

ORIGINS OF HRM CAPABILITIES IN FOREIGN MNC UNITS: DO MICRO-FOUNDATIONS MATTER?

Abstract

As organizational capabilities have in previous research been associated with differential outcomes in terms of value creation and firm performance, shedding light on their origins remains a priority for the literature. We seek to address this research gap by providing empirical evidence on the role of individual and social-interactional level micro-foundations for capability development. More specifically, we examine the role of individual level accumulation of experience and interpersonal-level social capital on MNC-unit-level strategic HRM capabilities. Using quantitative data from leading Nordic MNCs, we find that individual level accumulation of experience and meso-level relational social capital are significantly related to unit-level strategic HRM capability. Our findings thus support the argument that micro-foundations matter.

Introduction

The strategic management literature has seen a surge of attention in the concept of organizational capabilities in recent years (Dosi, Nelson & Winter, 2000; Eisenhardt & Martin, 2000; Nelson & Winter, 1982; Teece, Pisano & Shuen, 1997; Zollo & Winter, 2002). This interest stems from the recognition that capabilities are key contributors for differences in firm behavior and consequent outcomes. For example, extant research suggests that organizational capabilities contribute to learning and innovation (Leonard-Barton, 1992; Levitt & March, 1988; Nelson & Winter, 1982; Pisano, 2000), organizational change (Henderson & Stern, 2004; Teece *et al.*, 1997), and ultimately to variation in financial performance and competitive advantage (Eisenhardt & Martin, 2000; Levinthal & March, 1993).

Consequently, the question of where organizational capabilities come from becomes a fundamental concern for both theory and practice. The literature has emphasized the role of strategic management in adapting, integrating, modifying and reconfiguring the firm's capability base, and in this vein, mechanisms such as the

accumulation of experience, internal and external resources, and dynamic capabilities (Zahra & Nielsen, 2002; Teece *et al.*, 1997; Zollo & Winter, 2002) have been put forth as important determinants. However, while these advances have undoubtedly increased our understanding of capability development, much remains to be done, and a number of scholars have called for more research, in particular concerning explanations that go beyond correlations between collective-level variables (Abell *et al.*, 2008; Felin & Foss, 2005, 2009).

Specifically, the role of individual and interpersonal level micro-foundations as determinants of organizational capabilities has been underexplored (Abell *et al.*, 2008; Felin & Foss, 2005, 2009). Recent literature has argued for the fundamental role of individual action and interaction as explanatory variables for organizational phenomena that are rooted in social mechanisms (Felin & Foss, 2005; Felin & Hesterly, 2007; Foss, 2007). Yet, there is very little empirical research considering these micro-foundations of organizational capabilities. We seek to address this research gap by examining individual and social-interactional determinants of unit-level strategic HRM capabilities. In the following, we first review previous literature on the foundations of organizational capabilities in general and those of strategic HRM capabilities in particular, leading to a number of hypotheses being put forth. We then present our data and methodology, a quantitative analysis of individual and social-interactional level drivers of strategic HRM capabilities within 86 foreign units of leading Nordic multinational corporations (henceforth MNC). Finally, we present our findings and discuss their implications for theory and practice.

Foundations of organizational capabilities

Capabilities, and the related notion of routines, have become central concepts in much of the strategic management literature recently (Dosi *et al.*, 2000; Nelson & Winter, 1982). While definitions and approaches vary (see e.g., Dosi *et al.*, 2000), capabilities are typically regarded as relatively stable patterns of collective activity, with causal relations to firm-level outcomes (Zollo & Winter, 2002). Further, organizations are viewed as repositories of capabilities, with heterogeneity in organizational capabilities leading to or at minimum contributing to differential outcomes such as financial performance, innovation and competitive advantage (Eisenhardt & Martin, 2000; Nelson & Winter, 1982; Teece *et al.*, 1997). In this sense, capabilities “fill the gap between intention and outcome”, and are typically seen to be “shaped by conscious decision both in [their] development and deployment” (Dosi *et al.*, 2000, 1-2), differentiating them from organizational routines which are seen as less related to deliberate and conscious choice than internalized and institutionalized ways of ‘how things are done here’ (Abell *et al.*, 2008; Dosi *et al.*, 2000).

Consequently, in addition to the obvious interest in the capabilities-outcome linkages, the origins of organizational capabilities become a central concern: in order to consciously develop capabilities to achieve desired outcomes, it is crucial to understand where capabilities come from and what determines how they come about. Surprisingly, however, there is relatively little work done on the origins of capabilities, and empirical evidence is lacking (Zollo & Winter, 2002). The dominant literature discusses internal and external selection environments as determining and influencing the development of capabilities in a context dependent way (e.g., Helfat & Peteraf, 2003), and that new

capabilities evolve from existing ones through accumulated experience (Zollo & Winter, 2002) in a path dependent and co-evolutionary manner (Kogut & Zander, 1992, 1995; Nelson & Winter, 1982). Furthermore, firms may possess dynamic capabilities which enable firms to modify and reconfigure their existing capability bases (Teece *et al.*, 1997).

Apart from these relatively abstract conjectures, there is little research on the determinants of organizational capabilities, and in particular, explanatory mechanisms that look at underlying mechanisms beyond reduced-form macro-variables (Abell *et al.*, 2008). In fact, the emergent micro-foundations literature argues forcefully that macro-level explanations alone are not sufficient in explaining organizational outcomes without an explicit attention to individual action and interaction, as they merely provide a shorthand for mechanisms that take place at lower levels of analysis (Abell *et al.*, 2008; Felin & Foss, 2005, 2009; Felin & Hesterly, 2007). What is more, this line of thought responds to the ‘methodological collectivism’ of the dominant capability research by arguing that a deeper understanding of organizational processes “cannot be reached *in lieu* of a starting point in individuals” (Foss, 2007, 43).

Seeking to contribute to this “search of micro-foundations” (Felin & Foss, 2005) we examine a number of factors at the individual and social-interactional levels potentially contributing to the development of strategic HRM capabilities in multinationals. A single capability focus has also been used in other empirical studies in the field (see e.g., Heimeriks & Duysters, 2007, on alliance capabilities), and allows us to specify potential antecedents at lower levels of analysis, making the arguably highly elusive phenomenon of capabilities more observable. Our focus on strategic HRM capabilities may be particularly revealing not only because the field of HRM is

becoming increasingly interlinked with strategic management (Wright, Dunford & Snell, 2001) but also because it has a natural interest in people and their interactions (Mäkelä & Brewster, 2009). Furthermore, despite the acknowledged importance of capabilities, the question of how they come to exist has received surprisingly little attention in previous IHRM research (Morris, Snell & Wright, 2006).

