

**Governing Knowledge Sharing and Transfer in MNCs
by
Organizational Mechanisms Enabling Social Interaction**

Ph.D. thesis

Christina Roe Steen

Abstract

This dissertation aims to contribute to the understanding of how multinational companies (MNCs) use organizational mechanisms enabling social interaction to govern knowledge sharing and transfer within the company. The international management literature has, over recent decades, shown an increased interest in the importance of social interaction in the government of knowledge processes and integration of units by MNCs. Even though research provides support for the association between social interaction and the sharing and transfer of knowledge, researchers have neither fully explained how MNCs leverage this association nor identified the underlying mechanisms whereby social interaction positively affects related processes and under what conditions.

The dissertation consists of three papers: one literature review and two empirical studies. The literature review investigates how organizational mechanisms enabling social interaction are covered in the international management literature, with a specific focus on the role of socialization and social capital. The review identifies seven main categories covering 35 different mechanisms, which are defined as formal or informal. Additionally, the review proposes a model for how formal and informal mechanisms are connected to socialization and the development of social capital. The empirical papers report two different studies. The first investigates intra-organizational learning structures that enable social interaction among managers across borders and examines the extent of their association with strategic and HRM structures and the institutional context of the subsidiary's operation. This paper investigates both company-level factors and institutional context as a macro factor influencing the focal subsidiary. The second empirical paper investigates the micro-foundations of knowledge sharing and transfers within formal knowledge networks in an MNC. The focus is on the interaction between knowledge-sharing behavior and knowledge application and how these processes are influenced by network management, structural social capital, and different types of autonomous motivation.

Together, these papers contribute to the understanding of how MNCs use organizational mechanisms enabling social interaction to govern knowledge sharing and transfer within the company.

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Doha, November 2022

Christina Roe Steen

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Governing Knowledge in MNCs by Organizational Mechanisms Enabling Social Interaction
- A Literature Review on Socialization and Social Capital

Paper 2

Transnational Social Learning Structures in Multinational Companies: The Role of Strategic
Characteristics, Human Resource Structures, and Institutional Context

Paper 3

The Governance of Knowledge Sharing and Application in MNCs:
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1 Introduction

Firms are social communities that specialize in the creation and internal transfer of knowledge. The multinational corporation arises not out of the failure of markets for the buying and selling of knowledge, but out of its superior efficiency as an organizational vehicle by which to transfer this knowledge across borders (Kogut & Zander, 1993, p. 625).

Several authors claim that knowledge is an important, if not the most critical, strategic resource of firms (Grant, 1996; McEvily & Chakravathy, 2002; Szulanski, 1996), and the ability to share knowledge across national borders is the prime reason for the formation of multinational companies (MNCs) (Gupta & Govindarajan, 1994; Ingram, 2000; Nonaka & Takeuchi, 1995). Possessing intangible, knowledge-based assets allows firms to successfully compete in foreign markets (Hymer, 1959; Kogut & Zander, 1993; Tallman, 2003). By implementing mechanisms to secure the generation, sharing, transfer, and exploitation of critical knowledge, the MNC can create firm-specific advantages that can be the source of sustainable competitive advantage globally (Cohen & Levinthal, 1990; Eisenhardt & Martin, 2000; Grant, 1996; Inkpen & Tsang, 2005; Kogut & Zander, 1992, 1993). Under the resource-based view, knowledge within firms is recognized as a critical resource that might serve as a source of sustainable differentiation and hence competitive advantage (Barney, 1991; Fransson et al., 2011; Gupta & Govindarajan, 2000).

The fundamental characteristic of the MNC is its geographical dispersion, which leads to the presence of spatial, cultural, institutional, and linguistic boundaries between its different units and the people working in them. Therefore, to transfer knowledge successfully, MNCs depend on efficient knowledge sharing and the ability to exploit the knowledge shared across different cultures and institutional settings (Gupta & Govindarajan, 2000; Martin & Salomon, 2003; Minbaeva, 2004).

