempting to initiate transfer to another. A VP at Software referred to these brokers as the “give a damn people”. Also at Software, meetings of lab heads created intermittent opportunities to share practices, without the involvement of an intermediary, creating organic diffusion where potential adopters saw fit.

Finally, at Telecom, frequent acquisitions made in order to gain access to new technologies, and the capabilities which had developed them, created forces acting against coordination and integration amongst dispersed subsidiaries within the innovation network. The resulting structure created a context in which managers of a focal subsidiary were often unable to detect patterns of practice diffusion. As stated by one manager in the US: “there really isn't a concept anymore of coming from one place and going to another. It's a cross platform sharing of ideas and best practices”. While various measures had been introduced to increase integration, such as the boards and councils and idea sharing supported by information technology, the most salient mode of innovation practice diffusion remained organic.

The perceived value of knowledge practices, their fit to subsidiary business requirements, path dependencies and availability of resources were all important prerequisites for practice adoption. Centrally administered practices were accompanied by heightened pressures to adopt, so HQ was more likely to provide additional resources as needed to overcome issues of organizational fit and perceived usefulness. As HQ was only indirectly involved in

brokering practices, and not at all in organic diffusion, subsidiaries would often simply choose not to adopt innovation practices, where there was little or no perceived value, or to adapt them in the presence of subsidiary-specific factors which limited their fit. In the latter case, the innovation practices may be ceremonially adopted, and eventually even discarded.

The various modes of practice diffusion have implications for coordination and integration within MNC networks. While all of these MNCs have potential to realize the value of the transnational perspective on MNC strategy and structure, their evolutionary paths can create forces against the formation of a tightly integrated network. At Aero, the network remains tightly coordinated, although there is evidence that micro-political dynamics amongst subsidiaries will become more difficult to manage in the future. In more loosely federated structures, such as Telecom and Software, HQ has a role to play in practice transfer, even when it is occurring between subsidiaries. Brokers diffuse knowledge practices, but if their attempts are not accompanied by an expectation that the subsidiary will adopt, then some efforts will not produce the desired change. It is therefore important that brokers adequately understand the subsidiary specific factors which lead to the creation of practices in one subsidiary, and the factors which create barriers to adoption in potential recipient subsidiaries. In addition, in order for adoption to occur, subsidiary managers need to perceive the value of the practices. Therefore, the extent to which these practices help to improve performance, according to the metrics against which the subsidiary is evaluated, must be made clear. In some cases, this may involve creating new metrics, in others it means adapting the practices so that they address existing metrics. For Aero this is easier, as failure to achieve compliance results in negative value creation by a focal subsidiary. For Software this is more difficult because the federated structure is a result of a perceived need for subsidiary autonomy to address local market needs.

Finally, organic diffusion is an efficient mode of practice sharing, but there is always the risk that what gets shared is not consistent with the MNC's overall strategy. Common metrics can play an important coordinating role. If subsidiaries are evaluated according to similar metrics, then innovation practices are more likely to fit a focal subsidiary's needs and resources. More importantly, subsidiaries will be better able to recognize the potential value of practices developed elsewhere in the MNC network when assessment metrics are common across units. Where corporate or regional headquarters endorses and monitors common sets of metrics for each subsidiary within the innovation network, practices thus more readily flow to those subsidiaries that can extract value from them.

## **6. Conclusion**

### *6.1 Summary of findings*

Effective knowledge management is one of the most critical elements affecting the performance of the modern MNC as it aids in promoting strategic coherence while leveraging local knowledge globally. Yet given the sheer size of the modern MNC, in terms of the number of employees and its geographic reach, it is difficult to conceive that HQ managers could maintain persistent, rigorous control over knowledge flow. This research found that knowledge based practices diffused through various modes, from one organizational subunit to another, despite structural barriers inhibiting direct HQ involvement. This study revealed three processes which lead to the diffusion of knowledge practices within the geographically dispersed network of the MNC: central administration, which refers to direct HQ involvement in practice transfer amongst all relevant subsidiaries and business units, brokering, and organic diffusion, which involve limited and/or indirect HQ involvement. In all cases, practices were adopted based on their perceived benefit to the recipient. By being

aware of the role of structural conditions that tend to promote or inhibit practice diffusion, HQ managers can thus indirectly promote practice diffusion and associated outcomes by promoting interaction through joint responsibilities, performance metrics, and the creation of organizational roles that encourage knowledge brokering.