Development of theoretical framework

There has been a notable interest in the link between (strategic) human resource management and firm performance in the HRM field recently (e.g. Delery & Doty, 1996; Guthrie, 2001; Huselid, 1995; Youndt, Snell & Lepak, 1996), with a number of scholars arguing that HRM capabilities are a potential source of competitive advantage for firms (Ulrich, Brockbank, Yeung & Lake, 1995; Wright *et al.*, 2001). The literature tends to differentiate between operational (functional or professional) HRM capabilities which are associated with the delivery of traditional HRM practices, and strategic HRM capabilities which refer to the firm's or unit's ability to align HRM activities with the business strategies of the firm (Huselid, Jackson & Schuler, 1997; Sumelius, Björkman & Smale, 2008), and which are the particular interest of our paper. As Huselid *et al.* (1997) point out, although strategic capabilities have a far greater potential to affect performance-related outcomes, they tend to be generally less developed than operational HRM capabilities.

Indeed, although the HR-performance link has been extensively researched, we know much less about the sources of HRM capabilities (Roehling *et al.*, 2005; Ulrich *et al.*, 1995), and in particular of strategic HRM capabilities. While operational capabilities are inevitably a necessary pre-requisite for HRM to become more strategic

(Ulrich, 1997), we suggest in the following that individual and social-interactional micro-foundations can play a key role in determining strategic HRM capabilities at the unit level. More specifically, although there are a number of micro-level factors (such as individual traits, beliefs and motivations, or interpersonal homophily) that may potentially influence organizational level outcomes, we focus on two factors that previous research has shown to be particularly salient. First, experience accumulation has been suggested as a central driver for capability development (e.g., Zollo & Winter, 2002), and we extend this theorization to the individual level. Second, recent advances have shown that social capital can play a key role in various macro-level outcomes (e.g., Kostova & Roth, 2003; Nahapiet & Ghoshal, 1998), and we build on this literature to examine the role of interpersonal level interaction in the development of unit-level strategic HRM capabilities. Our theoretical model is summarized in Figure 1 below, and discussed in more detail in the next section. A number of hypotheses are developed for empirical testing.

- INSERT FIGURE 1 ABOUT HERE -

Individual level: accumulation of experience

There is general agreement in the literature that the accumulation of experience is a key aspect of capability development (Zollo & Winter, 2002). Experience accumulation is inherently linked to learning: direct or indirect inferences from history are incorporated into routines that guide behaviour (Levitt & March, 1988; Levinthal & March, 1993). Routines, in turn, reflect experience in that they are the result of past learning and “the selection and retention of past behaviours” in a path-dependent way (Gavetti &

Levinthal, 2000, 113; see also Zollo & Winter, 2002). Furthermore, scholars differentiate between adaptive (lower-level or single-loop) learning which is more automatic, tacit and typically responsive to changes in the environment; and proactive (double-loop or higher-level) learning, which is associated with the questioning and modification of underlying beliefs and expectations (Argyris & Schön, 1978; Fiol & Lyles, 1985). Both are related to the evolution of capabilities in that the former drives more incremental and adaptive changes whereas the latter allows deliberate and target-oriented development (Zollo & Winter, 2002).

We do not as such wish to engage in the considerable debate over the evolution or dynamism of capabilities (or indeed the definitions of and distinctions between the various related constructs; see Eisenhardt & Martin, 2000; Dosi *et al.*, 2000), but rather argue for the primacy of individuals in the accumulation of experience. In other words, we suggest that while experience may also accumulate collectively in the form of routines, individual level accumulation of experience matters. This argument is rooted in methodological individualism: as organizations are social entities (Kogut & Zander, 1993) intentional and purposeful human action must be the fundamental building block of organizational phenomena without which there is no collective (Felin & Foss, 2005). While we agree with the dominant knowledge-based literature (e.g. Kogut & Zander, 1993; Levitt & March, 1998) that the whole is more than the sum of the parts and individuals within organizations cannot be understood independently of their organizational context, the opposite is also true: organizations cannot be understood independently of the fundamental building block of individuals and their interaction.

More specifically, Felin & Hesterly (2007) argue that heterogeneity at the individual level can be an important driver for organizational outcomes. They show that

the question of ‘who’ has far-reaching consequences for organizational trajectories. From this perspective, individuals are far from randomly distributed, homogenous and malleable as typically depicted in dominant capability research, but rather self-selected and attracted to certain environments (Felin & Foss, 2005), to the extent that knowledge and capabilities can be acquired through key individuals (Song, Almeida & Wu, 2003).

This argument is fully in line with the underlying assumption of most of the HRM literature contending that human capital, referring to the skills and knowledge of the firms’ employees, is one of the primary resources for firms (e.g., Wright *et al.*, 2001). In addition, organizations place substantial effort in putting the right people in the right positions through increasingly sophisticated HRM activities (e.g., Scullion & Collings, 2006; Wright *et al.*, 2001), which would not be worth doing if people in fact were randomly distributed and homogenous.

Therefore, we argue that the accumulation of experience at the level of key individuals is a key determinant of organizational (unit) level strategic HRM capabilities. Experience is a key part of individual ability which has in previous literature been shown to influence organization capabilities such as knowledge transfer (Argote & Ingram, 2000; Argote, McEvily & Reagans, 2003). We focus specifically on three aspects of the unit HR managers’ experience, namely organizational tenure, foreign work experience, and work experience within HRM. The importance of tenure in the organization has been widely acknowledged in the literature (Biemann & Wolf, 2009), and long experience of working within an organization has been suggested to result in a high level of organization specific knowledge (Gupta, 1984), which we argue is conducive to the development of strategic HRM capabilities. International experience is increasingly viewed as an important tool for developing managers in MNCs (Jokinen,

Brewster & Suutari, 2008), helping them grasp the complexity of the MNCs worldwide operations. Further, foreign work experience is considered to enhance the understanding of what capabilities are needed for operating in a global environment as well as provide an opportunity to develop the necessary capabilities (Carpenter, Sanders & Gregersen, 2000). Finally, we argue that experience of working with HRM-related matters creates a necessary base which enables the development of more strategic capabilities, as operational capabilities have been argued to be a necessary pre-requisite for a more strategic role (Ulrich, 1997). Against this background, we propose the following hypotheses:

Hypothesis 1: The HR manager's tenure in the MNC will be positively associated with the level of strategic HRM capabilities in the unit

Hypothesis 2: The HR manager's level of foreign work experience will be positively associated with the level of strategic HRM capabilities in the unit