Kogut and Zander (1993) describe the MNC as a knowledge-sharing network, where the existence of the MNC can be understood in its ability to transfer, create, integrate, and deploy certain kinds of knowledge more efficiently than markets. Therefore, an MNC capable of

sharing and transferring knowledge internally has a significant capability to gain and sustain competitive advantage. The MNC is thus capable of generating value by successfully transferring specific capabilities to a new context and capitalizing on valuable knowledge residing within subsidiaries (Forsgren, 2008). The essence of the MNC lies in its dispersion of activities across national borders, which creates a competitive advantage that could not be attained otherwise (Kostova & Roth, 2002).

Proponents argue that because knowledge-based resources are usually difficult to imitate and socially complex, heterogeneous knowledge bases and capabilities among firms are the major determinants of sustained competitive advantage and superior corporate performance (Claver-Cortés et al., 2018; Forsgren, 2008; Kogut & Zander, 1993; Kühlmann, 2014; Williams & Lee, 2016). This knowledge is embedded and carried through multiple entities, including organizational culture and identity, policies, routines, documents, systems, and employees (Forsgren, 2008). However, as Martin and Salomon (2003) emphasize, although MNCs are in possession of knowledge-based assets which potentially enable them to benefit in terms of competitive advantage, they must also have the capability to transfer knowledge efficiently between company units; otherwise, knowledge transfer might be both costly and time-consuming (Kenny & Florida, 1993; Martin et al., 1995; Teece, 1977). Organizations with these capabilities are more productive than organizations without it (Inkpen & Tsang, 2005).

However, while the literature demonstrates the challenges involved in successfully transferring knowledge across MNC units (Szulanski, 1996), few efforts have been made to examine the influence of organizational mechanisms facilitating knowledge sharing and transfer within the MNC (Björkman et al., 2004). Hence, the main aim of this dissertation is to provide further insight into how MNCs can efficiently use organizational mechanisms enabling social interaction to govern and facilitate knowledge sharing and transfer within the company.

Although it is important that MNC management decides which organizational mechanisms to use to enhance knowledge flows, research is lacking on the strategies MNC headquarters may deploy to ensure that the competence of subsidiaries is transferred across units (Björkman et al., 2004; Foss & Pedersen, 2002). According to Ciabuschi et al. (2011), knowledge transfer has predominantly been seen as dependent on the properties and attributes of that which is being transferred: Referring to a meta-study by Wijk et al. (2008) of the antecedents and consequences of knowledge transfer, such as knowledge, organizational, and network

characteristics, Ciabuschi et al. (2011, p. 130). claims that they still “do not open up the toolbox of transfer mechanisms” Ciabuschi et al. (2011) further emphasize the effects of strategies and structures of MNCs (e.g., vertical and lateral mechanisms) and the need to address different outcomes of knowledge transfer, especially its effectiveness.

Particular attention has been paid to the antecedents to knowledge sharing that can be fostered by human resource management (HRM) practices (Cabrera & Cabrera, 2005). Brewster and Sparrow (2007) identify one of the challenges of international HRM as the need to rethink the mechanisms used to transfer knowledge globally. One area addressing this challenge is interpersonal networking and formal organization design. However, research and literature on this topic provide little understanding of how MNCs use mechanisms to facilitate knowledge sharing within a company and across national borders. This area has gained some attention (e.g., Gooderham, Minbaeva, & Pedersen, 2010; Gooderham, 2007), and it remains highly relevant for knowledge transfer in MNCs (e.g., Zhou et al., 2020).