This research contributes to knowledge management literature by examining the role of formal structure on the diffusion of knowledge practices throughout the MNC network. While prior research has shown that hierarchical involvement tends to inhibit knowledge transfer (e.g. Ciabuschi, Forsgren and Martín, 2012), the propositions developed here suggest that HQ can play both direct and indirect roles in creating necessary preconditions for integration and coordination which in turn enhance knowledge flow. An awareness of these processes, and the conditions under which they occur, provides managers with an opportunity to guide and direct the flow of innovation practices. For example, it was suggested that metrics used to evaluate subsidiaries provide signals used to evaluate the potential value of the practice. Practices that contribute to enhancing performance based on these metrics are more likely to be adopted, but there often remains the challenge of fitting them to subsidiary-specific resources and local business requirements. These considerations must be made by HQ and innovation practice brokers if the practice is to be fully adopted and internalized by a recipient subsidiary.

## *6.2 Limitations*

Case study methodology was useful in undertaking this study as it enabled more clear delineation between causes and effects. Much of the prior research on the topic of knowledge transfer focuses on uni-directional transfer of knowledge from HQ to organizational subunits. By taking a broader inductive approach, different mechanisms of diffusion and how they interact with structural enablers and constraints within the MNC were observed. Yet case

study methodology also has its limitations. Cases produce over-specified models of the phenomenon of interest, enhancing their explanatory potential but limiting their generalizability. It could not therefore be concluded that different modes of structuring an organization, or the different types of workflow characteristic of the industries in which a MNC competes prohibited some modes of diffusion while promoting others. Furthermore, MNCs in knowledge-intensive industries were chosen based on preconceptions concerning their theoretical relevance. It therefore cannot be concluded that differences between what was observed in this context and a less knowledge-intensive context actually exist. Future research is needed to both extend and generalize these findings.

### *6.3 Implications for practitioners and researchers*

This research addresses an increasingly important area of decision making for MNC managers. The globalization of knowledge creation has been spurred on by the increasing internationalization of technologically advanced industries. Industries such as telecommunications, aerospace, pharmaceuticals, healthcare equipment, electronics, and software, among many others, are growing quickly in developing economies. Likewise, the talent to staff these industries is also dispersed, compelling substantial investment in globally dispersed research and development centers. Hence, managers are now faced with increasingly complex coordination of functions across multiple borders. The ability to orchestrate knowledge flow within different MNC structures is thus an important skill for MNC HQ and subsidiary managers.

This research also suggests some new directions for of knowledge management research in the context of the MNC and other large organizations. The findings suggest that several types of diffusion can and do exist within MNCs at various points in time. The authors suspect that

early stages of internationalization are associated with higher levels of HQ control over practice establishment and diffusion, while longer-tenured MNCs evolve more organic systems. But more generalizable studies based on survey research are needed to confirm these observations. This study will hopefully promote the undertaking of related research with the potential to greatly enhance understanding of how knowledge practices are created, diffuse and are replaced in the MNC.

#### *6.4 Future research directions*

This research can be used as a starting point for a variety of knowledge management studies. Studies on knowledge transfer should consider more explicitly the type of structure that characterizes the MNC. Typologies already exist that can be used to operationalize MNC structure (e.g. Bartlett and Ghoshal, 1989; Zander 1999). Taking into account a broad range of organizational structures will allow researchers to create more generalizable theory concerning knowledge flows, beyond HQ-led endeavors. This theory could tackle performance issues regarding transfer such as efficiency and effectiveness, what types of knowledge flow most readily through which channels and so forth. Likewise, researchers can examine modes of knowledge transfer that can potentially have undesirable effects from the perspective of overall MNC strategy. These and numerous other studies can build off the propositions presented in this study.

