From localized to corporate excellence: How do MNCs extract, combine and disseminate sticky knowledge from competence clusters?

ABSTRACT

MNCs and competence clusters differ widely in their knowledge generation and dissemination processes. I propose these differences provide systematic challenges for MNC units tapping into locally vested skills, combining their findings with existing knowledge and disseminating this internally. Our aim is to develop a framework for conceptualising the knowledge transfer process between MNCs and competence clusters. For that purpose I develop a conceptual model of the knowledge tapping process and a set of propositions.

Keywords: MNCs, Knowledge management, Competence Clusters

INTRODUCTION

The ability to acquire, combine, disseminate and utilise knowledge and technologies in multiple business contexts is increasingly considered to be a distinctive competitive advantage of multinational corporations, or MNCs (Dicken, 2005; Dunning, 1998; Enright, 1998; Zander and Sölvell, 2000; Porter and Stern, 2001; Quinn, 2000; Sumelius & Sarala, 2008). The competitive advantage of the MNC hinges on two critical factors, namely the capability of external knowledge tapping in diverse business contexts and the capability of internal knowledge dissemination among the units comprising the MN organisation. The latter issue has its focus on coordination mechanisms among internal units of the MNC and has been considered in length by research (for a fairly recent overview see Zander, 2002). The first issue centres on external coordination mechanisms between subsidiary units of the MNC and local carriers of knowledge Holm, Holmström & Sharma, 2005; Foss & Pedersen, 2004). Because of their global reach and extensive resource base, MNCs hold specific advantages for pursuing such combined strategies compared with other firms (Porter, 1994). As markets become fragmented and volatile, monitoring and acquiring new technologies rather than to develop and amortize them in-house, has become a strategic priority (Enright, 2000). This process can be witnessed in the internationalisation of R&D among MNCs, seeking to combine locational innovation advantages (Archibugi & Michie, 1995) with owner specific advantages.

There is a growing literature on the impact of knowledge flow in general and specifically emanating from local districts in support of the competitiveness of MNCs (Cohendet et al, 1999; Blanc & Sierra, 1999; Wiel, 1997; Sabel, 1990; Enright, 2000). However, this literature concentrates the types of incentives that MNC headquarters may use for facilitating knowledge development in subsidiaries and sharing of this knowledge to other MNC units (Forsgren, Johanson & Sharma, 2000; Foss & Pedersen, 2004). Most of these studies have not addressed how different

representations of knowledge across organizational contexts may affect the ability of the MNCs to tap into competence clusters and combine it with existing knowledge. Typically, the knowledge development issue is dealt with in this literature by paraphrasing Kogut & Zander (1992) who defined knowledge development in terms of recombining existing knowledge. However, knowledge management systems differ across MNCs and recombining on a global scale in order to achieve MNC advantages call for some form of standardized and codified representation of knowledge as well as uncodified forms (Nielsen & Michailova, 2007). The multinational corporations and its network of related business units on one hand and the regional cluster of related business enterprises and supporting units on the other hand[1] presents very different organisational settings and differ in their knowledge generation, representation and dissemination processes. Whereas the representation of knowledge in clusters hinges on non-codified knowledge, which are only available through accessing personal networks (Leamer & Storper, 2001). Correspondingly different strategies and procedures for knowledge retrieval reflect these differences. I propose that these differences in knowledge storing and access provide systematic challenges for MNC units when attempting to tap into skills vested in competence clusters and seeking to translate and combine their findings with the with their existing knowledge and disseminating this to the wider organisation. The purpose of this paper is to further develop a framework for conceptualising the process of obtaining and managing knowledge transfer between MNCs and actors in local districts. I intent to clarify a distinct model for this transfer process, along with the factors impacting on it.

The paper is structured as follows. First, an outline of the differences in terms of how knowledge is created, represented and transformed in MNCs and competence clusters are outlined. Next, a literature review on the process and the obstacles of obtaining and transferring knowledge

1 Many different terms are used to conceptualise co-location and knowledge exchange among business actors: Industrial Districts, Industrial Technology Districts, Innovation Clusters, Regional Innovation Systems, and Clusters of Competence. The term competence cluster is used here. See Gupta & Subramania (2008) for conceptual discussions.

from competence clusters are provided and a theoretical framework is presented and a set of propositions is developed.

CREATING, REPRESENTING AND TRANSFORMING KNOWLEDGE: THE MNC VERSUS THE REGIONAL INNOVATION SYSTEM

Research on knowledge management has for some time acknowledged that social settings influence how knowledge shared by a collective of persons is produced and retained (Schutz, 1970; Walsh, 1995). Departing from the Arrowenian view of technological knowledge as generic and public in nature, knowledge is increasingly seen as localised in institutional contexts defining accessibility as well path dependence. Thus, it is largely excludable and highly dependent on institutional context (Antonelli, 1999). Characterised as different social settings with highly different governance mechanisms, MNCs (defined as an organisation with entities in two or more countries operating under a system of decision-making permitting coherent policies and a common strategy) and competence clusters (defined as group of co-located and vertically and horizontally interconnected but independent firms, public and private institutions) represent distinct social contexts, which differ with respect to how they create, represent and transform knowledge. By creation Imean the factors and conditions leading to the creation of new ideas in terms of mental frames and patterns shared among a group in social context. Representation relates to how knowledge is memorized and stored in social settings, recognizing that knowledge on a group level rest on social cognitive frames representing knowledge beyond that of the individual (Walsh, 1995). Finally, transformation relates to the process by which knowledge is de-contextualized, moved from one location to another and implemented in a novel context (Von Hippel, 1994). The key differences between archetypes of MNCs and competence clusters are outlined in table 1, below