Research on HRM in the international context has developed into a broad discipline (Brewster, 2004; Brewster & Sparrow, 2007; Gooderham et al., 2008; Schotter et al, 2021; Ferndale et al., 2022), largely focusing on how HRM policies and practices might differ regarding MNC strategy and the local context/environment of subsidiary operations (Brewster et al., 1996; Taylor et al., 1996). Gooderham et al. (2019) emphasize that institutional context has been underestimated and overlooked in HRM research, which has been characterized by universalistic assumptions. They call for higher awareness of cross-national institutional effects in research related to HRM and people processes. To further understand how these factors influence knowledge transfer in MNCs is therefore of interest. Although the issues involved in managing knowledge within firms have received considerable academic interest, work on knowledge management within firms spanning multiple countries has been relatively sparse (Desouza & Evaristo, 2003).

In addition to the fundamental challenges in knowledge transfer processes in MNC, continuing globalization and the high pace of technological development create complexity (Kostova et al., 2016). These developments have brought new ways of communicating, but the significance of face-to-face social interaction remains highly recognized (Noorderhaven & Harzing, 2009). As social interaction is considered a powerful mechanism to facilitate knowledge transfer processes (Noorderhaven & Harzing, 2009), further understanding of how such interaction between individuals and organizational mechanisms influences the

knowledge transfer process is of interest. However, although the positive relationship between socialization and knowledge-sharing behavior is well established (Zeng et al., 2018), several related knowledge transfer areas need further investigation (Noorderhaven & Harzing, 2009). In particular, Foss (2006) points to the need to better understand the effects of different organizational mechanisms and structures that can be used in knowledge transfer processes.

The knowledge-based view (e.g., Conner & Prahalad, 1996; Kogut & Zander, 1992, 1993, 1996; Nonaka & Takeuchi, 1995; Spender, 1996) enabled the identification of “organizational advantage” (Ghoshal & Moran, 1996). However, despite providing insight into the attributes of organizations as knowledge networks and systems, a coherent theory to explain such attributes was lacking: What kind of mechanisms could explain how this social knowledge is generated? And what is it that makes firms better than markets? Both socialization mechanisms and social capital have been promoted as explanations of organizational advantage, especially in relation to knowledge sharing and transfer in MNCs (e.g., Andersson et al., 2015; Gupta & Govindarajan, 2000; Nahapiet & Ghoshal, 1998). Social interaction facilitates both socialization and social capital, which brings us to the core focus of this dissertation: How can MNCs encourage social interaction in knowledge processes whereby the facilitation of socialization mechanisms and social capital are obvious outcomes; and how can MNCs use organizational mechanisms enabling social interaction to govern such processes?

According to Pajunen (2008), there is no coherent definition of organizational mechanisms in the literature. Several articles in the management literature refer to organizational mechanisms but do not explicitly and clearly define them (e.g., Björkman et al., 2004; Jensen, 2015). A mechanism can be a variety of design actions, such as managerial interventions, that facilitate structured or unstructured interactions between individuals or organizational entities (Nambisan et al., 1999). Organizational mechanisms are often implemented to support the company’s strategic direction by facilitating the firm’s resources and capabilities to secure competitive advantage and nudge embedded behaviors in the right direction, that is, to be optimal for the business (Cordero & Ferreira, 2019). Organizational mechanisms are understood as defined by Chou and Tsai (2004, p. 207): “A structural arrangement or a variety

of design actions to facilitate interactions and knowledge exchange among organizational members.”

Further, as Gooderham et al. (2013) demonstrate, we need to know more about how these mechanisms function and their design in order to know how they facilitate or inhibit the development of social capital and knowledge-sharing activities. Two main questions thus emerge: First, how MNCs should design and organize the content of these organizational mechanisms; that is, how they should determine what is and what is not working; and second, how the structures of organizational mechanisms affect individual-level mechanisms. Thus, we need to understand how organizational mechanisms enabling social interaction affect micro-level mechanisms in order to generate the desired macro-level mechanisms (knowledge sharing and transfer between MNC units), which is an area that has received some attention during the last two decades (Gooderham et al., 2010; Gooderham, 2007). Foss (2007) also pointed out the need to investigate and learn more about the antecedents of organizational behavior at the micro level to increase our understanding of how governance mechanisms work.