Hypothesis 3: The HR manager's level of HR work experience will be positively associated with the level of strategic HRM capabilities in the unit

Social-interactional level: structural and relational social capital

In addition, social-interactional factors, and particularly social capital, have been put forth in previous literature as potentially important determinants of various organizational outcomes (Brass *et al.*, 2004; Kang, Morris & Snell, 2007; Kostova & Roth, 2003; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). While issues of aggregation and emergence (referring to patterns of interaction between HR actors *within* a particular unit) remain outside the scope of this study, we contend that the interaction *between* HR actors in a unit and relevant other actors both firm-internally and across-firms is a potentially powerful determinant of unit-level strategic HRM capabilities. As a case in point, Brass *et al.* (2004) argue that inter-unit ties not only

consist of, but often are a function of interpersonal relationships. It is worth noting at this stage that while the above looked at the accumulation of experience at the individual level, here we consciously focus on the meso-level: it makes sense to examine interactions of the group of individuals that deal with HRM issues in a unit rather than one key actor to get a more complete picture, as the combinatory effect of different interactions can have an effect beyond individual relationships. Obviously, the principal HR actor will play a central role in these, but his or her interactions will inevitably be supported with and complemented by interactions of other people involved with HRM issues in the unit.

In broad terms, the term social capital refers to assets embedded in relationships (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998), and the concept has been a subject of considerable interest in the social sciences recently (see e.g., Portes, 1998, for a review of the origins of the concept). The theoretical umbrella has been used in a variety of research fields, considering both individual social capital as well as the social capital of groups, organizations, and even nations (e.g., Bourdieu, 1983; Burt, 1992; Coleman, 1988; Putnam, 1995). In this paper we adopt an interpersonal perspective, and focus on social capital that is embedded in the bridging relationships that provide connections between the group of people dealing with HRM issues in the focal unit and the corporate HR function (Adler & Kwon, 2002; Burt, 1992; Granovetter, 1973). The corporate HR function plays a central role in developing and coordinating the firm's overall HRM capability base, and thus provides a key source of knowledge, as well as insights and best practices in terms of linking HRM with business strategy (Sumelius *et al.*, 2008).

In line with Kostova & Roth's (2003) micro-macro model, we suggest that interpersonal level social capital can have important consequences for organizational level outcomes. Their theoretical framework posits that boundary spanning interpersonal interaction within MNCs builds individual social capital, from which also other colleagues in the interaction partners' units can consequently benefit. Thus, interpersonal level inter-unit linkages enable access to knowledge and resources for not only the boundary spanning individuals but also for colleagues in the respective units, and by doing so facilitate collaboration, coordination and the building of organizational trust (Kostova & Roth, 2003). In more generic terms, structural social capital (Nahapiet & Ghoshal, 1998), referring here to the extent of interaction, should lead to more knowledge sharing across unit boundaries, leading to other organizational outcomes.

Indeed, a number of previous studies have shown that the extent of interaction between organizational units or groups increases knowledge sharing between them (e.g., Hansen, 1999; Nahapiet & Ghoshal, 1998; Reagans & McEvily, 2003; Tsai & Ghoshal, 1998), and it has further been suggested that people are among the most important carriers of this knowledge (Doz *et al.* 2001). For example, Reagans & McEvily (2003) showed that strong relationships with frequent interaction facilitated the sharing of explicit and tacit knowledge between groups, with Hansen (1999) finding that the strength of the interaction relationship, characterized by frequent interaction, influenced the sharing of tacit knowledge in particular. Furthermore, and importantly, Tsai and Ghoshal (1998) identified that the frequency of interaction and the closeness of social-interaction ties amongst managers of two MNC units had a significant positive effect on

knowledge exchange between them, and that this had positive consequences for value creation at the organizational level.

Within the area of IHRM, research on the role of social capital for various HRM outcomes, including the development of strategic HRM capabilities, remains scarce despite its acknowledged importance (Morris *et al.*, 2006), and Lengnick-Hall & Lengnick-Hall (2006) posit that especially more empirical studies are needed to shed light on social capital in connection with HRM. Nevertheless, in a conceptual paper Björkman & Lervik (2007) proposed a positive relationship between the level of structural social capital between MNC headquarters and a foreign unit and the level of implementation, internalisation and integration of MNC headquarters' HRM practices in the unit. Further, in a study on foreign MNC units in located in China, Sumelius *et al.* (2008) found that interaction between HR managers in the foreign unit and managers at corporate headquarters increased knowledge sharing between them about HRM practices and their link to unit business strategy, leading to an increased capability to act strategically at the unit level. Thus, we put forth the following hypothesis:

Hypothesis 4: The level of structural social capital between key actors in the unit and the corporate HR function will be positively associated with the level of strategic HRM capabilities in the unit

Furthermore, as several scholars suggest (Inkpen & Tsang, 2005; Nahapiet & Ghoshal, 1998; Uzzi, 1997; Uzzi & Lancaster, 2003), it is not only the extent of interaction that matters, but also the quality of the relationships. In particular, relational social capital, typically operationalized as trust, has been shown to be a powerful driver of various organizational outcomes (e.g., Kang et al., 2007; Nahapiet & Ghoshal, 1998;

Tsai & Ghoshal, 1998). For example, Uzzi (1997) and Uzzi & Lancaster (2003) established that embedded interpersonal relationships characterized by a high level of trust were associated with more exchange of knowledge and resources than arms-length relationships. Furthermore, as Zaheer, McEvily & Perrone (1998) suggest, trust encourages knowledge and resource exchange by making interaction partners more willing to share.

In the context of MNCs, and more specifically the headquarters-subsidary relationship, Björkman & Lervik (2007) suggest that relational social capital will have a positive influence on foreign units' adoption of HRM knowledge from headquarters in the shape of HRM practices. This could mean that a high level of relational social capital, which is characterized by a high level of trust, makes the foreign MNC unit positively inclined towards the knowledge coming from headquarters, for instance believing it to really be valuable and useful. The existence of trust also means that there is no suspicion in the unit of the headquarters passing on knowledge to benefit its own purposes. In sum, we pertain to the argument that the relational dimension of social capital enables the development of trust that is crucial for the flow of tacit knowledge (Lengnick-Hall & Lengnick-Hall, 2006), which in turn stands as a base for enhancing capabilities. Consequently, we suggest the following hypothesis:

Hypothesis 5: The level of relational social capital between key actors in the unit and the corporate HR function will be positively associated with the level of strategic HRM capabilities in the unit

Method

Data collection

This study is based on data collected within the frame of a large scale multilevel research project on global HRM in fifteen Nordic MNCs. The collection of data for the project is ongoing and the data used in this conference paper was gathered between April and June 2009. During this time interviews were conducted with both the general manager and the HR manager of 86 foreign units of 10 MNCs. This constitutes just over half of the intended final sample. The data collection process is estimated to be completed in early autumn 2009.

