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Problem solving in MNCs: How local and global solutions are (and are not) created

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Published on: 05 Nov 2012 - Journal of International Business Studies (Palgrave Macmillan UK)

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Esther Tippmann, Pamela Sharkey Scott, Vincent Mangematin. Learning in MNCs: How subsidiary managers do (and do not) create global solutions. *Journal of International Business Studies*, Palgrave Macmillan, 2012, 43, pp.P. 746-771. 10.1057/jibs.2012.25 . hal-00756252

HAL Id: hal-00756252

<http://hal.grenoble-em.com/hal-00756252>

Submitted on 26 Nov 2012

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Learning in MNCs: How subsidiary managers do (and do not) create global solutions

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Abstract

How do subsidiary middle managers contribute to organizational learning in distributed organizations? This qualitative study uses a *micro-perspective* to investigate how subsidiary middle managers search for distributed knowledge as part of their solution finding to deal with non-routine problems that occurred within their focal subsidiary. Based on a data set of 23 solution finding processes we find that the middle managers' ex ante classification of the non-routine problem either as *local* or *global* influences their solution finding approach, leading to activities that '*negotiate distance*' or '*trap in local rigidities*'. We find that middle managers play different roles '*local template promoters*' and '*global principles creators*'. Using an activity perspective, this study contributes by unraveling micro-level processes that have largely been neglected by the organizational learning and MNC knowledge process literatures. The findings demonstrate that in order to achieve integrated MNC learning, subsidiary middle managers need to truly embrace a global perspective which will promote activities that achieve simultaneous global integration and national responsiveness in their solution finding efforts.

INTRODUCTION

Due to the distribution of knowledge and capability between subsidiaries and the headquarters, considerable attention has been devoted to understanding how to manage these dispersed and heterogeneous knowledge pockets for firm wide organizational learning. In this respect the contribution of subsidiaries moved to the forefront because they were increasingly seen as playing a strategic role in MNC knowledge processes. Raising environmental pressures to adapt and change, for example, meant that MNCs increasingly counted on the capacity of subsidiaries to generate new knowledge (Almeida & Phene, 2004; Andersson *et al.*, 2005; Johnson & Medcof, 2007) and to enhance and develop capabilities (Andersson *et al.*, 2002; Birkinshaw & Hood, 1998; Forsgren *et al.*, 1999; Schmid & Schurig, 2003) that could then be leveraged by other MNC units. Indeed, reverse knowledge spillovers, the transfer of best practice from the subsidiary to the headquarters (Ambos *et al.*, 2006; Hakanson & Nobel, 2001), and knowledge outflows to other subsidiaries (Gupta & Govindarajan, 1991) indicate the contribution subsidiaries make towards MNC wide learning. Following this notion of the subsidiary as an important generator of knowledge and capability development in the MNC, this study was concerned with knowledge processes at the corporate periphery, yet departs from previous research in this area in substantial ways.

In the field of international business there have been numerous studies on MNC knowledge flows – a stream of research that explicates the pattern of knowledge exchanges in MNCs, their enabling and inhibiting conditions (cf. Gupta & Govindarajan, 2000; Szulanski, 1996) as well as performance implications (Monteiro *et al.*, 2008; van Wijk *et al.*, 2008). Although these studies largely adopted the subsidiary as unit of observation, they commonly treated the subsidiary like a black box in that the details, complexities, and social elements of knowledge processes occurring within the subsidiaries were not fully illuminated. Thus, this stream of research has been criticized for its relative insensitivity to exploring micro-level

phenomena (Becker-Ritterspach *et al.*, 2010; Foss & Pedersen, 2004). Important questions remain open for exploration, including: How do individuals initiate knowledge processes? How do they search for organizational knowledge? What knowledge do they mobilize? How do individuals deal with the challenges of knowledge dispersion? What roles do they play in knowledge replication processes?

This study aims to answer some of these questions by adopting an activity perspective to investigate the managers' actual doings in terms of knowledge engagements when searching for solutions for unusual challenges. Examining micro-level knowledge phenomena this study offers a different perspective on MNC knowledge processes and responds to recent calls for more research using a micro-perspectives in order to advance scholarly understanding of organizational knowledge processes (Felin & Foss, 2005, 2009; Felin & Hesterly, 2007; Friedman, 2001).

In the pursuit of a micro-perspective, we focused on subsidiary middle managers. Drawing on the definition by Wooldridge *et al.* (2008:1192), the term middle manager refers to various mid-level professionals who have access to top management and knowledge of operations. These include line managers, functional managers and other project and team based executives. Middle managers were chosen because their status has grown substantially as the remote HQ top management find it difficult to manage the complexities of MNCs that are characterized by multifaceted interdependencies between the different business units, markets and countries (Prahalad & Doz, 1987). This endows subsidiary managers, who are intimately knowledgeable about day-to-day operations, with an opportunity to exert upward influence on top management's decision. This may include activities by subsidiary managers to increase the unit's profile to harvest more HQ top management attention (Bouquet & Birkinshaw, 2008) and to influence strategy making in selling subsidiary relevant issues to top management (Ling *et al.*, 2005).

Further, delayering initiatives contributed towards the risen accountability and decision making scope of middle managers (Balogun & Johnson, 2004; Wooldridge *et al.*, 2008). This means that middle managers are increasingly in a position to act entrepreneurial within their own units in dealing with the pressures of attaining organizational objectives. It also implies that in dynamic environments that demand organizations to adapt continuously, middle managers not only manage the performance of their own unit, but have a broader responsibility in acting as champions of organizational change (Burgelman, 1983). In their role as change agents, middle managers are in a unique position because they are close to front-line employees and often in boundary spanning roles and thus earlier aware of changing environmental conditions.

Middle managers also regularly interact with top management and thus maintain a strategic view of the business (Floyd & Wooldridge, 1997; Huy, 2001). This central position within the organization can allow them to generate impactful improvements and new solutions. Having immediate access to global management peers and senior management, subsidiary middle managers can then lead the diffusion of change across subsidiary borders in their pursuit of global initiatives (Williams, 2009). The subsidiary middle managers may initiate such a global approach if they have developed a 'global mindset' (Prahalad & Doz, 1987:197)—a managerial thinking that marries global and local perspectives. This means that they not only recognize the local dimension of the particular situation, yet also comprehend the global implications and how potential solutions can achieve a balance between local responsiveness and global integration.

The study reported is an initial effort towards improving our understanding of micro-level knowledge processes by investigating the *role* and *activities* of subsidiary middle managers in generating MNC learning. Specifically, we examined the knowledge processes when middle managers develop solutions to problems and thereby unveil the detailed

dynamics of middle managers' solution finding *activities*, offering insights into how their problem classification influences knowledge searching and solution development. Further, we use the findings of the middle managers' knowledge engagements to unravel their *role* in the replication process, thus extending the knowledge replication literature.

The following sections provide a review of the literature, outline the methodology and findings, before discussing implications for theory and management practice.