This introduction illustrates the need to further develop our understanding of specific types of organizational mechanisms enabling social interaction in MNCs, which factors influence the use of these mechanisms, and how they can be utilized.

The overall research question for this dissertation is:

How can MNCs use organizational mechanisms enabling social interaction to govern knowledge processes within the company?

This dissertation aims to contribute to the growing literature on social interaction as a means of understanding knowledge sharing and transfer within MNCs. It consists of three papers, covering three main objectives.

Paper 1 is a literature review which aimed to investigate how organizational mechanisms enabling social interaction in knowledge processes in an MNC context have been covered in the international management literature. A specific focus was given to socialization and social capital, since these are central concepts in explaining why social interaction facilitates knowledge sharing and transfer. This paper contributes by providing an overview of different

categories of organizational mechanisms enabling social interaction, suggesting how to separate formal and informal mechanisms, and proposing a model of how both types are related to socialization mechanisms and the different dimensions of social capital.

Paper 2, an empirical paper, aimed to investigate subsidiaries of MNCs operating in different institutional contexts. The theoretical starting point is the association between factors at the organizational and institutional levels and the use of transnational social learning structures (TSLs). TSLs in this specific context enable social interactions among managers in MNCs. This paper contributes to the understanding of what factors influence the use of organizational mechanisms enabling social interaction in MNCs.

Paper 3, also an empirical paper, aims to build on the work of Nesheim et al. (2011) by using data on individuals from a single MNC. It investigates how knowledge sharing is associated with knowledge application and the influence of autonomous motivation and network management in this setting. Additionally, it evaluates how knowledge sharing and network management are associated with structural social capital across borders. This paper contributes to our understanding of how MNCs can efficiently utilize organizational mechanisms enabling social interaction to govern knowledge sharing and transfer by specifically looking into antecedents to these processes and their relationship with knowledge sharing and application.

This dissertation only focuses on intra-knowledge sharing within MNCs, rather than intra-knowledge sharing among companies in general or inter-knowledge sharing between companies and external actors (e.g., Ferraris, Santoro, & Dezi, 2017; Gupta & Polonsky, 2014). I acknowledge that there are knowledge transfers from MNC units to external firms and that these might also play an essential role in internal knowledge processes; however, it is necessary to narrow the scope and maintain a sharp focus. Furthermore, the very existence and competitiveness of MNCs have been attributed to internal knowledge flows (e.g., Forsgren, 2008; Ghoshal & Bartlett, 1990; Kogut & Zander, 1993); the phenomena, as well as the logic and objectives, behind internal and external knowledge flows are different; and the context of MNCs brings additional differences in the logic of knowledge flows than that seen in national companies.

This introductory chapter briefly overviews the theoretical background on the governance of knowledge in MNCs and gives an overall framework to explain how the research question is addressed and the three papers are connected. Before the model and its components are presented, the next sections provide an introduction to the MNC, followed by an overview of coordination and control, and the concept of knowledge and knowledge sharing and transfer, within MNCs.

Thereafter, the methodological choices related to the empirical papers are presented, followed by a short introduction to each paper, general discussion, implications, and suggestions for future research.

1.1 The multinational company

The MNC as a phenomenon largely developed after World War II (Bartlett, 2000). Basic definitions of an MNC are “a large organization with subsidiary businesses in more than one country” (Heery & Noon, 2001, p.297), and a company that owns and operates units that perform value-adding activities in locations outside their home country by making foreign direct investments (FDI) (Benito & Tomassen, 2010). Bartlett and Ghoshal (2000) emphasize that a company must fulfill two criteria to qualify as an MNC: 1) having *substantial direct investments* in foreign countries (not only export); and 2) actively managing those operations abroad and considering them integral parts of the company, both strategically and organizationally (i.e., simply holding them in a passive financial portfolio does not qualify).