Insert TABLE 1 here

MNCs and competence clusters differ with respect to knowledge creation – both in terms of the nature of the knowledge created and the intensity by which new commercial ideas are launched. Recent contributions scold MNCs for their lack of knowledge creation ability or "innovativeness" (Hamel, 1999). Despite the stream of research characterizing MNCs as "networks", heterarchies or "internal markets", ascribing market-like features to internal resource governance processes in these organisations, few MNCs have successfully created market like conditions for motivating knowledge creation internally. Even ABB, often hailed as the icon among the multinationals regarding its ability to create optimum conditions for knowledge creation and exchange, seems to have lost its spunk. It seems that with regard to knowledge creation, MNCs more often than not are better described in hierarchical terms as routine-makers, built to perpetuate past success by institutionalising its form (Nelson & Winter, 1982; DiMaggio & Powell, 1983). Iconcur with Välikangas & Hamel, 2001, who acknowledge that the knowledge creation process of MNCs differ from the market in several important ways. MNCs do innovate, as long as the exploratory activities are aligned with the existing competences and routines of the firm (Hamel & Prahalad, 1994).

The ability to sustain and perpetuate routines, however, often comes at the expense of contradicting dominant views (Thornberry, 2001). Even though MNCs can muster resources and talent beyond even entire competence clusters, their knowledge creation activities are better described in terms of sustaining existing knowledge than in terms of creating disrupting knowledge, challenging what is already known. Budget allocation policies, career ladders, fear of cannibalising existing business platforms all speaks in favour of this (Välikangas & Hamel, 2001).

In comparison, competence clusters such as Silicon Valley represent a fertile environment for spawning new ideas and businesses, where rivalry among concepts and those entrepreneurs promoting them provides an ongoing forum for the exchange of new ideas and creation of knowledge, challenging the existing order. This partly also explains the attractiveness of these localities for the explorative R&D activities of MNCs (Kummerle, 1999; Dunning, 2002).

MNCs and competence clusters also differ with respect to how knowledge is represented in the social context. Within the MNC the issue of knowledge representation is tightly linked to that of knowledge transmission. A key issue for the MNC concerns the problem of transferring knowledge across institutional contexts. Knowledge transfer is only possible at a cost, and - as a trivial matter - it is in the interest of management to reduce this cost as much as possible (Buckley & Carter, 1999; 2002). The magnitude of this cost depends on the permeability of internal unit boundaries, which again is dependent on representation, in particular the degree of standardisation exercised, as pointed out in a recent case study of Xerox developing a global IT infrastructure (Storck & Hill, 2000). The crucial difference regarding knowledge representation MNCs and competence clusters pertains to differences in environmental complexity. By definition, MNCs are facing multiple institutional environments with corresponding knowledge fragmentation problems (Kostova & Zaheer, 1999). In order to ensure some degree of internal consistency, MNC management often seek to create some form of standardized and centrally governed representation of knowledge in terms of explicated norms and procedures, for instance by assigning specialist roles or mandates to specific MNC units, who then act as an authority within the MN organisation (Buckley & Carter, 1999). Therefore, in order to ensure knowledge permeation, there are forces promoting a declarative and codifiable state of knowledge within the MNC, as this is a prerequisite for representing knowledge in a form that makes it widely accessible for MNC units. This also means that MNCs

have a fairly clear division of knowledge-synthesizing labour, suggesting that the location of key competencies where specific parts of the knowledge created can be pinpointed (Carter, 1995).

In comparison, knowledge representation in the regional innovation system represents is organized in a less orderly fashion. Competence clusters represent an organic form, where bits and pieces of complementary knowledge are dispersed among individuals and firms in a community of associated actors within the region. As shown in the stream of research on competence clusters, one primary reason for spatial clustering is that knowledge frequently sticks to a regional location (Porter, 1998 Porter & Stern 2001; Andersen, 2002; Enright, 2000). Knowledge is often bound to tradition and intricate social relationships and personal experience and is accessible primarily by people who have contributed actively to its creation. This increases its internal circulation, but tends to impede its external accessibility (Amin & Wilkinson, 1999).

An important aspect relates to the distributed and interrelated nature of knowledge representation within competence clusters, which represents knowledge in a complex and interconnected form (Maskell & Malmberg, 1999). Like a memory system, competence clusters constitute a specific learning and innovation regime characterized by the localized practices, routines and norms of interactions of the members, where any unit's activity is regulated by the activities of neighboring units (cf. Boden 1990, p. 14). As noted by Weick & Roberts (1993), in complex and interconnected knowledge representation forms, individual knowledge processing units often rely on one another for representing and disseminating different proportions of expertise. Simply put, the collective mind represents the community members´ meta-knowledge on who knows what in the community and how to interrelate these knowledge chunks into a social system of joint actions (Yoo & Kanawattanachi, 2001). The apparent differences in how knowledge is represented, stored and retrieved, lead us to suggest that the process of tapping knowledge from

local districts to MNCs presents a particular challenge, which has not been addressed in particular detail.