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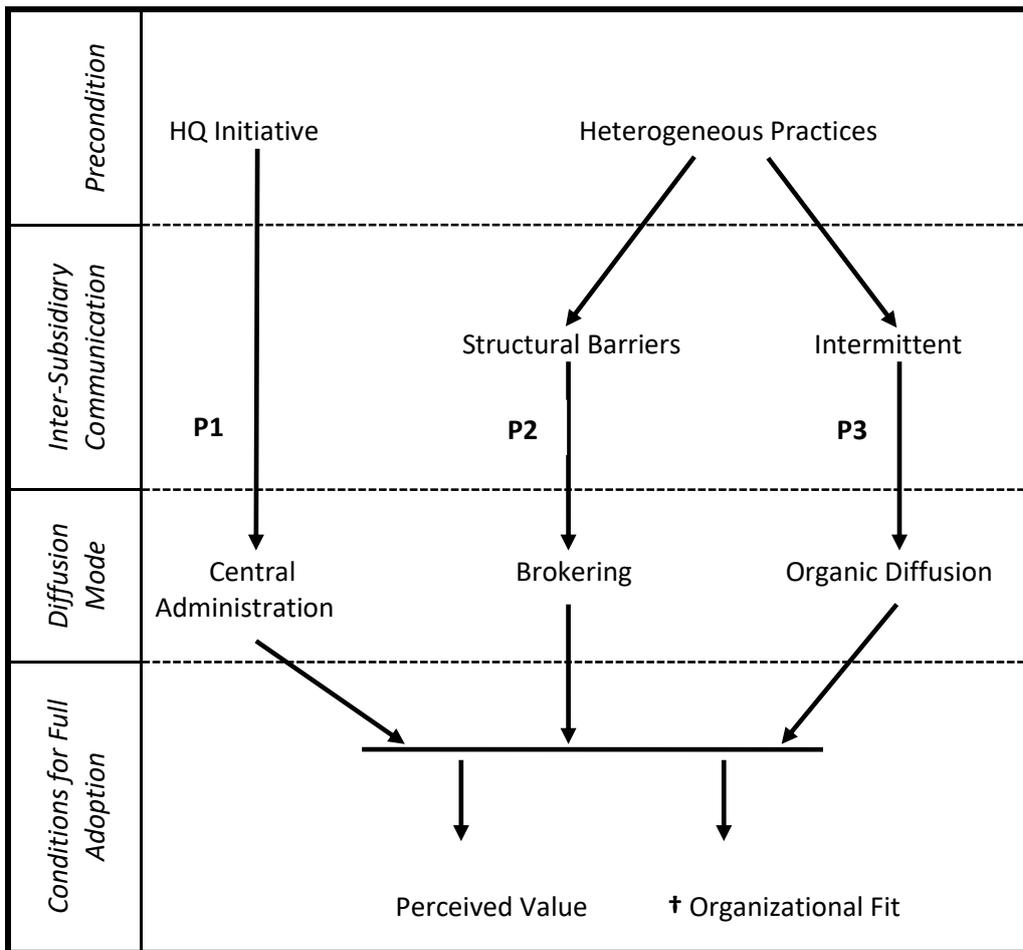
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Figure 1: Processes of diffusion of knowledge-practices amongst subsidiaries



† Business Requirements, resources, and path dependencies.

Table 1: MNCs and Informants

<i>Company (Nationality)</i>	<i>Main Products</i>	<i># Informants</i>	<i>Informant Position (Location)</i>
Pharma Co. (USA)	Pharmaceuticals	1	Upper management (Canada)
SoftCo (USA)	Software	2	Middle management (China)
SemiCo (USA)	Semiconductors	1	Middle management (China)
Lux Co. (India)	Consumer discretionary	3	Director and middle management (2) (India)
T-Car (India)	Automobiles	1	Director of marketing (India)
IS Services (India)	Information systems services	8	Director(4) and middle management (4) (India)
ETF (USA)	Industrial engineering	3	Director(2) and middle management (India)
Retail Co. (USA)	Retail	1	Director (India)
Telecom Co. (USA)	Communication technology	4	Director (Canada) Middle management, China, USA (2)
Aero Co. (USA)	Aerospace	6	Director of engineering & head engineer (USA) Subsidiary managers (China, eastern Europe, India, Latin America)
Software Co. (Germany)	Software	5	Director , lab head, head of engineering (Canada) Middle management (Canada, USA)
IT Services Co. (India)	Consulting	5	Executive (2), Lab head, consultants (2) (India)