THEORETICAL BACKGROUND

Cyert and March (1963) submit that organizational learning is adaptive learning: a discrepancy between organizational expectations and reality, usually caused by changes in the external environment, motivates processes of adaptive behaviors. This study uses this concept of '*problemistic search*' (Cyert & March, 1963:126) to investigate middle managers' solution finding activities that are stimulated by non-routine problems, defined as novel or unique situations for which current organizational practices and routines do not offer a pre-determined response (Nelson & Winter, 1982).

Recent literature draws considerable attention to learning processes in response to rare events (Lampel et al., 2009), arguing that these are critical situations that distract attention from normal activities by exposing hidden weaknesses normally camouflaged by routine operations. Emphasizing the strategic importance of appropriate responses to non-routine events, it is suggested that: '*much of what really matters in organizations has to do with exceptions, rather than routines ... how exceptions are dealt with proves more important in explaining performance outcomes*' (Felin & Foss, 2009:164). Such unusual situations offer an opportunity for organizations to engage in learning processes, and it is part of management's responsibility to effectively deal with exceptional situations (Delmestri & Walgenbach, 2005) in order to initiate the desired learning activities. Overall, these arguments offer a strong

rationale for investigating middle managers' roles and activities as part of the solution finding in these critical situations.

From the perspective of the middle manager the solution finding process comprises three main steps: classifying the problem, searching for knowledge, and implementing and replicating the solution.

Classifying the problem

Starbuck (2009) argues that many organizations fail to learn from unusual events because individuals may be biased towards a belief that only little can be learned from the particular situation. However, if middle managers experience non-routine problems richly by seeing and making sense of the various different aspects of these complex situations (Beck & Plowman, 2009), the desired learning outcomes are more likely achieved. This necessitates high cognitive efforts by the middle managers who have to cope with the complexities of non-routine problems. The uncertainties and ambiguities inherent in most non-routine problems create a situation whereby defining the dimensions of the problem space can be aided by social interactions with peers who, drawing on their own expertise, can help defining the problem space more accurately (Cross & Sproull, 2004). This process is especially facilitated by lateral interaction with middle management peers (Dunbar & Garud, 2009).

Once the middle managers have specified the non-routine problem, the scope and boundaries of the situation determine the resulting knowledge gaps that can then be addressed in the main search phase.

Searching for knowledge

Knowledge is defined as know-how, expertise or best practice, and - in contrast to information such as financial or operational data - knowledge equates to a skill, a routine or to external market data of strategic value (Gupta & Govindarajan, 1991, 2000). Knowledge can be tacit or codified (Polanyi, 1966).

The searching for knowledge incorporates all actions of looking for and identifying knowledge for potential access and use, and is a distinct phase preceding the actual transfer (Hansen, 1999).

Being close to front-line employees and top management as well as engaged in interactions with peers, middle managers are embedded centrally in the organization's common knowledge exchanges. They often use these lateral and vertical links to gather knowledge (Mom et al., 2007). External knowledge sources also constitute a valuable source of knowledge, and middle managers may complement internal knowledge sources with specific outside expertise (King & Lekse, 2006; Menon & Pfeffer, 2003). For subsidiaries, tapping into external knowledge sources of the host country can prove particularly valuable for learning in that non-redundant and complementary knowledge can be accessed (Almeida & Phene, 2004; Frost, 2001; Kurokawa *et al.*, 2007).

The solution finding process involves the efficient search for a solution (Nickerson & Zenger, 2004). As searching for knowledge creates opportunity costs, the time and effort spent on looking for and evaluating knowledge (Hansen *et al.*, 2005), some studies have explicitly evaluated the effectiveness of knowledge searching activities. It has been found, for example, that individuals whose job requires high intellectual demands, including a lot of variation and non-routineness of tasks, benefit most from sourcing additional knowledge (Gray & Meister, 2004). In addition, it has been demonstrated that the knowledge searching activities to be effective need to be aligned with the envisaged outcome, especially the degree

of novelty and innovativeness of the potential solution (Gray & Meister, 2006) as well as amount of time that can be devoted for the solution development (Haas & Hansen, 2007). Thus, the nature of the particular knowledge needs as well as envisaged outcomes should direct the scope and intensity of the middle managers' searching activities.

Due to the novelty and complexity of non-routine problems, likely creating uncertainties about the exact knowledge needs, the solution discovery often not only involves gathering knowledge, but to generate new knowledge through discovering novel combinations of existing knowledge (Henderson & Clark, 1990). In that respect the search for knowledge represents an opportunity to access unique knowledge of various other organizational members and to produce a situation where knowledge can be cross-pollinated (Okhuysen & Eisenhardt, 2002). The middle managers engage in knowledge conversion processes to create knowledge (Nonaka, 1994).

To increase the chances of identifying unique and valuable knowledge for the creation of novel solutions, subsidiary middle managers need to be willing to access the distributed and diverse knowledge pockets of the MNC. The high degree of knowledge distribution in the MNC poses several challenges to the subsidiary middle managers' knowledge searching efforts.

Being located at the corporate periphery, subsidiary middle managers usually only have a limited pool of knowledge sources geographically co-located at the same site. More likely, the subsidiary middle manager has peers, seniors, direct reports and/or other colleagues that they interact with as part of normal operations dotted around the globe. Also, subsidiaries usually host a limited set of mandates that predefine the nature and scope of knowledge and capability located at the focal site (Gupta & Govindarajan, 2000; van Wijk *et al.*, 2008). Overall, in order to search the vast spectrum of diverse knowledge pockets, the subsidiary middle managers' knowledge searching has to span geographic distance.

While the subsidiary middle manager may have to search distributed knowledge sources, various studies have demonstrated that knowledge flows in MNCs are impeded by geographic distance (cf. Hansen & Løvås, 2004; Monteiro *et al.*, 2008). Knowledge flows are more likely if actors are co-located because interactions are more frequent and intense, which also offers an opportunity for individuals to search for knowledge.

Not only does geographic distance pose a barrier to effective middle managers' knowledge searching, the complexities of knowledge needs may necessitate crossing the boundaries of the managers' specific, own domain. Such a search across boundaries is not straightforward and requires from the middle manager to deal with an increased perceived novelty of knowledge, a situation that adds substantial complexity and ambiguity to the whole knowledge searching process (Carlile, 2002), yet can more likely reward with innovative solutions when valuable, related knowledge is identified.

Although non-routine problems provide the opportunity to develop new solutions, Spender (1989:6) suggests that middle managers are often 'unenterprising in copying others' solution rather than creating new answers for themselves'. This finding is echoed by Menon and Pfeffer (2003) who find that managers prefer copying superior knowledge from others to implement a satisfying solution. Overall, this suggests that to the extent that a solution exists for the particular non-routine problem and can be located through the searching, the middle managers can copy existing knowledge where possible and have to create new solutions when necessary.