The first step in the data collection process was to identify the twenty largest Finnish MNCs in terms of number of employees. We also determined that the scope of their international operations was suitable for the purpose of our project. Our aim was to gain access to 10 units in 10 MNCs, and the result was that 9 MNCs chose to participate in the project with a total of 95 foreign units. In the second phase, we targeted additional Swedish and Norwegian MNCs of similar size to increase comparability, with 3 Swedish and 3 Norwegian MNCs joining the project. The resulting fifteen Nordic MNCs represent a variety of industries, ranging in size from 2,500 to 60,000 employees and have units in approximately 30 different countries. Characteristics of the participating units are provided in Table 1.

- Insert Table 1 about here –

Interviews were conducted over the telephone using two separate structured questionnaires: one was used for the unit general manager, and one for the person who was identified as the key actor for HR issues concerning each respective unit (referred to as the HR manager for the sake of simplicity in the following). The respondents were identified by a corporate HR representative who acted as our main contact person during the project. The questionnaires were developed through multiple rounds of iterations based on an extensive literature review, and pre-tested and debated both within the 6-person research team and in pilot interviews with two external managers in equivalent positions to the respondents. Based on these pilot interviews no major changes were made to the questionnaire but a few questions were reworded.

The questionnaire language was English, and interviews were structured so that the interviewer and respondent went through the questionnaire together over the telephone. The interviewer filled in the responses into the questionnaire whilst the respondent simply had the questionnaire in front of him/her to ease the process. In general, it took between 20 and 45 minutes to fill out the questionnaire. The language used during the interviews was primarily English, with Finnish, Russian and Swedish used in some cases for the purposes of clarification.

The main advantages of collecting data in this way are that fewer questions are left unanswered and the interviewer is able to clarify possible queries that the respondent may have (Webster, 1997). Furthermore, the procedure served to ensure that the questions were answered by the intended respondent. One limitation of this approach in the context of the current study is that seven people were involved in conducting the interviews which implies a potential inter-interviewer bias (Fowler, 1988). To alleviate this potential problem, we made extensive efforts to ensure

consistency between the interviewers. For instance, in the beginning of the data collection process we held extensive discussions in order to ensure the same interpretation of terms and definitions, and this was followed up throughout the process with weekly discussions on emerging questions and issues.

Operationalizations

Podsakoff, MacKenzie, Lee & Podsakoff (2003) posit that a potentially serious source of common method bias is the use of single respondents. Furthermore, Yang, Wang & Su (2006) argue that the inclusion of multiple respondents in surveys strengthens the validity of reported relationships. In line with this we operationalized our dependent variable based on responses from the unit general managers and the independent variables based on responses from unit HR managers (or more specifically, the key actor within HR in each respective unit). Furthermore, as the HR managers were selected by a third party (corporate HR representative) rather than the general managers of the units in question, this provided another source of validity in terms of psychological separation (i.e., a perceived disconnection) between the predictor and criterion variables (Podsakoff *et al.*, 2003).

Dependent variable

Strategic HRM capabilities. The operationalisation of strategic HRM capabilities was adapted from previous research (Becker & Huselid, 1998; Huselid *et al.*, 1997; Mitsuhashi *et al.*, 2000). We asked unit general managers to rate the current capabilities of the HR function in *i) analysing the environment and its impact on subsidiary HRM making an explicit effort to align business and HRM strategies, ii)*

developing HRM initiatives that contribute to achieving current and future business goals, and iii) performing ongoing evaluations of the alignment of HRM practices and the business strategies of the unit. The questions were answered on a 7-point Likert scale where 1 = “poor” and 7 = “excellent”. The Cronbach’s alpha value for this construct was 0.88.

Independent variables

Tenure in the MNC. We measured tenure in the MNC by asking respondents how many years they had been working in the corporation.

HR experience. To measure the HR managers’ HR experience we divided the length of their work experience within HR with the length of their total work experience (both within and outside HR), controlling for total work experience (see below).

Foreign work experience. We measured foreign work experience by asking the respondents to indicate if they had i) *no foreign work experience*, ii) *1-6 months foreign work experience*, iii) *7-24 months foreign work experience*, or iv) *more than 24 months experience of working abroad* and operationalized it as an ordinal variable in our regression.

Structural social capital. Structural social capital between the managers involved in HR issues within the unit with managers at corporate HR was measured by asking the unit HR managers the extent to which managers from their unit and corporate HR i) *have frequent face-to-face meetings together*, ii) *have frequent telephone/video conference contact with each other*, and iii) *frequently participate in committees/project teams/communities of practice with each other*. The questions were answered on a 7-point Likert scale where 1= “do not agree” and 7 = “agree entirely” (the scale being

adapted from Gupta & Govindarajan, 2000), and the construct had a Cronbach's alpha value of 0.73.

Relational social capital. Following previous work (McAllister, 1995; Tsai & Ghoshal, 1998), we measured the relational social capital between the managers involved in HR issues within the unit and managers at corporate HR by asking unit HR managers to indicate their extent of agreement on the following statements: *i) Managers from our unit and corporate HR have a sharing relationship; they both freely share ideas, feelings and hopes about their operations, ii) In general, managers from our unit and corporate HR can rely on each other without any fear that they will take advantage of each other even if the opportunity arises, and iii) In general, managers from our unit and corporate HR will always keep the promises they make to each other.* These questions were answered on a 7-point Likert scale where 1= “do not agree” and 7 = “agree entirely”, and the alpha value for this construct was 0.83.

Control variables

We included three unit level control variables in the study. Firstly, we controlled for *unit size*. Following Gupta & Govindarajan (2000) who argue that larger units have a greater pool of resources to draw from for the creation of new knowledge, we argue that the size of the unit could positively influence the development of unit HRM capabilities. To obtain a more normal distribution for the variable and decrease the high variation in size we measured unit size by calculating the natural logarithm of the number of employees. Second, we controlled for the influence of *unit age* using the number of years that the unit had been part of the MNC. As older units tend to have amassed more experience in dealing with a variety of business and people issues, unit

age was deemed an appropriate (although imperfect) proxy for controlling unit-level accumulation of experience. Third, we also controlled for the relative size of the unit HR function. We measured this by dividing the number of people working at least fifty percent of their time with unit HR issues with the total number of employees in the unit. We argue that since larger units are likely to have a larger HRM workload than smaller units using the relative rather than absolute size of the HR function better enables us to capture the relationship between the workload and the number of people working with unit HR issues. The rationale behind this argument is that the more time the HR unit has to spend on operational issues, the less opportunities they have for building their strategic capabilities.