Distance is one characteristic differentiating MNCs from purely national companies – not only spatial or geographic, but also other types such as cultural, political, institutional, and infrastructural distances might be seen as complicating different transfer processes in MNCs (Ambos & Ambos, 2009). Although these facets of “cognitive” distance tend to correlate with spatial distance, there is not necessarily a linear relationship (Rolstadås, 2012). The relevance of distance has been investigated since the early 1960s; the term first use, psychological distance, is not necessarily directly linear to geographic distance, where distance refers to other factors such as culture, political ties, common history (Brewer, 2007; Fletcher & Bohn, 1998; Håkanson & Ambos, 2010). For example, the difference between the UK and Australia can be evaluated as low, while France and Germany, for example, seem further apart despite their comparative geographic proximity. After Hofstede (1980) developed his theory of the dimensions of cultural distance, and institutional distance gained focus in the international

management literature (Gooderham et al., 2019). Due to the multinational context the aspects of distance faced by MNCs include the liability of foreignness (Zaheer, 1995), which consists of costs arising from unfamiliar operating environments, economic, administrative, and cultural differences, the challenge of coordinating over geographic distance, etc. (Goodall & Roberts, 2003).

A common distinction in connection with MNCs is between the parent company (commonly referred to as the headquarters) and its subsidiaries. The headquarter–subsidiary (HQS) relationship is central to the field of international management since the coordination and control of geographically dispersed value-adding subunits across borders stands at the core of the MNC (Kostova et al., 2016).

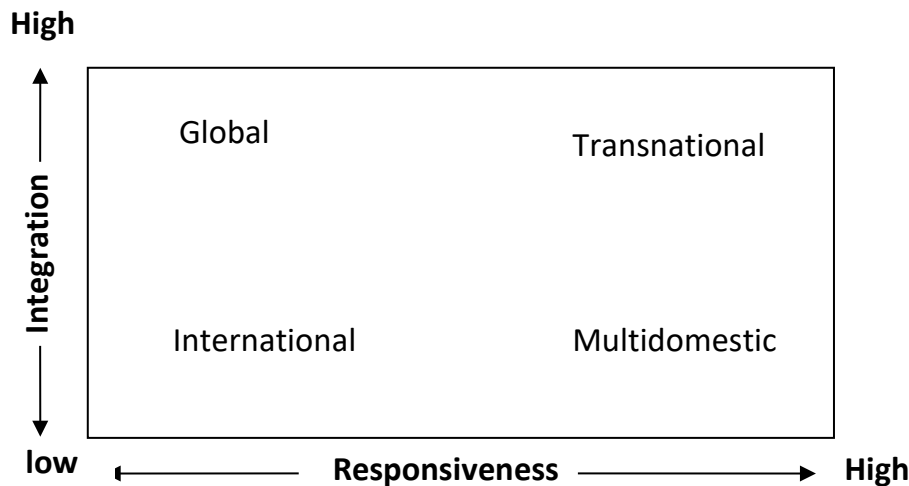
The relationship between the MNC and its separate units, whereby the MNC has to deal with the dual demands of global integration and local responsiveness, introduces the localization–centralization dilemma. MNCs seek global integration for efficiency and local responsiveness for adaptability. Adaptability allows practices to be modified based on local conditions (e.g., tasks, preferences, marketing) (Bartlett & Ghoshal, 1989). The integration–responsiveness (I–R) framework, initially developed by Prahalad (1976), brought the environment into consideration, emphasizing that MNCs need to confront two pressures: local responsiveness and global integration. The I–R framework is still considered highly relevant and is widely used in the international management field (Kostova et al., 2016).

MNCs follow different strategies that emphasize local responsiveness or cost efficiencies through globalization to achieve competitive advantage (Bartlett & Ghoshal, 1989). The challenge of finding a balance between these two directions illustrates the complexity of the MNC. The balance between localization and globalization affects strategic decisions on many levels (e.g., operations, products, marketing, organizational structure, HRM). How the MNC chooses to balance the globalization/localization dilemma is fundamental to its relationships with its subsidiaries, reflecting different levels of interdependence among its units (Kostova & Roth, 2003).