Implementing and replicating a solution

The MNC is a network of differentiated units that creates, exchanges and leverages knowledge (Bartlett & Ghoshal, 1989; Ghoshal & Nohria, 1989). To benefit from knowledge related advantages, distributed organizations leverage learning outcomes across the network of globally distributed units (Kogut & Zander, 1993).

The literature on replication of routines suggests that highly localized best practice is less likely transferred because the receiving units lack the absorptive capacity (Foss & Pedersen, 2002). Further, it has been found that best practice is more likely adopted by sister units if it acts as a working example because the template has demonstrated its efficacy and practicability (Jensen & Szulanski, 2007) and if adaptations are undertaken to respond to local institutional and environmental conditions (Kostova & Roth, 2002; Kostova & Zaheer, 1999). It may require significant adaptations of the best practice to instill a sense of identity among the employees of the receiving unit which will then promote its implementation (Becker-Ritterspach, 2006; Becker-Ritterspach et al., 2010).

Conversely to this notion of extensive adaptation, it is also suggested that routines are more effectively replicated if the receiving unit adheres closely, at least initially; to the original best practice until similar performance results are achieved. Only then the best practice should be adapted gradually to the local host environment (Jensen & Szulanski, 2004; Szulanski & Jensen, 2006). This prevents possible negative effects when deviating from the original template because the workings of a practice can be causally ambiguous, making it difficult for managers to understand its complexities and thus predetermine performance implications of adaptive actions.

When replicating best practice, there are two approaches: principles and templates which differ in the appreciation given to the *causal understanding* of why certain actions lead to specific performance outcomes. Baden-Fuller and Winter (2007:4) suggest that replication by

principles means to understand *why* a routine works and to copy the critical underlying mechanisms while remaining more flexible to elements that do not adversely impact on the performance of the original best practice; and replication by templates means to focus on *how* the routine is performed and to replicate the processes of the original best practice as exactly as possible.

Following the micro-level focus of this study, we also investigated, from a knowledge perspective, the middle managers' role in the replication process to further understand how their activities influence how best practice is transferred from the focal subsidiary to other units. Thus, our study helps developing a better understanding of middle managers' actual, knowledge related roles in the replication process, responding to calls for more research on micro-level phenomena in the knowledge replication process (Becker-Ritterspach *et al.*, 2010; Foss & Pedersen, 2004).

To summarize, previous studies have emphasized the value of micro-level examinations of organizational learning processes to advance scholarly understanding of knowledge processes in distributed organizations. Our specific interest in understanding the *activities* and *roles* of middle managers in subsidiaries to generate these learnings, let us to pose two interrelated questions: How do middle managers in subsidiaries solve non-routine problems; and what are the roles of subsidiary middle manager in replicating these solutions?

METHODS

Research design and setting

The exploratory nature of this research was particularly suited to a case study research design (Eisenhardt, 1989; Yin, 2003). The research setting was subsidiaries of four MNCs. We focused on a single industry, the ICT sector, to increase the comparability of findings. The ICT industry offered two advantages. As a dynamic industry (Brown & Eisenhardt, 1997) we

believed that middle managers regularly encounter non-routine problems, allowing to study the phenomenon of interest – solution finding activities in response to novel situations. It is also a knowledge intense sector (Brown & Eisenhardt, 1997), thus providing an attractive setting to study knowledge searching processes.

Having defined the study's population, we then selected four subsidiaries by the principle of theoretical variation for in-depth analysis. The cases were chosen to represent a range of different parameters at the corporate, subsidiary and middle management level to strengthen the emerging theory. Given our interest in studying middle managers' activities, all subsidiaries had to be sufficiently large that there existed a sizeable middle management level. All subsidiaries – here called Epsilon, Gamma, Omega, and Sigma to preserve their anonymity - were wholly owned by their parent organizations.

Data collection

Access to the subsidiaries was negotiated with subsidiary top management. We promised confidentiality in order to encourage extensive access for collecting data and more open and detailed answers of respondents.

Data was collected using a range of data collection techniques: interviews with middle managers, interviews with senior-level informants, and study of archive materials. The whole dataset comprised over 2,200 pages.

We conducted 26 semi-structured interviews with subsidiary middle managers which ranged from 45 minutes to 75 minutes. The interviews gathered material on the particular aspects directly relating to their *specific* non-routine problem. In conducting the interviews a standardized core was followed to the extent that all informants were asked to provide a detailed description of the non-routine problem, their knowledge searching, development of a solution and further involvement in the replication of solutions, where applicable. Within

these categories the interviews remained open to leave sufficient scope for the middle manager to report about their specific activities. Prompts were used when necessary to encourage detailed answers and ensure that accounts were exhaustive. To this end, our initial contact with the subsidiary top management and initial study of archival material gave a broad understanding of the subsidiary strategy and main challenges. This helped to relate to the middle managers in the interview, allowing formulating specific prompts and probes.

To provide against the danger of retrospective bias, we asked middle managers to describe a concrete non-routine problem that occurred during the last twelve months, a recent enough timeframe to allow for a precise recall of events (Huber & Power, 1985; Miller *et al.*, 1997). We sought to further increase the level of accuracy of accounts by focusing on managers' specific actions rather than their opinions, intentions or beliefs (Golden, 1992; Miller *et al.*, 1997).

In the five interviews with senior-level managers like Directors and General Managers we explored in more detail the subsidiary and MNC strategy as well as the outcomes of the solution finding processes.

Moreover, we had the opportunity to review archival material, including selected internal reports, communications, strategy documents, and intranet information which often yielded additional detail on the scope of the non-routine problem and outcomes of the solution finding processes.

Data analysis

The analysis was conducted in NVivo to maintain a case database and manage the data analysis process in a systematic and consistent manner (Sinkovics *et al.*, 2008; Weitzman, 2000). Although the data were coded manually, using software was especially useful for

fragmenting and recoding the data as well as for managing the emerging codes to generate findings iteratively.

As our understanding of the data on the solution finding progressed, we observed differences in the degree to which middle managers approached the non-routine problems in, broadly speaking, ‘local’ or ‘global’ terms. Given that the central tension in international business is managing the simultaneous needs for global integration and local responsiveness (Bartlett & Ghoshal, 1998; Prahalad & Doz, 1987), we felt that this observation of global and local engagements had potentially valuable insights to offer in relation to explaining how subsidiary middle management dealt with these tensions when finding solutions for non-routine problems. Thus, the unit of analysis in this paper is the middle managers’ solution finding activities for non-routine problems that were classified as local and global. The analysis focused on the respective 23 non-routine problems that were part of our dataset. Table 1 provides an overview and brief description of the non-routine problems that were included in this analysis.