In addition to unit level effects we also controlled for relevant factors at the social-interactional and individual levels. At the social-interactional level, we controlled for the *participation in external networks* (in the host country) of those managers who were involved in HR issues within the unit. This is in line with previous studies (e.g. Sumelius *et al.*, 2008) which found a positive relationship between the level of strategic HRM capabilities in the unit and participation in networks with other MNCs.

In relation to individual heterogeneity, which has in previous research been argued to be an important but overlooked explanatory factor (e.g. Felin & Hesterly, 2007), we controlled for both the HR manager's total experience and two individual ability-related variables. The rationale for controlling for the HR manager's *total work experience* was that HR managers with more fragmented careers (i.e. with both HR and non-HR work experience) may be more or less strategically orientated than managers with HR experience only. Second, as education is an important aspect of individual ability (Minbaeva *et al.*, 2003), we controlled for the level of professional training of the

unit HR managers by including two dummy variables. The first was coded so that units in which the HR manager had an MBA were assigned the value 1 and units in which this was not the case were set to 0. Similarly, the second dummy variable was coded so that units in which the HR manager had had HRM training lasting for more than one month received the value 1 with others receiving the value 0.

Results

In order to assess the effects of the hypothesized variables we conducted a multilevel analysis using general linear regression with fixed effects. The general linear model is a generalization of the linear regression model, in which effects can be tested for both categorical and continuous predictor variables. Therefore, as we have a nested dataset in which the observed units belonged to fifteen different MNCs, the general linear modelling approach allowed the conducting of a multilevel analysis, controlling for exogenous company effects through the categorical blocking variable ‘company’.

The correlation matrix of the variables in the study indicates that all correlations in the model were below .90. This suggests that our model does not suffer from a serious collinearity problem since Hair *et al.* (1998) suggest that the first indication of substantial collinearity is correlations above .90. Furthermore, all the variance inflation factor (VIF) values were low, between 1.107 and 2.584 in the full model, and the tolerance values all below 1. The correlation matrix and some descriptive statistics of the variables in this study are presented in Table 2.

- INSERT TABLE 2 ABOUT HERE -

Table 3 presents the results of the general linear regression model, with the parent corporation included as a fixed factor in the analysis. In order to separate the effects of control and independent variables we estimated two separate models; a baseline model in which we included the control variables only (Model 1), and the full model all independent and control variables (Model 2). We report the result of the full model ($F = 1.673, p < .10$); as discussed, we are in the middle of the data collection process with around 50% of the data collected, so these results should be seen as indicative only with more robust results expected with a higher number of observations .

- INSERT TABLE 3 ABOUT HERE -

In Hypothesis 1 we posited that the unit HR manager's tenure in the MNC will be positively associated with the level of strategic HRM capabilities in the unit. The hypothesis is supported ($B = 0.043, p < 0.05$), as the analysis shows that units in which the HR manager has longer experience of working in the MNC have higher levels of strategic HRM capabilities. Similarly, our results showed support for Hypothesis 2 which hypothesized that the level of the unit HR manager's foreign work experience will be positively associated with the level of strategic HRM capabilities in the unit ($B = 0.375, p < 0.05$). Further, the results also showed support for Hypothesis 3 ($B = 0.015, p < 0.05$). This indicates that the unit HR manager's work experience within HR has a significant and positive influence on units' strategic HRM capabilities.

In Hypothesis 4 we suggested that the level of structural social capital between key actors in the unit and the corporate HR function will have a positive influence on the unit's strategic HRM capabilities. The results, however, were not supportive ($B = -$

0.077, $p > 0.10$) and Hypothesis 4 is therefore rejected. Conversely, the results for Hypothesis 5 were significant ($B = 0.268$, $p < 0.05$), indicating support for the argument that relational social capital between the managers involved in HR issues within the unit and managers at corporate HR has a positive influences on strategic HRM capabilities in the unit. Although we can only speculate, the results seem to indicate that it is not so much the quantity of interaction but its quality that matters, and more research is called for. Of the control variables the size of the unit was significantly and positively associated with the level of strategic HRM capabilities in the unit ($B = 0.421$, $p < 0.05$), whereas the other control variables did not show any significant influence on the dependent variable.

Discussion

The objective of this paper was to empirically examine individual and social-interactive determinants of unit-level strategic HRM capabilities in MNCs. As organizational capabilities have in previous research been associated with differential outcomes in terms of value creation and firm performance, shedding light on their development remains a priority for the literature, to which we sought to contribute by providing empirical evidence on the role of micro-foundations as capability determinants. Our findings support the argument put forward by methodological individualists (e.g., Coleman, 1990) that individual and social-interactive level micro-foundations matter. More specifically, focusing on the key HR actor in 86 MNC units, we found that individual level accumulation of experience is a significant determinant of unit-level strategic HRM capabilities. This finding is in line with Zollo & Winter's (2002) argument that the accumulation of experience is a central element of capability

development. However, while the dominant capability literature has typically focused on organizational level accumulation of experience in the form of routines, in which individual actors have been seen as secondary and inter-changeable, we show that the question of ‘who’ (Felin & Foss, 2005, 2009) has significant consequences at the organizational level. We certainly buy the argument that established routines outlive the turnover of people, but – and importantly –in line with Felin & Foss (2005, 2009) we contend that this may depend on ‘who turns over’. In other words, our findings show that individual level micro-foundations matter, at least what comes to key individuals.

In additional to the individual level, we also examined two important social-interactive factors, namely whether the structural and relational social capital between the managers involved with HRM issues in the observed units and managers in the corporate HRM function. We found relational social capital significant whereas structural social capital was not, and speculated that it may be not so much the extent of interaction in itself but the quality of the relationship that matters; however, more research is called for in this respect. In fact, with our dataset, we were only able to scratch the surface of one aspect of social interaction, which is inevitably a much more complicated issue involving interactions between interactions. What is more, we focused on inter-unit interaction (controlling for firm-external interaction) only, while unit-internal interaction between the different actors involved with HRM in the unit were outside the scope of this study. The aggregation and emergence of inter-unit interactions is likely to play a significant role in capability development, and remains a key challenge for future research.