KNOWLEDGE TAPPING FROM ACTORS IN COMPETENCE CLUSTERS: SOME PROPOSITIONS

Analogously to the discussion in the previous section, it is clear that even though MNCs locate units in local areas, this does not automatically grant them access to utilize valuable knowledge resting in the regional innovation system. Knowledge located in regional innovation system cannot be easily transferred and applied in the MNC context. Localised knowledge requires a conversion implying an exchange of interpretations and a process of translation if it is to be readable and cumulative to knowledge stocks and learning flows within the MNC. The ability to absorb knowledge generated in these regions and translating it and combining it with the existing knowledge, therefore calls for specific skills, including the ability to access, incorporate and use externally derived knowledge (Dosi & Malerba, 1996). Primarily, the process of absorption, translation and dissemination depends on organising and managing inter-firm as well as intrafirm boundaries (Andersen & Christensen, 1999). Managing these interfaces, notably the quality of interaction and communication links is a *sine qua non* for achieving effectiveness in MNC-region learning processes.

The generic research question can be presented as: given the contingencies of the regional innovation system for tapping sticky knowledge, what affect outsiders' (in this case MNCs) ability to gain access to these competences? What affects their ability to combine knowledge with their existing know how, and what affects the dissemination of knowledge into the MNC network? Moreover, what are the potential interaction effects between these distinct phases of the knowledge tapping process?

These questions tie up with an emergent research area that focuses on the interaction of regional clustering with the strategy of MNCs (Dunning, 1998; Enright, 2000; Christensen and Munksgaard, 2001). However, so far the contributions within this area have been sparse (Enright, 2000). These basic research questions are outlined in figure 1, outlining a model of the essential elements of knowledge tapping and knowledge combination processes and internal knowledge dissemination of the MNC.

Insert figure 1 here

The processes on how firms gain access to external knowledge from other firms, networks or districts have attracted attention from various streams of research, which hold overlapping, yet distinct assumptions concerning the phenomenon in question.

In the discussion I will draw in relevant and important research streams: Research on the sociology of knowledge, the economic geography literature, the literature on interfirm learning processes, and the literature on business networks. I will structure our discussion of these theoretical frameworks around the generic questions of factors affecting extraction, transfer and implementation processes for MNCs seeking to tap into knowledge of local competence clusters. Consistent with our discussion on the nature and localization of knowledge in competence clusters, I believe that the competencies held by actors in the regional system cannot be accessed directly, but appears in the solving of day-to-day problems as they are presented to participants in the regional innovation system. Consistent with the ideas of a collective wisdom or logic (Melin and Hellgren, 1993), such problems prompt specific actors to utilise their connections in an open-ended problem-solving process. In contrast the innovation processes of MNCs are often characterized by a programmed approach to innovation and technological development, which is governed by the

organisational archetype of the firms (Christensen, 2002). It is in the interplay between these learning regimes and the underlying differences in the social organization of knowledge generation that we must see the challenges for and the corresponding practices of the localised MNC, when extracting, combining and diffusing excellence from competence clusters.

Extracting Sticky Knowledge from Competence clusters

The extraction of knowledge from a regional innovation system basically falls into two purposes, namely that of combining external knowledge with in-house knowledge and that of imitation, where MNCs acquire knowledge not previously available within the MNC, analogous to the Strategic Asset FDI motive suggested by Dunning. Sometimes these two purposes have to be combined in order to extract value from the localized knowledge context.

As explained, an important feature of competence clusters is barriers to imitation (Maskell & Malmberg, 1999). For the MNC, aspiring to extract knowledge, the key challenge for gaining access is overcoming these imitation barriers. Imitation barriers may accrue from primarily two sources: first, barriers may arise from the nature of the knowledge itself. Knowledge rooted in districts is often procedural, rather than declarative in nature, as highly personal cues held in mind of professionals (Nonaka, 1991). Highly specialized skills, such as those held by artisans and in other communities of practice, often …"*cannot be specified in detail and cannot therefore be transmitted by prescription, since no prescription for it exists. It can be passed on only by example from master to apprentice*" (cf. Polany, 1958, p. 52). Moreover it is usually developed from processes of interaction and dialogue and repeated trial and error games, which have formed a shared experience and understanding, which is not easily expressible by any single actor who may not know the entire script, but only the parts they are responsible for. Paraphrasing Michael Polany (1958): Districts often know more than they can tell.