Table 1: Summary of non-routine problem data set

Epsilon	Gamma	Omega	Sigma
<ul style="list-style-type: none"> • 3 x developing outsourcing operations • 3 x designing internal processes 	<ul style="list-style-type: none"> • 1 x developing outsourcing operations • 3 x designing internal processes • 4 x developing sales business • 3 x optimizing and automating operations 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 3 x designing internal processes • 3 x optimizing and automating operations
Total = 6	Total = 11	Total =	Total = 6

For the purpose of this paper, the data analysis involved three main steps: (1) micro-level solution finding activities, (2) comparison of problem solving activities for non-routine

problems classified as local and global problem, respectively, and (3) evaluation of middle managers solution finding activities in relation to actual scope of non-routine problem.

Step 1: Micro-level solution finding activities. First, to analyse the micro-level solution finding activities, we examined in detail the middle managers' classification of the non-routine problem, knowledge searching processes, and solution outcomes. Employing inductive qualitative techniques, we developed 'in vivo' codes, to generate a detailed representation of the data (Strauss & Corbin, 2008) and aggregated similar, recurrent codes thematically under broader, thematic categories.

For the classification of the non-routine problems, for example, we analyzed carefully how the middle manager described the particular non-routine problem and then clustered recurrent themes under the *global and local* categories.

When interrogating the data for the searching processes to understand how the middle managers located or developed a solution, we used an activity perspective (Jarzabkowski, 2005) that leans on social practice theory (Bourdieu, 1990). This perspective means examining the actual doings of individuals in the social world. In applying an activity perspective to this study, we analyzed the middle managers' actual activities in terms of searching for a possible solution, particularly their knowledge searching actions. We paid careful attention that we coded only actual *doing* by the middle manager rather than more general comments on organizational knowledge processes. The final categories for these searching activities reflected the *scope, intensity* of the knowledge searching as well as the *degree of collectivist solution finding*.

Each solution finding process was then analyzed in relation to its outcomes. Similar to the analysis of the problem classification, we coded how the middle manager described the scope of the solution and its replication, where applicable, with a view of relating the outcomes to the global and local categories. We corroborated the middle managers' data with

information from other data sources as much as possible to strengthen this analysis (Jick, 1979). For example, if a middle manager described how the developed solution was later rolled out in all other global sister units, we triangulated this information with data from senior management interviews, who also explained the global replication, and archival information, which could often offer additional information like project plans for the same roll out. This helped obtaining a detailed understanding of the middle managers' *role* in this replication phase.

Step 2: Comparison of problem solving activities for non-routine problems categorized as local and global. After the coding of the solution finding activities was completed, we examined if the knowledge searching activities and outcomes differed depending on the middle managers' *ex ante* categorization of the non-routine problem as local or global challenge. Here, the salience of the solution finding activities was assessed in relation to the problem classification.

Step 3: Examination of problem solving activities in relation to actual scope of non-routine problem. To conduct this analysis, we differentiated between the middle managers' *ex ante classification* of the non-routine problem, which reflected how the middle manager categorized the problem and subsequently approached the solution finding, and the *actual scope* of the non-routine problem, a measure for the true dimension of the non-routine problem. This analysis revealed whether the middle managers' solution finding approach matched the actual scope of the non-routine problem. Importantly, the middle manager might categorize the non-routine problem as local, although the actual scope of the challenge is global. To conduct this assessment of the actual scope of the non-routine problem, we triangulated data from the middle management interviews, here carefully interrogating the problem explanations for references to global dimensions, and data from the senior management interviews, here also using references to MNC wide challenges as indicators for

a global scope of the non-routine problem. Overall, we categorized seven of the 23 problem-solving cases as local non-routine problems that were actually of global scope.

Throughout the research process multiple measures were employed to strengthen the trustworthiness of the qualitative data and analysis (Lincoln & Guba, 1985). These included: multiple iterations of data analysis, constant moving back and forth between data and theory, triangulation, protecting the confidentiality of responses, and confirming the validity of the independent case analyses with respondents, including feedback in the subsequent analysis steps.

For illustration purposes the findings are presented in two parts: the first section introduces the middle managers' solution finding activities and the second section the assessment of middle managers' activities in relation to the actual problem dimension.

FINDING ONE: MIDDLE MANAGERS' SOLUTION FINDING

The findings for the middle managers' solution finding *activities* are presented in chronological order: starting with (1) the problem description, followed by (2) the knowledge searching activities and (3) the examination of outcomes.

Step one: Classifying the non-routine problems as local or global challenge


Once the middle managers had become exposed to an unusual situation, they had to define the non-routine problem what involved classifying its nature, scope and boundaries (Beck & Plowman, 2009). The middle managers' problem categorization efforts cumulated in a final description of the challenges that also reflected the middle manager's initial classification of the non-routine problem as either primarily local or global.

If the middle managers categorized the non-routine problem as primarily a '*local challenge*', they usually offered an account of the non-routine problem that outlined the

challenges from a perspective of the individual middle manager or immediate team: *“There has been a lot to learn and a lot to find out about and overcome to make sure that I can do my job”* (Sigma, middle manager 3). Thus, the middle managers scoped the non-routine problem from a personal or subsidiary outlook. Setting local boundaries, the middle managers also envisioned that the discontinuity could only have implications for the local team or focal subsidiary: *“This was an internal drain on our [subsidiary] resources”* (Sigma, middle manager 5). Overall, the middle managers classified the non-routine problem as local.

Conversely, other subsidiary middle managers extended their considerations beyond the focal subsidiary. In addition to the local impact, they further recognized the global implications of the non-routine problem, which was usually indicated by explicit references to how the specific subsidiary non-routine problem is similarly manifested at the corporate level. A middle manager, for example, explained how his particular non-routine problem is in fact affecting the global operations: *“Epsilon is a very security conscious organization. The challenges ... would be in the spread of information so that the core business remains secure.”* (Epsilon, middle manager 1). Once the middle managers acknowledged the global scope of the challenge, they often took the next step towards a truly global classification of the non-routine problems by picturing to develop a solution that could be of global interest or applicability: *“The idea behind that is that we are trying to be consistent across the different regions”* (Gamma, middle manager 2). In this case the middle managers were aware of the benefits of globally integrated learning. All these considerations led the middle managers then to define the originally local non-routine problem as a ‘*global challenge*’ that warranted the search for a broader solution: *“in such a global business you want the question also to be treated globally”* (Gamma, middle manager 6). Table 2 summarizes the findings for middle managers’ classifying of the non-routine problem.