The limitations of our study are as follows. First, our empirical dataset is at this stage of the research process fairly limited and the empirical findings should be

reviewed with caution; the full dataset of approximately 150 observations should alleviate some of these concerns. Second, we have focused on one particular capability (unit-level HRM capability), which allowed us to go down in the level of analysis. However, it may be that HRM capabilities are by nature more people-oriented, and the role of individuals and interpersonal interaction may be less relevant for other types of capabilities. On the other hand, the dominant HRM research has perhaps surprisingly also tended to focus on organizational level conjectures such as the configuration of high-performance practices (Huselid, 1995), their ‘fit’ with firm strategy (Wright et al., 2001) or the strength of the overall HRM signaling effect (Bowen & Ostroff, 2004) in terms of HRM capabilities, rather than individual or interpersonal level micro-foundations (Mäkelä & Brewster, 2009). Third, our data comes from fifteen Nordic MNCs (albeit with internationally dispersed units) and findings from other cultural settings, such as those associated with higher power-distance, may be different. These limitations represent fruitful areas of future research.

Finally, our findings provide some practical implications for MNCs. First, although evidence is still incomplete, it seems that key actors do indeed matter for the development of organizational capabilities. This means that the building of human and social capital should be a key concern for multinationals also from the capability development point of view (Wright *et al.*, 2001), for example through such HRM practices as global staffing and talent management. This is, of course, what companies do already now – suggesting that individual have long mattered in practice if not always in theoretical models.

References

- Abell, P., Felin, T. & Foss, N.J. 2008. Building microfoundations for the routines, capabilities, and performance links. *Managerial and Decision Economics*, 29: 489-502.
- Adler, P. & Kwon, S-W. 2002. Social capital: prospects for a new concept. *Academy of Management Review*, 27: 17-40.
- Argote, L., & Ingram, P. 2000. Knowledge transfer: a basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes*, 82: 150-169.
- Argote, L., McEvily, B., & Reagans, R. 2003. Managing knowledge in organizations: An integrative framework and review of emergent themes. *Management Science*, 49: 571-582.
- Argyris, C. & Schön, D. A. 1978. *Organizational learning*. Reading, MA: Addison-Wesley.
- Becker, B. & Huselid, M. 1998. High performance work systems and firm performance: a synthesis of research and managerial implications. In Ferris, G.R. (ed.) *Research in Personnel and Human Resource Management*, JAI Press, Greenwich, CT, 16: 53-101.
- Biemann, T. & Wolf, J. 2009. Careers patterns of top management team members in five countries: an optimal matching analysis. *International Journal of Human Resource Management*, 20: 975-991.
- Björkman, I. & Lervik, J-E. 2007. Transferring HRM practices within multinational corporations. *Human Resource Management Journal*, 17: 320-335.
- Bourdieu, P. 1983. The forms of capital. Originally published as *Ökonomisches Kapital, kulturelles Kapital, soziales Kapital*, in Kreckel, R. (Ed.) *Soziale Ungleichheiten*. Goettingen: Otto Schartz & Co., 183-198. Reprinted in Granovetter, M. & Swedberg, R. (2001) *The Sociology of Economic Life*. Cambridge, MA: Westview Press.
- Bowen, D. & Ostroff, C. 2004. Understanding HRM-firm performance linkages: the role of the strength of the HRM system. *Academy of Management Review*, 29: 203–221.
- Brass, D., Galaskiewicz, J., Greve, H. & Tsai, W. 2004. Taking stock of networks and organizations: a multilevel perspective. *Academy of Management Journal*. 47: 795–817.
- Burt, R. 1992. *Structural Holes*. Cambridge, MA: Harvard University Press.
- Carpenter, M., Sanders, W. & Gregersen, H. 2000. International assignment experience at the top can make a bottom-line difference. *Human Resource Management*, 39: 277–285.

- Coleman, J. 1988. Social capital in the creation of human capital. *American Journal of Sociology*, 94: 95-120.
- Coleman, J. 1990. *Foundations of social theory*. Cambridge, MA, London: Belknap Press of Harvard University Press.
- Delery, J. & Doty, H. 1996. Modes of theorizing in strategic human resource management: tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal*, 39: 802-835.
- Dosi, G., Nelson, R. & Winter, S. 2000. Introduction: the nature and dynamics of organizational capabilities. In G. R. Dosi, R. R. Nelson, and S. G. Winter (Eds.), *The nature and dynamics of organizational capabilities*. Oxford: Oxford University Press.
- Doz, Y., Santos, J. & Williamson, P. 2001. *From Global to Metanational*, Harvard Business School Press: Boston, MA.
- Eisenhardt, K. & Martin, J. 2000. Dynamic capabilities: What are they? *Strategic Management Journal*, 21: 1105-1121.
- Felin, T. & Foss, N.J. 2005. Strategic organization: A field in search of micro-foundations. *Strategic Organization*, 3: 441- 455.
- Felin, T. & Foss, N.J. 2009. Organizational routines and capabilities: historical drift and a course-correction toward micro-foundations. *Scandinavian Journal of Management*, 25: 157-167.
- Felin, T. & Hesterly, W.S. 2007. The knowledge-based view, nested heterogeneity, and new value creation: Philosophical considerations on the locus of knowledge. *Academy of Management Review*, 32: 195-218.
- Fiol, C. & Lyles, M. 1985. Organizational learning. *Academy of Management Review*, 10: 803-813.
- Foss, N.J. 2007. The emerging knowledge governance approach: challenges and characteristics. *Organization*, 14: 29–52.
- Fowler, F. 1988. *Survey Research Methods*. Newbury Park, CA: Sage
- Gavetti & Levinthal, 2000. Looking forward and looking backward: cognitive and experiential search. *Administrative Science Quarterly*, 45: 113-137.
- Granovetter, M. 1973. The strength of weak ties. *American Journal of Sociology* 78: 1360–1380.
- Gupta, A.K. 1984. Contingency linkages between strategy and general manager characteristics: a conceptual examination. *Academy of Management Review* 9: 399-412.