For the MNC the key challenge is to generate experiential knowledge through observation, imitation and participatory practice rather than through objective processing of information (Penrose, 1959). A study of the behaviour of MNCs in search of new high-tech competences in Silicon Valley confirms this picture. This study shows, that the ability to become a part of the local relational fabric is a decisive factor for the process of accessing unarticulated knowledge (Cohendet et al, 1999). It follows that socialisation and task participation in the community of practice nested in a local district is an important prerequisite for MNCs in achieving cognitive proximity (Nooteboom, 1999). Bresnan et al (1999) demonstrated in a study of knowledge transfer among acquiring and acquired units that frequent communication and informal visits were important prerequisites for obtaining interunit knowledge transfers. Hence, it can be proposed, that:

Proposition$_{1a}$: For MNCs, local socialisation of key organizational members and local task participation are important prerequisites for tapping knowledge from competence clusters

By key organizational members are meant the employees who are involved directly in knowledge interfaces with suppliers, customers or colleagues in development units in other organizations. Local socialization concerns the degree to which key organizational members interact with and comes to share customs and norms of local peers. Operational measures for socialization have been suggested by several literatures (See Ashforth & Saks, 1996).

Secondly, knowledge barriers may also arise because a particular information seeker is less able to acquire information, because the ability to recognize the value of new information is low. Hedlund (1994) use the concept of economies of depth, since experience and involvement are necessary

ingredients to generate new knowledge as well as to benefit from other, related fields of knowledge. Combing knowledge fields demands a profound knowledge of ones own capabilities as well as capabilities of the partners'. It has been claimed, that the ability to evaluate and utilise outside knowledge is largely a function of the level of prior relational knowledge, which is a central element of its capacity to absorb external knowledge (Cohen & Levinthal, 1990).

Therefore it is in general agreed that the absorptive capacity of any organisational unit depends on the skills of its members (Nonaka & Takeuchi, 1994), but it also depends on its intention and interaction with external actors and how the counterpart in the exchange dyad interprets them (Ford, Håkansson & Johanson, 1986). In order to achieve an interface beneficial for mutual learning and adaptation, committed collaboration is vested with resource deployment. For actors localised in competence clusters, its reputational assets somehow support these signals, as a successful firm is able to draw on its credentials and good name from previous transactions in order to achieve credible commitment advantages (Dei Ottati, 1994).

For an external actor alien to these markets of reputational information, such as an MNC trying to tap into local knowledge issues, a central task is therefore to signal commitment and trustworthiness for potential local suppliers through resource commitments in the local district. The MNCs support to gain market access may prove to be the foundation for systematic knowledge exchange. Hence, I propose, that:

Proposition1_b: For MNCs signalling credible commitment, local resource deployment, is an important prerequisite for gaining access to local competencies.

Institutional theory have discussed organizational signalling in order to demonstrate commitment as being important for generating legitimacy. Various operational approaches for measuring

organizational signalling toward a context in order to create, maintain or repair credible commitment has been suggested by content analysis research (Krippendorf, 2004).

Finally, access to knowledge may also be hindered, because the specific information providers deliberately are protracting or hindering the knowledge creating process to take place (Hamel, 1990). Companies, who in their strategy find it feasible to retain knowledge and keep it as a secret of the trade, can affect these processes. On the individual level, it has been demonstrated that specialized personnel such as technological gatekeepers can affect the access abilities (Katz & Allen, 1985). In both cases a passive adaptation and a closed dialogue are instrumental. Also differences in managerial traditions may hamper knowledge transfer.

Hence, strategic interaction with local buyers and/or suppliers is also an important consideration for the local MNC unit. Therefore the strategic as well as the operational contexts impose different task environments on to the local managers. Studies of strategic interaction among firms have demonstrated the crucial importance of trading interdependencies and mutual commitments in order to gain access to critical innovation resources and activities (Håkansson, 1987). Therefore, in order to trade interdependencies with a leading-edge local supplier, local decision-making autonomy of the MNC unit is called for. In a study of the characteristics of subsidiaries in leading-edge industry clusters, Birkinshaw & Hood (2000) showed that these are imbued with more decision-making authority than other MNC units. Based on this, it is therefore proposed, that:

Proposition 1c: In order to gain access to knowledge vested in suppliers in the regional innovation system, local decision making authority in the MNC unit is called for

Operational approaches to measuring the location of decision making authority in MNCs has been discussed in organizational design perspectives. See for instance Burton & Obel (2004).

Combining Regional innovation system and MNC unit knowledge representations

The utility of external knowledge depends on the ability to combine it with internal knowledge pools of the MNC. However, the ability to create new knowledge through interaction in a crucially depends on the relationship building with local actors in the external innovation environment. Innovative capabilities are not distributed equally among actors in the region. They may be more or less well connected to innovative activities, and it may be hard to anticipate their capability and interest in a process of mutual learning. There is a clearly qualitative difference between collaborative partners when it comes to gaining learning benefits (Powell, 1990). Therefore, it is proposed, that:

Proposition 2a: The ability for the MNC to combine internal and external knowledge representations depends on the centrality of the external partner in the regional innovation system

In studies of social structures in relation to knowledge extraction, researchers have been inspired by social network analysis to discuss centralization and in-betweeness as concepts describing an actor's relative position in a knowledge-sharing or advice-giving network (Ter Wal & Botscha, 2009)

The ability to gain organisational learning effects from any access gained has been discussed as a process of knowledge combination, in which elements of externally accessed declarative knowledge are combined with internal knowledge, via theories, models, analogies, metaphors, etc. (Nonaka, 1991, Cohendet et al, 1999). This phase is affected not only by the unarticulated and subjective nature of the knowledge sender, but also of that of the receiver, constituting a situation of cognitive distance (Nooteboom, 1999). Hence, in order to be able to embed new knowledge in the existing body of knowledge held by the MNC, a conversion and translation process must take place. Managing this process effectively is a crucial feature of the dynamics of knowledge creation within the MNC and depends heavily on both the MNCs ability to design conversion as well as communication processes for both externalisation and combination of knowledge (Cohen & Levinthal, 1990; Andersen & Christensen, 1999).