Table 2: Classifying the non-routine problem

		Relevant quote(s)
Increasingly ‘globalized’ classification of middle managers’ non-routine problem 	Local challenge Describing non-routine problem from personal or subsidiary standpoint	“I said that we [local team] will have our own thing. We’ll get lots of emergencies next year, and we’ll control our own destiny.” (Epsilon, middle manager 2)
	Classifying non-routine problem as local challenge	“This was an internal drain on our [subsidiary] resources because whether we processed 1,000 of these internal messages or 100, we got no recognition because it is not the core business. It is something that supports the core business. Our productivity was how many remote services we delivered at the end of the year. So, they [senior management team of focal subsidiary] didn’t care how much time we spent supporting that.” (Sigma, middle manager 5)
	Global challenge Recognizing global dimension of non-routine problem	“It [non-routine problem] is very new to Gamma.” (Gamma, middle manager 4)
	Envisioning global solution for non-routine problem	“It is a continuous effort with other regions to link up. ... So that we just don’t need to duplicate work, because we don’t really believe in that.” (Gamma, middle manager 1)
	Defining problem as global challenge	“If you just look at the country, we will not have an analytic perspective of the issue. How does it behave, for example, in other countries or in other regions? Does it allow you to benchmark and to find patterns? Because at the end of the day, in such a global business you want the question also to be treated globally.” (Gamma, middle manager 6)

Step two: Searching for knowledge to develop a solution

When analyzing the sources of knowledge that the middle managers searched and the activities with the knowledge accessed, it proved usually insufficient to simply copy existing knowledge. The specific and novel context usually required middle managers to build on existing knowledge to adapt or create new solutions. Thus, the findings presented below describe the searching for knowledge to develop solutions.

An integral part of the solution finding process was how the middle managers searched for knowledge to mobilize various distributed knowledge sources to assist their solution development. Our data suggested that there are three categories that described the solution finding activities, including the *searching scope*, *degree of collectivist solution finding*, and *involving global stakeholders*. The next section outlines the findings for each of these categories.

The scope of the knowledge searching described the extent to which the middle manager targeted the various geographically distributed knowledge sources offered by the MNC. The data implied that the middle managers usually first searched co-located knowledge sources. Facilitated by the spatial closeness that promoted frequent and spontaneous interaction, a middle manager recalled: *“We bounce ideas off each other ... You can’t do it on our own. She works with me closely. Be it that she is not a manager, I would say that I use awful lot of her brain to just discuss things, and then we can go together to the meetings.”* (Epsilon, middle manager 3).

Realizing that valuable knowledge may also be located at other sites, the middle managers embarked on searching geographically distant sources. In their search for specialist expertise, one middle manager explained: *“We then also worked with the quantitative marketing team in the US. That’s a highly skilled team of PhDs, statisticians, mathematicians”* (Gamma, middle manager 7). In these cases the knowledge searching

expanded outside the focal unit and also often beyond the particular domain of the middle manager. To locate relevant knowledge under these circumstances regularly involved socializing with previously unknown peers in the search for a new knowledge link: *“We didn’t know how to use it at this time ... I reached out to some people, saying: do you know who does this?”* (Sigma, middle manager 1). The new links could then be used to access knowledge.

Another important characteristic of the middle managers’ solution finding activities was the degree of collectivist solution finding - a category that described the how much the middle manager engaged peers in a group-like solution finding effort over an independent solution finding. In the case where the individual independently tackled the non-routine problem, the solution finding became siloed in that knowledge exchanges were more limited. A middle manager, for example, explained how her peripheral location in the subsidiary resulted in such siloed problem solving actions: *“Since you are cut off from the mothership; everything requires a phone call, everything requires an email; you cannot just stroll to someone’s desk and say: ‘Look, I have a problem, do you know how to handle this?’ You can’t. You always have to make this additional effort. And sometimes you just think: am I gonna ignore it; am I gonna try to solve it myself?”* (Sigma, middle manager 6). In other instances, the middle managers approached the solution development in a more collective manner by encouraging knowledge exchanges in group-like settings: *“What we did was setting up a team to figure out how do we look for these high-potential customers within that base”* (Gamma, middle manager 7). This also promoted bringing together individuals with various specialized knowledge in order to selectively search their particular knowledge when required.

The data revealed that the middle managers’ solution finding activities were further characterised by the involvement of global stakeholders. This occurred, for example, in the

form of generating a global understanding of the non-routine problem through the extension of the search for knowledge from the local particularities to understanding global patterns:

“See how it is working within our remits, and then, once I had a fair understanding of it: how does it also occur in other regions? ... We try to understand also what people are doing, what are the activities, what is the strategy that other people have towards the same business question. Because what we also see is that usually your business question is not unique to you, it is something that is not only shared, but is also happening in other places” (Gamma, middle manager 6). Further, to involve global stakeholders, the middle manager discussed the opportunities for a global replication of potential solutions with global senior management:

“We were developing it for EMEA, but now it’s global. But I think the consensus pretty much came that it wouldn’t make sense if we work in isolation” (Gamma, middle manager 4).

Thus, the involvement of global stakeholders could include the lateral engagement of middle management peers from other sites as well as the vertical engagement of top management.

Table 3 provides a summary of the findings for middle managers’ searching for knowledge.

Table 3: Searching for knowledge for solution finding

Searching categories	Searching activities	Relevant quote(s)
Searching scope	Searching geographically proximate sources	“Even within our department there are seven of us that are line managers. And we would all have various levels of experience. So, we would meet as a group once or twice on how to do things.” (Epsilon, middle manager 5)
	Searching geographically distant sources	<p>“We then also worked with the quantitative marketing team in the US. That’s a highly skilled team of PhDs, statisticians, mathematicians who use mathematical models, decision-tree approach to figure out why advertisers are doing what they are doing.” (Gamma, middle manager 7)</p> <p>“I reached out to some people, saying: do you know who does this? So you drop a few emails, send a few feelers, and I eventually got a guy who is working in Germany.” (Sigma, middle manager 1)</p> <p>“We heavily used a mergers and acquisitions team based in Canada.” (Sigma, middle manager 4)</p>
	Searching for new knowledge link	“We made our way through them ... As we spoke to one person, they gave us another name. And that person again gave us another name. So we were getting referred to other people. Soon enough we built up a network of people.” (Sigma, middle manager 4)
Degree of collectivist solution finding	Collective addressing of knowledge gathering	“And the amount of information that is associated with each area is so vast, is so complex that we, if we talk in university terms, that you have a professor for Sociology; you have another professor for Ethnology. It’s so complex and there is so many issues involved with each of these bundles of information that we need experts. ... There are people in the team who know more or some they know less about certain aspects.” (Gamma, middle manager 1)
	Siloed problem-solving	<p>“Everyone is kind of trying to sort out the issue as best as they can for their area.” (Epsilon, middle manager 1)</p> <p>“It was pretty much my own idea.” (Epsilon, middle manager 2)</p>
Involving global stakeholders		“You cannot work on your own, because there are a lot of dependencies so you actually need to have agreement from other key stakeholders and leverage them to a certain extent.” (Gamma, middle manager 1)

manager 6)

“My boss who is based in home country rang me and said: ‘Up to know it is a very passive idea, so have you got any idea; are there any tools at Sigma that we can use to monitor and track this process so that we can actually get figures and statistics?’” (Sigma, middle manager 6)

The next analysis step involved comparing the solution finding activities for non-routine problems that were classified by the middle managers as local or global, respectively. This investigation uncovered that there were substantial differences in how the middle managers' searching unfolded, depending on the middle managers' ex ante classification of the problem scope. Table 4 summarizes the findings of this comparison.