- Gupta, A.K. & Govindarajan, V. 2000. Knowledge flows within multinational corporations. *Strategic Management Journal*, 21: 473–496.
- Guthrie, J. 2001. High-involvement work practices, turnover, and productivity: evidence from New Zealand. *Academy of Management Journal*, 44: 180-190
- Hair, J., Anderson, R. E., Tatham, R. L. & Black, W. 1998. *Multivariate Data Analysis with Readings*. New Jersey: Prentice-Hall.
- Hansen, M. 1999. The search-transfer problem: the role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 44: 82-111.
- Heimeriks, K. & Duysters, G. 2007. Alliance capability as mediator between experience and alliance performance: An empirical investigation into the alliance capability development process. *Journal of Management Studies*, 44: 25-49.
- Helfat, C. & Peteraf, M. 2003. The dynamic resource-based view: capability lifecycles. *Strategic Management Journal*, 24: 997-1010.
- Huselid, M. 1995. The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38: 635-672.
- Huselid, M., Jackson, S. & Schuler, R. 1997. Technical and strategic human resource management effectiveness as determinants of firm performance. *Academy of Management Journal*, 40: 171-188.
- Inkpen, A. & Tsang, E. 2005. Social capital, networks and knowledge transfer. *Academy of Management Review*, 30: 146-165.
- Jokinen, T, Brewster, C. & Suutari, V. 2008. Career capital during international work experiences: contrasting self-initiated expatriate experiences and assigned expatriation. *International Journal of Human Resource Management*, 19: 979-998.
- Kang, S-C., Morris, S. & Snell, S.A. 2007. Relational archetypes, organizational learning, and value creation: extending the human resource archetype. *Academy of Management Review*, 32: 236-256.
- Kogut, B. & Zander, U. 1992. Knowledge of the firm, combinative capabilities and the replication of technology. *Organization Studies*, 3: 383-397.
- Kogut, B. & Zander, U. 1993. Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24: 625-646.
- Kogut, B. & Zander, U. 1995. Knowledge, market failure and the multinational enterprise: A reply. *Journal of International Business Studies*, 26: 417–426.

- Kostova, T. & Roth, K. 2003. Social capital in multinational corporations and a micro-macro model of its formation. *Academy of Management Review*, 28: 297-317.
- Lengnick-Hall, M. & Lengnick-Hall, C. 2006. International human resource management and social network/social capital theory. In Stahl, G. and Björkman, I. (eds), *Handbook of Research in International Human Resource Management*: 475-487. Cheltenham, UK: Edward Elgar Publishing Ltd.
- Leonard-Barton, D. 1992. Core capabilities and core rigidities: a paradox in managing new product development. *Strategic Management Journal*, 13 (Summer Special Issue): 111-125.
- Levitt, B. & March, J. 1988. Organizational learning. *Annual Review of Sociology*, 14: 319-340.
- Levinthal, D.A. & March, J.G. 1993. The myopia of learning. *Strategic Management Journal*, 14 (Winter Special Issue): 95-112.
- McAllister, D. 1995. Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38: 24-59.
- Minbaeva, D., Pedersen, T., Björkman, I., Fey, C. & Park H.J. 2003. MNC knowledge transfer, subsidiary absorptive capacity, and HRM. *Journal of International Business Studies* 34: 586-99.
- Mitsuhashi, H., Park, H.J., Wright, P. & Chua, R. 2000. Line and HR executives' perceptions of HR effectiveness in firms in the People's Republic of China. *International Journal of Human Resource Management*, 11: 197-216.
- Morris, C., Snell, S. & Wright, P. 2006. A resource-based view of international human resources: toward a framework of integrative and creative capabilities. In Stahl, G. and Björkman, I. (eds), *Handbook of Research in International Human Resource Management*: 433-448. Cheltenham, UK: Edward Elgar Publishing Ltd.
- Mäkelä, K. & Brewster, C. 2009. Interunit interaction contexts, interpersonal social capital, and the differing level of knowledge sharing. *Human Resource Management*, 48: 591-614.
- Nahapiet, J. & Ghoshal, S. 1998. Social capital, intellectual capital and the organizational advantage. *Academy of Management Review*, 23: 242-266.
- Nelson, R. & Winter, S. 1982. *An evolutionary theory of economic change*. Cambridge, MA: The Belknap Press.
- Podsakoff, P., MacKenzie, S., Lee, J-Y. & Podsakoff, N. 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88: 879-903.

- Portes, A. 1998. Social capital: its origins and applications in modern sociology. *Annual Review of Sociology*, 24: 1-24.
- Putnam, R.D. 1995. Bowling alone: America's declining social capital. *Journal of Democracy*, 6: 65-78.
- Reagans, R. & McEvily, B. 2003. Network structure and knowledge transfer: the transfer problem revisited. Working paper, Columbia University, New York.
- Roehling, M., Boswell, W., Caligiuri, P., Feldman, D., Graham, M., Guthrie, J., Morishima, M. & Tansky, J. 2005. The future of HR management: Research needs and directions. *Human Resource Management*, 44: 207-216.
- Scullion, H. & Collings, D.G. 2006. *Global Staffing*. Abingdon, UK: Routledge.
- Song, J., Almeida, P. & Wu, G. 2003. Learning by hiring: when is mobility more likely to facilitate interfirm knowledge transfer? *Management Science* 49: 351-365.
- Sumelius, J., Björkman, I. & Smale, A. 2008. The influence of internal and external social networks on HRM capabilities in MNC subsidiaries in China, *International Journal of Human Resource Management*, 19: 2294-2310.
- Teece, D., Pisano, G. & Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18: 509-534.
- Tsai, W. & Ghoshal, S. 1998. Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41: 464-476.
- Ulrich, D., Brockbank, W., Yeung, A. & Lake, D. 1995. Human resource competencies: An empirical assessment. *Human Resource Management*, 34: 473-495.
- Ulrich, D. 1997. *Human Resource Champions*. Boston, MA: Harvard University Press.
- Uzzi, B. 1997. Social structure and competition in interfirm networks: the paradox of embeddedness. *Administrative Science Quarterly*, 42: 35-67.
- Uzzi, B. & Lancaster, R. 2003. Relational embeddedness and learning: the case of bank loan managers and their clients. *Management Science*, 49: 383-399.
- Webster, C. 1997. Effects of researcher presence and appeal in response quality in hand-delivered, self-administered surveys. *Journal of Business Research*, 38: 105-114.
- Wright, P., Dunford, B. & Snell, S. 2001. Human resources and the resource based view of the firm. *Journal of Management*, 27: 701-721.
- Yang, Z., Wang, X. & Su, C. 2006. A review of research methodologies in international business. *International Business Review*, 15: 601-617.

- Youndt, M.A., Snell, S.A., Dean, J.W. & Lepak, D.P., 1996. Human resource management, manufacturing strategy, and firm performance. *Academy of Management Journal*, 39: 836-866.
- Zaheer, A., McEvily, B. & Perrone, V. 1998. Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organizational Science*, 9: 141-159.
- Zahra, S.A. & Nielsen, A.P. 2002. Sources of capabilities, integration and technology commercialization. *Strategic Management Journal*, 23: 377-398.
- Zollo, M. & Winter, S. 2002. Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13: 339-352.

Figure 1.