Several classifications of MNCs have been proposed (Harzing, 2000; Pudelko & Harzing, 2008), based on strategic considerations according to their subsidiaries' degree of responsiveness and integration. *Responsiveness* is the extent subsidiaries can influence strategic and

operational decisions to be responsive to local conditions regarding products and strategies, that is, differences in customer preferences. *Integration* refers to the degree of interdependence between units in the MNCs across borders and the degree of central coordination by headquarters. Based on Harzing (1999, 2000) and Bartlett and Ghoshal (2000), Figure two illustrates four strategic approaches adopted by MNCs:

Figure 1: Strategic approaches adopted by MNCs



1. *International* – diffusion of home company technology to subsidiaries (low responsiveness – low integration)
2. *Multidomestic* – decentralized company – differentiated by local conditions (high responsiveness – low integration)
3. *Global* – centralized company that acquires cost advantage through centralized production with standardized products (low responsiveness – high integration)
4. *Transnational* – company activities require flexibility in strategy according to global efficiency, national responsiveness, and worldwide learning simultaneously (high responsiveness – high integration; this does not imply that transnational companies are always high on both dimensions, but both must be considered for each situation). The transnational MNC seeks to achieve both cost-efficient global integration and value-adding local responsiveness, in addition to the benefit of worldwide learning and regular transfer of local best practices (Elter et al., 2014).

Kostova, Marano, and Tallman (2016) describe how mechanisms for coordination and control have developed over the last 50 years from more bureaucratic and formal to more networked

and informal. This development is especially seen in the trend whereby the increasing complexity of global operations has transformed subsidiary roles and responsibilities and impacted the nature of their relationships with the parent company. Additionally, the rise of emerging markets and associated importance of studying institutional and cultural contexts, given their differences from the traditional Western market, is reflected in the literature. Hence, the early focus on formal organizational structures and designs has shifted toward greater emphasis on the role of people (e.g., expatriates, boundary spanners) and informal factors (e.g., social networks, language, information systems) (Kostova et al., 2016).

New descriptions of the MNC emerging from this development, such as “the metanational” (Doz et al., 2001), build on the idea that subsidiaries have a significant strategic role to play in the MNC due to their access to unique resources, they can operate with more freedom than often officially recognized, making decentralized and informal mechanisms of coordination increasingly important for the success of the organization as a whole (Kostova et al., 2016, p. 178).

The result is that HQS relationships have evolved from a focus on administrative control and top-down directives to include consideration of other dimensions, such as normative (e.g., cultures, values), strategic (e.g., local strategies, subsidiary roles and mandates, reverse innovation), and intellectual (e.g., not just top-down, but also bottom-up and lateral knowledge flows) (Kostova et al., 2016).

The resulting shift in the literature has seen a move from a worldwide strategy focus to an emphasis on HQS relationships and a change in the subsidiary roles, with the internal organizational development in the subsidiaries and how their unique characteristics impact the overall success of the organization being the main focus (Kostova et al., 2016; Paterson & Brock, 2002). For example, there has been greater recognition of the strategic relevance of subsidiaries through exploration of the knowledge they generate and store and its transfer back to the parent company (reverse knowledge transfer) or to other units in the MNCs (lateral knowledge transfer) (Sanchez-Vidal et al., 2018). Kostova et al. (2016) specifically emphasize the topics related to organizational knowledge and learning as among the most critical mechanisms explaining the growing role of subsidiaries and identify five main themes in the HQS relationship: (1) organizational design and control systems; (2) host and home

country context; (3) subsidiary roles and regional structures; (4) knowledge creation and transfer; and (5) expatriate management and global HRM.