Table 4: Comparing knowledge search for non-routine problems classified as 'local' and 'global'

Searching categories	Local challenge	↔	Global challenge
Searching scope	Narrow searching <ul style="list-style-type: none"> • Overall often and mainly searching of geographically proximate sources • Only sometimes searching of geographically distant sources • Only sometimes searching for new knowledge links, more using existing personal links 		Broad searching <ul style="list-style-type: none"> • Overall often searching of geographically proximate sources • Intense searching of geographically distant sources • Very often searching for new knowledge link
Degree of collectivist solution finding	Isolating solution finding <ul style="list-style-type: none"> • Often siloed problem-solving, only sometimes collective addressing of knowledge gathering 		Encompassing solution finding <ul style="list-style-type: none"> • Often collective addressing of knowledge gathering • Very often involving global stakeholders

The searching for knowledge to deal with local challenges was characterized by a narrow scope, mainly confining the searching to geographically proximate sources with geographic distant searching and activities of seeking new knowledge links remaining rare. Often, the middle manager pursued a siloed problem solving and only sometimes engaged peers in a more collective solution finding effort.

When tackling a global challenge instead, the middle managers engaged in a broad searching that targeted geographically proximate and distant knowledge sources. Very often the middle manager searched for a new knowledge links and involved global stakeholders.

Step three: Scope of solution

Our data suggested that there are three categories that characterize the scope of the solution: *local solutions*, *globalization of local solution* and *global solution*.

Initially categorizing the challenge as local, the middle manager subsequently geared the solution finding activities towards developing solutions of local applicability. An illustrative example included: *"I have written a management guide for the host country"* (Sigma, middle manager 2).

In some cases the middle manager expected that the developed local solution is not only beneficial for the focal site, but may additionally appeal to other global units. This was an ex post evaluation in that after the non-routine routine problem was solved locally, demonstrating the positive impact of the solution, the middle manager chose to promote the solution to global peers and global senior management. A middle manager explained how his team created awareness of the new solution among global peers: *"We had informed everyone that we have in the management team [globally]: that is what is going on, and that is how we are doing it, and that is how it makes it simpler"* (Sigma, middle manager 1). The middle managers also described this process as *"giving our best practice"* (Sigma, middle manager 5) that peer units can equally use the new knowledge and benefit from the associated performance improvements.

The local solutions may be context laden solutions that were specifically tailored to the specific non-routine problem context of the focal unit. To replicate these local solutions globally, it was usually necessary to adapt the subsidiary best practice to suit global or local requirements of other countries. As a middle manager expressed: *"There were a few things that needed to be changed ... There are a lot of different regional or even country wide differences"* (Sigma, middle manager 1). Expanding the solution out of its original context, thus, necessitated additional modifications to the existing knowledge structure, and our data

suggested that these adaptation efforts fell largely within the remit of the managers at the receiving units. The role of the middle manager of the focal unit centered on providing (making available) a proven solution for replication.

Other solutions were of global scope in that they represented a generic knowledge grid, a basic knowledge structure that could be useful in various local contexts. This generic knowledge structure was then adapted to the different demands of the multiple locations. An illustrative example included: *“By keeping it in a standardized way of approaching selling that means that we have approached that problem in all regions, it means that it also works in the home country. We kept it pretty generic”* (Gamma, middle manager 7). In cases where the global operations were highly integrated, the subsidiary middle managers created a standardized solution that *“would then be implemented across the board and becomes a standardized process at the end. ... It would affect global locations”* (Sigma, middle manager 6). A summary of the findings pertaining to the middle managers’ is provided in table 5.

Table 5. Scope of solution

		Relevant quote(s)
	Local solution	“The tool that was delivered locally in Ireland was about really understanding where we were spending our time, where the weak points were? ... We are at this stage now, where we with this local dashboard, have understood that we can reduce our own workload.” (Sigma, middle manager 5)
Increasing 'globalization' of middle manager's solution	Globalization of local solution	
	Promoting local solution globally	“We are at this stage now where we ... presented this exact same information to the other centres. Our Global Director, he has used this information, and now he can access it. And we have given our best practices.” (Sigma, middle manager 5)
	Adapting local solution to global and multi-local requirements	“We are now building this tool for global management” (Sigma, middle manager 5)
	Global solution	“We now expanded it out of the pilot regions into more regions. And we have started to create specialist roles and new role career paths within Gamma to do this type of work.” (Gamma, middle manager 7)

FINDING TWO: LOCALISED SOLUTION FINDING FOR GLOBAL CHALLENGES

After having analyzed the middle managers' solution finding activities and compared these activities for non-routine problems classified by the middle managers as primarily local or global, in the next analysis step we considered the middle managers' activities in relation to the actual scope of the initial challenge. Essentially this involved assessing if the middle managers' approach to finding a solution reflected the real scope of the initial non-routine problem.

Our data implied that in about two thirds of the cases the middle managers' solution finding activities reflected the real scope of the non-routine problem, meaning that a local challenge obtained a local solution, and a global challenge a global solution. Yet in the remaining third of cases, the middle manager treated an actually global non-routine problem as a local challenge. This occurred despite acknowledging the global dimension of the particular challenge: subsidiary middle managers still constrained to tackling their immediate local challenge without a strong consideration of a global solution finding. Overall, this suggested that there are two approaches of how middle managers deal with actually 'global' non-routine problems. These are summarized in table 6 and now introduced in more detail.

Table 6: Middle managers' different solution finding approaches for 'global' problems

Problem scope	Global non-routine problem	
Middle managers' approaches	<i>Cell 1</i>	<i>Cell 2</i>
	<p>'Global' solution finding</p> <ul style="list-style-type: none"> • Solution developed becomes a regional or global solution Solution extends beyond focal subsidiary unit 	<p>'Local' solution finding</p> <ul style="list-style-type: none"> • Solution mainly used by the local team or focal subsidiary • Only sometimes middle manager tried to promote solution globally - activities to globalize local solution: • Promoting local solution globally

In *cell 1* of the table, the middle manager classified the actually global non-routine problem as such. The solution finding activities followed the typical pattern which reflected the global scope, accordingly developing a solution that extended beyond the focal unit and could be replicated across regions or even globally.

The *cell 2* signifies the most intriguing findings. Despite a global dimension of the problem which was acknowledged by the middle managers, they, however, classified and treated the problem as local and developed a local solution initially. This solution was responsive to the specific local context and thus used by the teams at the focal subsidiary. Only sometimes it was then tried to promote these initially local solution globally, which required adaptations to suit global or other country contexts. Overall, nearly half of all actually global non-routine problems were treated by the middle managers as local challenges.

DISCUSSION

The objective of this study was to move beyond the macro-level focus of the MNC organizational learning literature which tended to look at organizational level determinants of knowledge processes and knowledge flow patterns. In particular, this study accounted for the social nature of knowledge processes by examining knowledge related activities at a micro-level. In particular, we were interested in understanding the middle managers' *role* and *activities* in organizational learning processes – an area in the need of a deeper understanding of micro-level knowledge processes (Felin & Foss, 2005, 2009; Friedman, 2001).