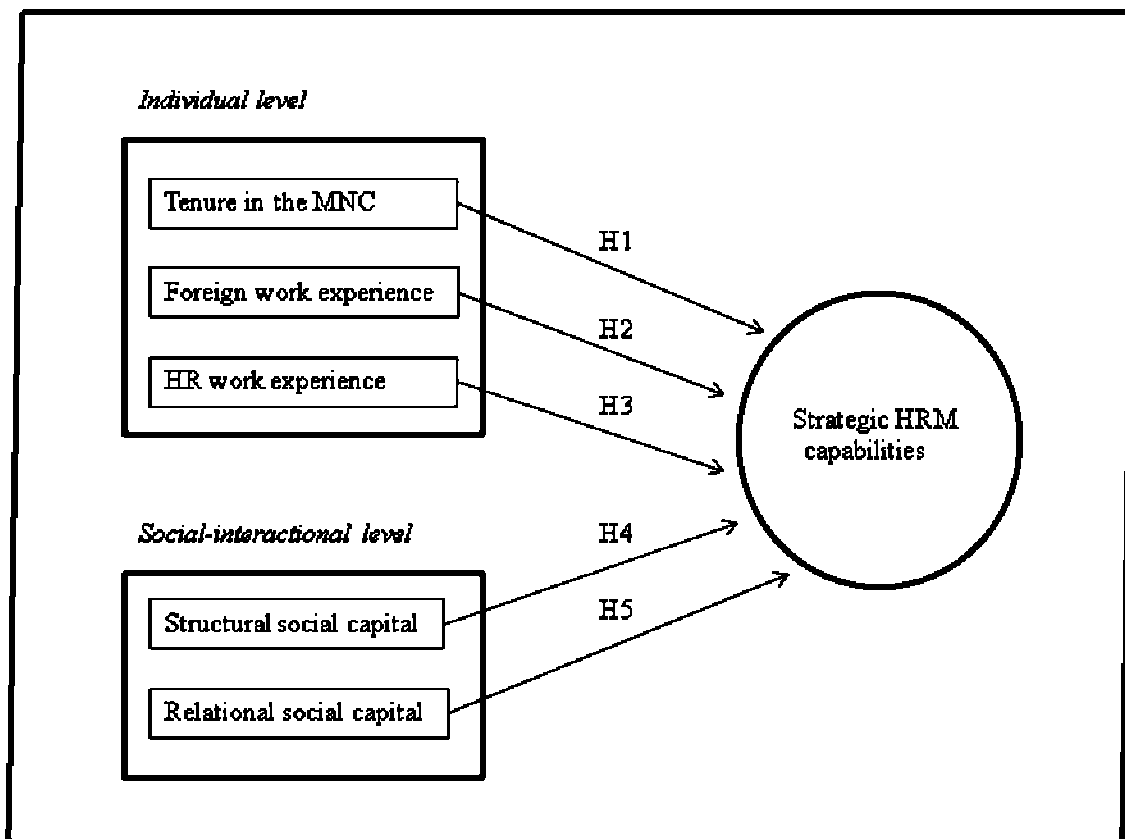


Table 1. Characteristics of sample units

N = 86	Category	%
Unit size (no. employees)	<100	16.3
	100-500	43.0
	501-1000	18.6
	>1000	22.1
Expatriate presence (no. foreign managers)	0	33.7
	1-5	43.0
	6-10	11.6
	>10	11.6
Unit age (years in the MNC)	< 5 years	14.0
	5-10 years	12.8
	11-20 years	32.6
	> 20 years	40.7
Size of the HR function (no. people)	1	22.1
	2-5	41.9
	6-10	18.6
	>10	17.4
Joint venture	Yes	1.2
	No	98.8
Acquisition	Yes	47.7
	No	52.3
Nationality of HR mgr	Host country	89.5
	Parent country	4.7
	Third country	5.8

Table 2. Means, standard deviations and Pearson correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Means	4.80	8.46	1.59	68.63%	3.67	5.00	3.94	5.79	23.63	1.41	20.90	0.21
sd	1.19	7.92	1.00	25.30%	1.51	1.29	1.27	1.34	23.73	1.19	8.73	0.41
1. Strategic HRM capabilities												
2. Tenure in the MNC	0.07											
3. Foreign work experience ¹	0.18	0.09										
4. HR experience	0.19	-0.05	-0.13									
5. Structural social capital	0.14	-0.06	-0.16	0.05								
6. Relational social capital	0.22*	-0.04	-0.08	0.06	0.53**							
7. External networks	-0.23	0.08	0.00	0.21*	0.15	0.14						
8. Unit size ²	0.17	-0.11	-0.16	0.13	0.38**	-0.08	0.24*					
9. Unit age	0.16	0.06	-0.05	0.11	0.11	0.01	-0.02	0.20				
10. Size of the HR function	-0.05	-0.08	0.10	-0.02	-0.13	0.00	-0.20	-0.61***	-0.08			
11. Total work experience	-0.13	0.42**	-0.05	-0.22*	-0.01	-0.05	0.16	0.09	-0.11	-0.16		
12. MBA	0.00	-0.10	0.15	0.02	-0.09	-0.08	0.04	-0.08	-0.09	0.22*	-0.20	
13. HR training	-0.06	-0.03	0.16	0.11	-0.15	-0.05	0.08	-0.01	-0.03	0.03	0.10	-0.18

All two-tailed tests. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

¹ Foreign work experience is measured as an ordinal variable

² Unit size is measured as the natural logarithm of number of employees

Table 3. Regression models

	Model 1. Controls only			Model 2. Full model		
	B	Std. error	<i>t</i> -statistic	B	Std. error	<i>t</i> -statistic
Company ³			NS			NS
Tenure in the MNC				0.043	0.021	2.079*
Foreign work experience				0.375	0.145	2.587*
HR experience				0.015	0.006	2.469*
Structural social capital				-0.077	0.134	-0.570
Relational social capital				0.268	0.130	2.063*
External networks	-0.057	0.116	-0.495	-0.187	0.111	-1.676+
Unit size	0.234	0.178	1.315	0.421	0.183	2.304*
Unit age	0.005	0.006	0.760	0.003	0.006	0.536
Size of the HR function	0.075	0.158	0.474	0.127	0.147	0.862
Total work experience	-0.021	0.017	-1.220	-0.027	0.019	-1.469
MBA	-0.021	0.382	-0.055	0.083	0.350	0.238
HR training	-0.106	0.306	-0.346	-0.381	0.291	-1.309
R ²	0.140			0.362		
Adjusted R ²	-0.065			0.146		
F	0.684			1.673+		
N	86			86		

+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$, NS = not significant.

³ The blocking variable 'Company' gives several coefficients, which are not recorded in the interest of space and relevance. Neither the blocking variable nor the individual company coefficients are significant.