1.2 Control and coordination mechanisms in MNCs

In the context of MNCs, governance refers to the structures and processes designed to ensure the effective and efficient management of MNCs across multiple units (Verbeke & Kenworthy, 2008) and thus involves global integration of such units in the MNCs, linked to organizational mechanisms for coordination and control (Smale et al., 2013). Control can be described as a process whereby a person, group, or organization determines or intentionally affects what another person, group, or organization will do (Baliga & Jaeger, 1984), for example, headquarters' regulation of business activities and related expectations (Cray, 1984). Gupta and Govindarajan (1991, p. 775) interpret control mechanisms as representing "not only the formal control systems but also other powerful formal and informal organizational mechanisms that generally are available to corporate headquarters for shaping the decisions and actions of subsidiaries." Coordination can be the means through which the different parts of an organization are integrated or linked together to accomplish a collective goal. In the context of MNCs, these linkages are set across units and borders (Cray, 1984; Martinez & Jarillo, 1989). Mechanisms for control and coordination are often used in combination to govern and ensure the consistency of business activities across borders (Kim et al., 2003). The governance principles allow for the alignment of environmental characteristics, strategy, and organization and vary according to the strategic roles of the units in the MNC (Verbeke & Kenworthy, 2008; cf Bartlett & Ghoshal, 2000).

Governance mechanisms can be implemented on different levels in an organization. For example, different means to achieve control and coordinate behavior on the individual level are deployed in the belief that influencing the conditions of individual actions in a particular manner will lead employees to make decisions that, when aggregated, lead to favorable organizational outcomes and the achievement of common organizational goals (Foss, 2007; Harzing, 1999).

The matter of control or management in MNCs has stimulated a considerable volume of research, and researchers with different perspectives have classified control or management mechanisms into different categories (Tseng et al., 2002). Ouchi (1979) specifies three fundamentally different mechanisms of control: markets (output and financial/accounting

control), bureaucracies (strategic, process, operational, structural, formal equity, and auditor control), and clans (social, informal, and cultural control). Baliga and Jaeger (1984) refer to a two-dimensional scale: bureaucratic versus cultural. Martinez and Jarillo (1989) describe how the early literature moved from describing more formal mechanisms of coordination in MNCs to focusing on subtler forms, such as acculturation and the creation of networks and informal communication. More recent work has categorized the different approaches into three integration mechanisms: centralization, formalization and socialization (Zeng et al., 2018).

According to Gupta and Govindarajan (1994), a critical task for headquarters is the coordination of transactions within three dimensions, namely capital flow, product flow, and knowledge flow, where the creation and use of knowledge across units is the essential source of competitive advantage for the modern MNC (Grant, 1996; Spender, 1996). The headquarters has a crucial role in coordinating and facilitating corporate knowledge flows and stocks (Gupta & Govindarajan, 2000). The global competitive advantage rests upon the parent MNC's ability and capacity to transfer central knowledge, tap into local subsidiary knowledge, and assimilate it into advantageous global knowledge, making it available to the rest of the corporation. Hence, the question becomes how MNCs can govern knowledge sharing and transfer within the company across borders. Paper 1 gives a more thorough description of relevant governance mechanisms in the context of knowledge sharing and transfer in MNCs.

1.3 Knowledge

The concept of knowledge is elusive, and there is no coherent definition of it in the context of knowledge processes in the MNC (Adenfelt & Lagerström, 2006). Davenport and Prusak (1998, p. 5) define knowledge as

a fluid mix of framed experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.

Hedlund and Nonaka (1993, p. 117) define it as “cognitive perceptions as well as skills and expertise embodied in products or services,” while Kostova (1999, p. 309) suggests “particular ways of conducting organizational functions that have evolved under the influence of an

organization's history, people, interests and actions, and that have become institutionalized in the organization." These definitions imply that knowledge differs from information, which is simply a statement of facts (i.e., external market data about critical customers, competitors, or suppliers), being embedded in its owners. Information becomes knowledge when it is interpreted by individuals, given a context, and anchored in the beliefs and commitments of individuals (Nonaka & Takeuchi, 1995).