We unravel the detailed dynamics of middle managers' solution finding *activities*, thereby offering detailed insights in how their problem classification influences knowledge searching and solution development actions.

To summarize the finding for the middle managers' solution finding activities, the data suggested that the middle managers' classification of the non-routine problem as either local or global influenced the pattern of their knowledge searching activities. In the case of problems treated as local, knowledge searching tended to be narrow and isolated; whereas for problems treated as global the middle managers' searching tended to be broader, encompassing peers and other stakeholders. Thus, we found that the middle managers' actions in exploring the global dimensions of a local problem and embarking on finding a global solution, shaped the knowledge searching activities and scope of final outcome. In the sections that follow, we discuss the findings of the middle managers solution finding activities in more detail and link them directly the relevant theory on knowledge processes and organizational learning.

We finally build on these insights to describe subsidiary middle managers' different *roles* in the replication process, thus extending the knowledge replication literature. Similar to the foregoing arguments of a lack of studies on micro-level activities, there is currently limited research that explicitly examined the role of individuals in the knowledge replication processes (Becker-Ritterspach *et al.*, 2010; Foss & Pedersen, 2004). Thus, our study helps developing a better understanding of middle managers' actual, knowledge related roles in the replication process.

Classification of problem to either 'negotiate distance' or become 'trapped in local rigidity'

We found that the middle managers' solution finding approach differs substantially depending on the classification of the non-routine problem as local or global. The data suggested that categorizing a problem as 'global' stimulated a knowledge search that is broad, searching and integrating MNC wide knowledge pockets whereas the knowledge searching for local problems remained more restricted to local knowledge sources.

Our finding that proximity influences which sources the middle managers prefer targeting is similar to suggestions of other scholars (cf. Hansen & Løvås, 2004; Monteiro *et al.*, 2008) who found that geographic distance between MNC units hinders the exchange of knowledge because of less frequent face to face interaction which offers a channel for rich interaction. Extending previous insights, however, we argue that the categorization of a problem as 'global' seemed to provide the middle managers with a rationale to '*negotiate distance*': if a problem was defined as global, the *perceived* geographic distance between different units seemed to shrink for middle managers, leading to the 'paradox of far-but-close' (Wilson *et al.*, 2008:979). This perceived closeness then promoted knowledge search across spatial distance. This finding implies that proximity has a more subjective and micro-level connotation than currently accepted by most researchers in the IB field who largely treat geographic distance as organizational level, structural contingency beyond the individual's immediate influence rather than a more subjective concept. The findings of our study suggest that the negative impact of intra-organizational distance on knowledge flows can be mediated by the individual through a global purpose of the searching for knowledge.

Conversely, if the middle manager classified a problem as local, the data implied that this confined the solution finding to a primarily narrow and proximate knowledge searching. Thus, we argue that the middle managers may become '*trapped in local rigidity*' whereby the same, primarily co-located knowledge sources are accessed repeatedly. In the light of the novel and complex knowledge demands that non-routine problems pose, such a pattern in

middle management knowledge searching can cause inertia and rigidities (Leonard-Barton, 1992) because it leads to an insufficient influx of different and diverse knowledge to promote new knowledge generation, ultimately impeding the subsidiary's and multinational's ability to successfully enhance its capabilities.

This finding clearly highlights the critical role of the interpretation of non-routine problems. Starbuck (2009:935) argues that successful organizational learning occurs if individuals 'escalated an idea from one situation to a larger category', a broad and imaginative interpretative process that we also observed if middle managers explored the possible global dimensions of their specific, originally local challenges before eventually categorizing the non-routine problem in global terms. Further, the findings emphasize the role of middle managers' agency in taking the next logical step and to pursue a globalized solution finding once the global scope of the particular problem was recognized.

Localized solution finding for 'veiled' global challenges can lead to fragmented learning

The data suggested that there are a substantial number of challenges which were actually global, but obtained a 'local' solution (cell 2, table 6). We call these challenges '**veiled global**' challenges, because often the middle manager was aware of the true scope of the non-routine problem, meaning that in their quest for an interpretation of the situation they recognized the actually global scope, yet still approached the solution finding from a local perspective.

This can potentially lead to fragmented and distributed learning and knowledge accumulation in MNCs. The danger of fragmentation is one of the major challenges in managing the complexities of MNCs and occurs if interdependencies between units, businesses, and countries are not exploited by management (Prahalad & Doz, 1987). For the findings of this study this implies that if subsidiaries develop their own solution to the same

organization-wide problem, knowledge accumulation in the MNC can become disjoint. This may be particularly the case if locally developed knowledge is highly context sensitive and difficult to generalize or to adapt to the demands of other countries, creating additional barriers for the global integration of knowledge. It can also cause solution finding efforts becoming duplicated.

Linking middle managers' solution finding activities to their role in knowledge replication (principle and template)

The solution finding processes for actually *global* problems can be classified by the timing of the involvement of global stakeholders: When did the middle managers' action reflect the global scope of the problem? The data suggested that this was either at the problem definition stage (cell 2) or after the solution discovery if a local solution was promoted globally (cell 1). This timing has important implications for the cognitive efforts needed by the middle manager during the solution finding and on the later replication via templates or principles (Baden-Fuller & Winter, 2007).

In cell 1, the middle managers often developed new best practices which represented a context-laden development of new knowledge. In the few cases where the middle managers tried to promote this local solution for global replication, the middle managers' role became, what we term, '*local template promoters*' because they marketed a proven solution – a working best practice – for global uptake. We argue that they promoted largely templates because they showed little causal understanding of how their local solution might have to be adapted to global needs. The middle managers, thus, anticipated that successful replication in other units depends mostly on close adherence to their original best practice.

In cell 2, instead, the middle managers dealt with the problem from the outset as a global challenge, and their solution finding involved globally dispersed and varied knowledge

sources as well as global stakeholders to develop a solution that was suited for more immediate replication. The subsidiary middle managers were engaged in high cognitive efforts because they had to understand the causal relationships between the causes of a problem and possible outcomes not only for their local context, but also from a worldwide perspective. In a collaborative and global solution finding effort, the middle managers acted like, what we call, '*global principles creators*', because they had to understand *why* a certain solution can work in all countries concerned, dynamically and flexible integrating knowledge into a new structure. They often aimed to develop a generic, yet flexible knowledge structure that simultaneously allowed for global integration (replication of core), while maintaining flexibility for adaptation to specific contexts (local responsiveness).