Learning process is closely associated with processes of problem-solving (Cohen & Levinthal, 1990) For the MNC; knowledge resources are valuable through processes of activation where knowledge is applied to specific puzzles at hand (Ford, Håkansson & Johanson, 1986). However as noted previously, the problem solving heuristics and knowledge generation strategies of competence clusters and integrated firms differ. Therefore, there is good reason to focus on the managerial practices for designing and managing inter-firm interaction for achieving effective processes of combination activities. This affects both the distribution of tasks as well as task processes among MNC unit and regional actors. Obtaining an ideal task division between regional and internal units is a tricky balance; the challenge is not to make a task division that ensures an optimal operational efficiency, but to develop interactive processes around the tasks that contribute to new ways of doing things or to new tasks based on combined procedural knowledge. On the one hand the ability to absorb knowledge and to combine acquired knowledge with existing knowledge calls for some activities to be conducted internally in the auspices of the MNC. This is necessary in

order to have some form of shared knowledge structure present among the interacting MNC units' members necessary for being able to combine existing and novel knowledge and hereby achieve knowledge creation benefits.

Proposition 2b: Complementary and overlapping competencies present in the MNC unit (technical and otherwise) matching those of the regional innovation system are important prerequisites for combining MNC unit and regional knowledge representations

An operational approach to skill matching in collaboration has been suggested by the researchers adopting the absorptive capacity approach, and is here linked to the skill profiles of individuals (Cohen & Levinthal, 1990). However, the research literature is more silent when it comes to the development of operational measures for organizational capabilities (However, see Rothaermel & Warren, (2008) for a possible route forward).

On the other hand, learning calls for interaction and externalisation of tasks, in order to reap benefits from diversity and inconsistency, which are important triggers of puzzle-solving activities and in its turn – learning dynamics (Ford, Håkansson & Johanson, 1986).

Hence, for the MNC wanting to tap into regional knowledge systems, it is important to design division of work processes to reflect only partly overlapping tasks, complemented with non-overlapping areas in order to achieve mutual and reciprocal interdependencies among regional and MNC unit task personnel, while at the same time maintaining their distinct qualities and identities.

However, gaining access to the knowledge vested in competence clusters is a necessary but not a sufficient condition for the integration of regional and internal knowledge. As pointed out in

studies of expert system designs, the act of converting unarticulated knowledge into articulated knowledge is not merely translating the experts' knowledge out of their heads and onto paper, but is instead an act of knowledge creation where existing and new knowledge is formed into knowledge concepts (Cowan et al, 2000). According to Johnson, et. al. (2002) knowledge concepts may often take the form of collaborative routines, but some routines are more conductive to learning than others.

Proposition 2c: For the MNC, the task division between the MNC and external members of the regional innovation system affects the combination of external and internal knowledge

Division of tasks and how this links to coordination and knowledge exchange have been investigated and operationalized in the regional literature (for instance Henriksen & Halkier, 2009). Although this approach

The process of how tasks are conducted also reflects the task structure. As pointed out by Thompson (1967) task structures characterized by reciprocal interdependencies calls for intense and frequent interaction in order to achieve mutual adaptation and learning. Intensity and iteration are crucial dimensions of knowledge combination processes. Especially, in cases of sticky knowledge, the iteration means that problem-solving activity often shuttles back and forth between internal and external task groups, as information cannot be passed across simply trough directions or specifications, using for instance prototypes as the information carrier (Kristensen, 1992). In other cases, personnel are exchanged between external and internal organization as means for transferring complex information (Andersen, 1999). Even in a the case of explicit knowledge, the extraction of

value from it may be restricted due to legal protection – in which case a formal collaborative venture is needed – or in cases where the explication is equivocal – in which case dialogue and demonstration is needed.

Proposition 2d: For MNCs successful regional/internal knowledge combination processes depend on their ability to create and manage iterative cycles of problem solving

The literature on post project learning has developed important contributions with respect to measuring knowledge combination issues. This literature may well serve as inspiration for operational aspects in the present context (Thomke & Fujimoto, 2000).

The process of knowledge transfer also involves the process of knowledge translation, since the recipient environment as well as the combining with internal knowledge pools involves adaptation to new technical and organisational realities. Therefore the process of combining external and internal knowledge is a highly operational issue, which is most often embedded the daily operations in distinct units in the MN organisation. Therefore, the acceptance of a considerable autonomy and flexibility – in the sense that external commitment may supersede that of internal commitment – of the subsidiary is needed.

Knowledge Dissemination in the Intra-MNC Network

The ability to combine, dissolve and recombine the distribution of assets and activities in international space is traditionally considered a key issue in MNC's competitive advantage.