Table 2: Knowledge practice transfer discussed across cases

	<i>Practices</i>	<i>Source</i>	<i>Recipient</i>	<i>Description / R</i>
<i>Telecom Co.</i>	Boards and councils meetings	HQ (US)	All business units globally	Meetings of managers from across the business units for innovation initiatives.
	Crowd sourcing	N/A	N/A	New ideas generated and voted upon by others with
	Subject matter experts	N/A	N/A	Virtual (online) identification of individual thought knowledge.
	Distributed Teams	HQ (US)	All units globally	Assignment of geographically dispersed individual
	Identifying reuse opportunities	Internal to IT dept.	Subsidiaries within IT dept.	Identifying new applications for existing technolog
	Centers of excellence	HQ (US)	All units globally	Intention to distribute/integrate innovation amongs
<i>Aero Co.</i>	Design	HQ (US)	All units globally	All procedures related to new product design. Req (FAA) compliance.
	Design and reporting	Regional HQ (India)	China	Local processes for ensuring common documentati
	Knowledge sharing	HQ (US)	All units globally	Formal training materials for all aspects of the busi
	Project management	N/A	N/A	Project managers tend to be PMI certified, althoug
<i>Software Co.</i>	Best practices	N/A	Units globally	Brokered within the MNC amongst the federated b
	Lean programing	HQ (Europe)	Labs globally	Initiative for software developers using new techn
	Lead generation	N/A	Units globally	Practices used to create new markets.
	Monitoring practices	Subsidiary	Subsidiary (Canada)	'Dashboard' created in one location implemented i usefulness.
<i>IT Services</i>	Governance processes	HQ (India)	India, UK, US	Measurement, reporting, documentation processes implemented globally.
	R&D branding	HQ (India)	Labs globally	Branding creates perceived new value.
	R&D partnerships	HQ (India)	Labs globally	Partnerships entered into with customers to develop
	Technology transfer	HQ (India)	Labs globally	Transfer of new R&D to business units for comme
	Project management	HQ (India)	Labs globally	Formal stage classifications for projects.

Table 3: Structural factors influencing inter-unit knowledge-based process transfer.

	<i>Precondition</i>	<i>Inter-unit communication</i>	<i>Mode of diffusion</i>	<i>Illustrative examples</i>
<i>Telecom</i>	HQ Initiative	Complicated by frequent acquisitions and high technological diversification.	Central administration	Matrix-type structure (boards and councils) creating opportunities for new practices.
	Heterogeneous practices	Complicated by frequent acquisitions and high technological diversification.	Organic diffusion	Crowd sourcing used to bring popular practices. Competition and cooperation encouraged.
<i>Aero [1]</i>	HQ Initiative	Frequent and highly integrated.	Central administration	Senior engineers at HQ mentor newer staff through training sessions and taking joint responsibility.
<i>Software</i>	HQ Initiative	Occasional meetings of lab heads (engineering).	Central administration	Introduction of 'lean' programming practices and additional resources to aid adoption among labs.
	Heterogeneous practices	Limited by geographic separation (marketing). Occasional meetings of lab heads (engineering).	Brokering Organic diffusion	'Best' practices identified and transferred between units. A 'dashboard' type software tool demonstrated and transferred to labs in other geographic locations.
<i>IT Services [2]</i>	Practices established in older labs transferred to new labs at inception.	All lab heads must be members of the board. All are from India regardless of the location of the lab.	Central administration	R&D type work is not easily codified. Design and use of materials and equipment, research and development functions are highly codified and transferred.

[1] No heterogeneous practices observed. Due to FAA compliance concerns, practices tend to be highly codified and deviance is not tolerated.

[2] No heterogeneous practices observed. It is unlikely that researchers at different labs had much opportunity to interact.