These discussions extend the replication literature (Baden-Fuller & Winter, 2007; Jensen & Szulanski, 2004; Jensen & Szulanski, 2007) by shedding light on the different roles played by middle managers in initiating and facilitating the replication of best practice. Previous research suggested that best practice may be only hesitantly adopted by sister units because they only insufficiently respond to local specifics (Kostova & Roth, 2002; Kostova & Zaheer, 1999) and require significant adaptation to encourage successful implementation (Becker-Ritterspach, 2006; Becker-Ritterspach et al., 2010). Also, highly localized best practice is less likely transferred because the receiving units lack the absorptive capacity (Foss & Pedersen, 2002). We argue that by creating a global principle - a broadly supported solution by global management groups - these replication challenges can be remedied.

Further, the findings of this study have implications for the scholarly understanding of recontextualisation – the adaptation of best practice to the local context. Literature usually suggests that the recontextualisation occurs at the replication stage of the best practice when it is adapted to the receiving units' specific demands – a pattern that we observe in the case of middle managers' creation of a local solution (cell 1). Yet, as the global solution development

(cell 2) implies, this recontextualisation effort also takes place during the solution finding stages where middle managers liaise with global stakeholders and peers in sister sites to understand their counterparts' specific needs to then create a generic, yet flexible principle.

Overall, illuminating the roles of subsidiary middle managers in creating and replicating best practice directly relates to learning processes in MNCs. Extending discussion of the transnational solution, the findings of this study contribute by pointing out the activities at subsidiary middle management level and how they relate to achieving a balance between global integration and local responsiveness. More precisely, if acting like a 'local template promoter', the subsidiary middle manager drives the global integration of learning because a local solution becomes globally shared. Similarly, by being a global principle creator, the middle manager engages in a globally integrated solution finding effort.

Implications for Practice

The most pertinent implications originate from the finding that middle managers' solution finding activities affect the level of organizational learning not only in the focal subsidiary but worldwide. It clearly demonstrates the contribution subsidiary middle managers make towards initiating and contributing to MNC learning processes. Yet, top management need to be aware that creating worldwide learning is not an automatic process, but needs to be promoted through appropriate recognition and incentive structures.

The findings of this study, that subsidiary middle managers are often aware of the global dimension of non-routine problems, demonstrated that subsidiary middle managers can develop an extensive international exposure and become intimately familiar with the various international interdependencies of their own operations. Nevertheless, as the findings implied, these global challenges often obtained local solutions. It is thus likely that the everyday operational performance pressures on middle managers geared their solution

finding towards immediate solutions. Spender (1989:33), for example, argues that ‘managers are not really interested in the ultimate truth about a specific situation ... instead they are more interested in the “cash value” of a particular way of thinking, in whether it works and helps them towards their goals’. This also suggests that subsidiary middle managers need to be appropriately incentivised in order to achieve the desired global learning outcomes.

MNC top management should lead subsidiary middle managers in a way that encourages them to pay attention to interdependencies with sister units, other lines of business, and other countries. In order to increase subsidiary middle managers’ interest to act interdependently and beyond their immediate local needs, their evaluation criteria may include the contribution to the group or more generally their global mindset needs to be strengthened (Prahalad & Doz, 1987).

When subsidiary middle managers promoted an initially local solution globally, it appeared to be more an opportunistic behaviour, a welcomed side effect, than an initial intention. Although it can also lead to shared, worldwide learning benefits and act as a vehicle to demonstrate the value creation of the focal subsidiary, the global solution finding process had another important side effect. As our findings demonstrated, creating a global solution involved a holistic engagement and intimate relationship building with global senior management, global middle management peers and other global expert units. It was also associated with the searching for new links which represented an opportunity to develop relationships which can then become the conduit for further knowledge exchanges. This observation lends support for an argument by Gynawli et al. (2009) who suggest that the subsidiary’s ability to create voluntary, peer to peer ties beyond the ties implied by the formal MNC structure is a critical antecedent of the subsidiary’s ability to exchange knowledge and develop strategic importance. For management practice this implies to fully appreciate the

benefits of a global solution development means to recognize these positive and longer term networking and profile building effects.

For middle managers the findings imply to become aware of how the classification of the challenge influences the solution finding approach, especially to recognize how a classification of a non-routine problem as 'local' and envisioning a local solution tends to evoke knowledge searching activities that are narrow and isolated, mainly neglecting the possibilities of using globally distributed sources. While a global scope of the non-routine problem may help to 'negotiate distance', a local scope of the problem, conversely, does not mean that the middle managers has to become 'trapped in local rigidities'. It is thus critical to recognize that such a searching bias can occur and to overcome possible negative effects by remaining open to tapping into organization-wide knowledge pockets.

In addition, it is important that subsidiary middle managers realize the contribution their activities and roles make towards developing the knowledge base and capabilities of the MNC. While managing the international interdependencies fell traditionally more in the remit of subsidiary and HQ top management, subsidiary middle managers are also directly or indirectly exposed to the complexities of worldwide operations. This incorporates the notion that their influence may stretch beyond their direct authority (Prahalad & Doz, 1987), if for example, they create a global solution and consequently solve issues that are beyond their formal responsibility. It also includes the view that subsidiary middle managers can expand their own personal network and profile internationally when leading the development of a global solution.

Limitations

As with all case study research, further research is needed to establish the generalizability of these findings to other contexts. At the same time, we expect that the

findings are of broader relevance. First, the phenomenon under investigation – subsidiary middle managers’ solution finding – is expected to similarly occur in other industries, especially in sectors that are characterized by moderate and high dynamism. Second, all subsidiary middle managers need to deal with the interdependencies of international operations and dispersion of knowledge that are the basic characteristics of any MNC.

A limitation of this study certainly is that in the case of global non-routine problems that were dealt with locally, our data does not permit to determine exactly when the middle manager became aware of the ‘global’ dimension (ex ante, during or ex post the solution finding). We believe, however, that this does not influence the conclusions because the findings suggested that it is also important for local non-routine problems to encourage middle managers to engage in a broad searching that involves global stakeholders and knowledge pockets. Even if the subsidiary middle manager does not immediately conceptualize the global scope of the non-routine problem, a solution finding that embraces global knowledge sourcing, as suggested by our study, will help to more accurately determine the scope of the challenge, to reformulate the problem in a way that is broader and multi-dimensional (Cross & Sproull, 2004).

Conclusion

The findings clearly demonstrate that the middle managers’ different knowledge related activities and roles can either enhance or impede integrated and global learning. Thus, advancing our understanding of learning processes in distributed organizations means more fully embracing the middle managers’ diverse micro-level activities. This certainly seems to present a fruitful avenue for further research.

Overall, the study shows how middle managers’ problem solving activities can balance the need for local responsiveness (if the solution solves a problem that was originally

identified locally) and global integration (if solutions are replicated globally or the solution was output of a global engagement). Managing these tensions was usually conceptualized as being of MNC top management responsibility. Our findings suggest that organizational learning research in the field of international business and management practice need to acknowledge the contributions subsidiary middle managers' problem solving activities can make towards integrated organizational learning in the MNC and allow for a view of the 'transnational perspective' (Bartlett & Ghoshal, 1998:232) that transcends hierarchical levels.

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