However, the vital part is the ability of the MNCs' to disseminate knowledge from one part of the MN organisation to another.

Knowledge dissemination in the MNC has by tradition been analysed in an organisational context constituted by the multidivisional organisational form (the M-form). In the M-form organisation, the process of knowledge building is basically divisionalised, but often supported by central R&D functions in cases, where divisions share a common core technology. Christensen (2002) makes a distinction between two M-formed organisations: An unrelated diversified organisation, which seeks to promote financial economics; and a related diversified organisation, which seeks synergetic economics. A third type sketched by Christensen (op. cit.) is the vertical organisation, trying to promote economies of integration through the control of buyers and suppliers. The vertical organisation as well as the related diversified organisation demands a more centralized management and a stronger coordination of operational guidelines than the organisation with unrelated diversification. Therefore the room left for adaptive manoeuvres is narrow at the operational level of the local unit. The unrelated diversified organisation on the other hand is more responsive to differences in the local context of operations, at least at the level of the division.

There is, however, growing evidence that innovation in the MNC cannot be understood as either local or global, but that sources of input shifts over the length of the innovation process (Zander & Sölvell, 2000). It is thus one of the driving forces for the formation of MNC's (Cantwell, 1991; Zander & Sölvell, 2000). Hedlund (1994) points to contextual developments, which challenge the M-form organisation. In his mind knowledge combination does not follow divisional lines, nor does operational efficiency follow from lines of divisions nor from knowledge combinations. Therefore several strategic agendas operate at the time and they change over time and they constitute each their own logic of order. In this view, the MNC face a basic dilemma of how to combine subsidiary flexibility with the management of knowledge flows in the multinational

organisation. The basic dilemma is that those very coordination procedures that may support knowledge dissemination and integration at the corporate level may very well hamper knowledge extraction at the local level, e.g. the level of the subsidiary unit. The character of the dilemma differs with several factors. Organisational and managerial traditions may be difficult to alter; the shared core technology base may be more or less shared over time and technology strategy at the corporate level may be more or less in conflict with the innovative strategies for individual innovative projects or product divisions. This severely interferes with processes of knowledge dissemination inside the MNC.

On top of this dilemma comes another managerial dilemma, namely that the strategic interests in knowledge dissemination as seen from the headquarter – or the MNC as a unit – may interfere with those strategic interests pursued at the level of the individual subsidiary. White and Poynter (1990) and later Birkinshaw, Hood and Jonsson (1998) thus has emphasised that subsidiaries often develop with a main focus on the justification of their own existence rather than merely improving efficiency along the perspectives seen by headquarter. In these efforts, access to localized pools of knowledge often plays a profound role of leverage.

On this background we are left with two major issues, namely what are the drivers for knowledge sharing in MNC where subsidiaries and divisions incorporated tend to pursue agendas of autonomy? And how can knowledge sharing be organised considering 1) the internal balance of interests among the units of the MNC and considering 2) the combined utility of access to external knowledge and knowledge dissemination.

Drivers for knowledge dissemination and sharing

In a competitive environment where the knowledge factor has gained momentum, the ability to share knowledge across units of the MNC seems self-evident. Prahalad and Hamel (1990) has thus

emphasized that the competitiveness of the MNC is based on its ability to develop and sustain a core competence in the corporation and also emphasize that the quest for autonomy easily turns into a collection of discrete businesses. Drivers for knowledge sharing in this corporate framework are a combination of self-interest of the subsidiary units combined with economies of scale and scope and operational efficiency serving differentiated markets.

However, over the years the increased internationalization of the MNC activities, advanced though mergers and acquisitions as well as strategic alliances, has exemplified the establishment of research and development functions and centres of excellence in other places than the county of the headquarter. The traditional times, where foreign subsidiaries would simply take knowledge and technology from their MNC headquarter and modify it slightly in response to local needs, are more or less over.

Many studies though still tend to view overall integration of the MNC as a question of similarity of the units incorporated. Instead, the key seems to be the combined forces of differentiation and complementarities of positions taken in a value added perspective (Hedlund, 1994; Malknight 1996). In this perspective the logic and drivers for knowledge sharing vary with the configuration of the MNC. In general some units are highly engaged in markets transactions. Their logic for knowledge sharing is closely attached to the prospects of sustaining business though the exploitation of country differences. Some units are highly engaged in transactions of production. Their logic for knowledge sharing is attached to say economies of operational efficiency, specialisation and joint supplier information and procurement practices.

Proposition 3a: Mutual complementarities of skills among MNE units are important for internal knowledge distribution

A main driver of knowledge sharing therefore is the mutual complementarities of skills in the corporate organisation. The units of the MNC jointly have a much stronger capacity of scanning global environments for new knowledge (Corporate dissemination advantages). At the same time they can enjoy the economies of scope in their ability to combine knowledge from different fields of technology and commercial contexts (Corporate 'externalities' of knowledge sharing). In addition the costs of knowledge generation may be offset by the ability to use knowledge over and over again in the organisation (Corporate scale in knowledge sharing).

The organising of knowledge dissemination and sharing

In their overview of the stream of research on subsidiary management research, Paterson and Brock (2001) shows that the issue of knowledge dissemination has become one of the most critical issues in the research agenda. One of the key issues touched upon is the question of how to combine autonomy of subsidiaries and integration of the MNC.

There is no simple answer as to how to combine knowledge sharing with the growing autonomy of subsidiary units in the MNC. One line of thinking is to follow Andersson and Forsgren (1996, pp 19) in their findings that 'it is not first of all a question of designing the organisation in such a way that sufficient integration and co-operation among the units will be reached'. In their mind it is rather a matter of combining flexibility with respect to the different business environments with scale and scope among units.

Hedlund (1994) handle knowledge sharing in the MNC in an organisational framework characterised among other elements by the architectural role taken by corporate management, the combined role of knowledge, the temporary constellations of people and the lateral communication patterns envisaged. This N-form structure has many features in common with the interorganisational network view on the MNC taken by Ghoshal and Bartlett (1990). In this view,

resources and knowledge in the corporate network are dispersed among units embedded in external networks of customers, suppliers, regulating agencies and research institutions. Especially, MNC units embedded in competence clusters enjoy closer relationships with local institutions such as political bodies and educational systems (Birkinshaw & Hood, 2000)

Proposition 3b: The reach and speed of knowledge dissemination ability of the MNC unit is influenced by the organisational structure of the MNC

According to Ghoshal, Korine and Szulanski (1994) the internal differentiation – due to differentiation in the task environment of the subsidiaries – can meet the high level of reciprocal dependencies in two ways. The first one is to generate slack resources by building up overlapping competencies which ultimatively may lead to the elimination of interdependencies. This way does not envisage knowledge dissemination of any importance among the units. The second way is to increase the information capacity by help of the creation of lateral relation building between MNC units. This solution is supported by Zander and Sölvell (2000) arguing that one-way transfer of knowledge (from HQ to DS) actually is turning into a two way transfer (HQ to Ds and DS to HQ).

In a study of the importance of lateral relationship building among R&D units in MNCs, Hansen (1999) demonstrated that innovative knowledge flows depends on the social network centrality of these units, measured in the basis interaction frequency, non-redundancy and heterogeneity of such contacts. I therefore propose, that

Proposition 3c: Lateral knowledge dissemination from the local MNC unit to other parts of the of the MNC depends on the extent and characteristics of lateral relations held by the MNC unit

A basic precondition for knowledge dissemination and sharing to take place is the basic operating transactions taking place among the units of the MNC network. The way these transactions are organised form the base for knowledge sharing. In this framework, incentives and knowledge of the network of subsidiaries and supporting units is a basic element in a corporate strategy to shape a stronger coherence in knowledge dissemination.

The position of the MNC unit also matters to its ability to disseminate knowledge into the MNC organisation. In order to conceptualise the variations in the strategic context of subsidiaries, Gupta and Govindsrajan (1991) presented a typology of four different subsidiary positions relating to its engagement in in- and outgoing knowledge flows. In a similar manner, the position of MNC units can be discussed regarding their position for knowledge exchange with external suppliers in the regional innovation system and with other internal units. Four generic roles are identifiable: Divisional knowledge tappers (High external knowledge exchange and low internal exchange); Global knowledge developers (high external inflow and high internal outflow); corporate knowledge implementers (Low external exchange and high internal exchange); and Isolated knowledge carriers (Low external and internal knowledge exchange).

Insert figure 2 about here

Both the isolated knowledge carrier and the corporate knowledge implementer characterize positions, which are not directly reliant on the external skills represented by a regional innovation system. A typical isolated knowledge carrier denotes a situation, where knowledge flows are of limited importance for the unit. For instance, a unit focusing on operational management issues, but oriented towards a specific agglomeration of buyers may be located in the regional innovation system. Corporate knowledge implementers, on the other hand, are seen to play an important role as

a knowledge-integrating unit. They are important users of knowledge generated by other units in the MNC or they are key units of internal knowledge dissemination to other MNC units, but they do not rely directly on the knowledge and skills of external suppliers in generating knowledge flows.

Different ways of organising the MNC influence the role played by each of the four generic units listed above. In the case of unrelated diversification the divisional knowledge tappers play a primo role. In the case of related diversification of the MNC the global knowledge developers play a crucial role to the corporate innovation system, especially in combination with the units playing the role as corporate knowledge implementers. They may also take the form of decentralised centres of excellence. In the case of vertical integration, the divisional knowledge tappers are envisaged to play a key role in combination with the corporate knowledge implementers.

CONCLUSIONS

In this paper I have explored some of the basic theoretical problems associated with the transformation of sticky knowledge from competence clusters to MNCs. This is done by help of a few simple propositions linking conditions for external knowledge tapping with internal knowledge dissemination in the MNC. A number of dilemmas and paradoxes are associated with this process.

First of all, the paper points to a simple but most often neglected issue, namely that we are dealing with two organisational settings, which have quite different collective wisdoms forming the operational logics of the participating units. The implications are among other things that different managerial logics meet. In this meeting a range of adaptation processes are set in motion. Sometimes they are characterised by an open dialogue and mutual adaptation processes, in which case potentials for mutual learning and thus also innovation is shaped (innovative learning). In other extreme cases they are characterised by a closed dialogue and thus also one-sided adaptation processes, in which case learning processes tend to be one-sided (adaptive learning).

Secondly, in organisational terms, MNCs represent a geographically as well as technologically distributed and often fragmented collection of organisational units, which may be quite removed from the original point of knowledge entry and where different priorities and agendas easily lead to rivalry between organisational units and divisions, concerning overall technology strategy. Therefore, achieving a successful combination of the knowledge represented in one organisational unit with one or more actors in a regional innovation system, does not necessarily automatically lead to dissemination and absorption of this knowledge into other organisational units within the MNC. Successful dissemination depends on the success of the organisational unit's ability to create new concepts, models and metaphors through combination processes, which can then be distributed.

A primary consideration here is the structuring of the MNC, with respect to communication infrastructure and interconnectedness of organisational units, but also the relative position vis-à-vis other units of the organisational unit in question, responsible for interacting with the regional innovation system. The MNC face a basic dilemma in the balance between the optimising of internal knowledge dissemination and external knowledge tapping. Attempts to optimise internal knowledge dissemination, for example in order to avoid costly duplication, tend to hamper external the capacity of external knowledge tapping. This dilemma is difficult, if not impossible to solve through overall organizational design.

In my belief a basic understanding of the organisational structure established is important in this respect, since a strong awareness of the strongholds and weaknesses of this among the members of the organisation, can influence the balance between intended and unintended managerial developments.

Unrelated diversification tends to favour decentralised knowledge extraction, but at the same time tends to disfavour internal knowledge dissemination. Related diversification on the other hand,

tends to favour internal knowledge dissemination, but on the other hand tends to reduce units operational autonomy and thus narrow down the freedom for adaptation to local contextual conditions. This tends to lower the capacity of local knowledge extraction. Vertical integration tends to produce activity coordination based on Arm's Length principles, imposing corporate rules, guidelines and routines on to the suppliers attached with local units. This tends to favour operational efficiency, but disfavour open dialogue on the puzzle of problem soling and thus also limits the sharing of knowledge.

What I have illustrated, much in line with Hedlund (1994) is that several strategic agendas meet in the MNC. Local strategic agendas related to operational matters of specific supply chains and innovative oriented projects meet with strategic programmes of corporate innovation and technology development. Corporate knowledge agendas meet with agendas for strategic market positioning.

Basically ownership advantages tend to collude with location advantages and in this way they may sometimes lower internalisation advantages, leading to outsourcing instead of corporate inclusion. In other cases the take over of key players in the regional innovation system may work in support of combining ownership and location advantages. In this way internationalisation advantages are promoted. Thus, the dilemmas of promoting local knowledge building in relations to local actors and the corporate knowledge sharing contains tension that tend to lead to new organisational forms in MNCs.

There are some limitations as well, when it comes to the measurements of the propositions suggested. Although inspiration may be found in much of the current literature, the measures called for are complex. Further development of measurements are needed in order to test the propositions developed.

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Table 1: MNCs and Competence clusters as different social settings for creating, representing and disseminating knowledge

	MNCs	Competence clusters
Knowledge creation	Sustaining and extending on existing know how	Disruptive and challenging existing know how
Knowledge representation	Knowledge represented in declarative and codified form consistent with established trajectory	Knowledge of tacit in nature and represented in decentralised but interdependent memory systems
Knowledge dissemination	Driven by central governance, i.e. organisational surveillance systems or assigned development teams	Driven by micro-ordering processes, i.e. facilitated by shared labour pools, temporary alliances and localized learning

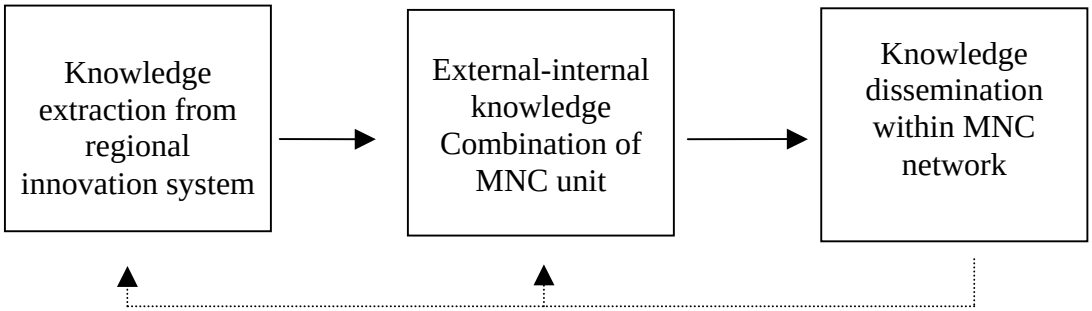

Figure 1: A conceptual model of the knowledge-tapping process

Figure 2: A Knowledge Flow-based Framework for the Role of Subsidiaries in MNC's

Knowledge exchange between the focal subsidiary or unit and external suppliers			
	High	Divisional knowledge tappers	Global knowledge developers
	Low	Isolated knowledge carrier	Corporate knowledge implementers
		Low	**High**
		Knowledge exchange between the focal subsidiary or unit and the rest of the corporation	

Source: Inspired by, Gupta and Govindsrajan, 1991, pp. 774.