Another common distinction is between practical, experience-based knowledge (skills and routines) and theoretical knowledge (derived from reflection and abstraction of that experience and the development of facts and propositions). The former can be referred to as "know-how" and "procedural knowledge" and the latter as "know-that," "know-what," and "declarative knowledge" (Nahapiet & Ghoshal, 1998).

Other scholars refer to different typologies of knowledge: declarative – knowing what needs to be done; procedural – knowing how things need to be done; axiomatic – knowing why things need to be done; and relational – knowing whom to contact to get things done (Duvivier et al., 2019). Hong and Nguyen (2009) refer to knowledge types. Technical knowledge refers to knowledge of specific techniques and is task-oriented. Systemic knowledge, or the knowledge of organizational systems and procedures, is socially complex with a broader organizational focus, being related to the understanding of structural relationships among different departmental units and how such units cooperate and behave collectively. Strategic knowledge requires a change in the mindset of managers, their criteria of organizational success, and their mental maps of the factors significant for achieving this success.

One common distinction is between explicit and tacit knowledge. Explicit knowledge, transmittable in formal and systematic language, is objective because it can be codified and is impersonal, context-independent, and easy to share. Tacit knowledge is implicit and personal because it is subjective, experiential, and context-specific. This knowledge is held in people's heads (Massingham, 2010), making it more abstract and deeply rooted in action, thus more difficult to formalize, articulate, and transfer (Nonaka, 1994; Polanyi, 1967).

Explicit knowledge can be documented in standardized procedures (Martin & Salomon, 2003) and is codifiable, making it relatively easy to acquire, whereas tacit knowledge is embedded in non-standardized processes and can only be absorbed and acquired when closely observing

the knower in action or through interaction with the knower (Dhanaraj et al., 2004). Hence, close geographic proximity is an essential aspect of transferring tacit knowledge, especially in situations where face-to-face interaction is enabled (Noorderhaven & Harzing, 2009). Prior research has investigated the difficulties in transferring tacit and complex knowledge within the organization (Szulanski, 1996; Zander & Kogut, 1995), the relevance of motivation and absorptive capacity (e.g., Gupta & Govindarajan, 2000; Minbaeva et al., 2003), and the importance of central network positions in intra-organizational knowledge transfers (e.g., Tsai, 2001).

The division between explicit and tacit knowledge has implications for assuming knowledge is a competitive advantage in MNCs. Explicit knowledge, being easily codified, is easily transmitted and can, without difficulty, be imitated by competitors. In contrast, tacit knowledge is non-codifiable and challenging to assess from the outside, giving it the potential to generate unique competitive positions abroad and, due to its inaccessibility, to be a source of competitive advantage (Gooderham, 2007). However, tacit knowledge is more difficult to transfer (Gupta & Govindarajan, 2000; Szulanski, 1996), which emerges as a barrier to knowledge transfer (Massingham, 2010).

Nonaka and Takeuchi (1995) emphasize that knowledge is related to human action. Individuals create knowledge, and organizations provide a context in which individuals can both create and amplify knowledge. Knowledge can be defined according to the different types and levels in organizations. Knowledge is a multilevel phenomenon, including individuals, groups, and/or organizations (Crossan et al., 1999; Hedlund, 1994), where the multilevel processes are guided by existing knowledge, shared practices, and routines (Cohen & Levinthal, 1990). One division can be made between individual organizational knowledge:

Knowledge is the individual capability to draw distinctions, within a domain of action, based on an appreciation of context or theory, or both. Organizations are three things at once: concrete settings within which individual action takes place; sets of abstract rules in the form of propositional statements; and historical communities. Organizational knowledge is the capability members of an organization have developed to *draw distinctions* in carrying out their work, in particular *concrete contexts*, by enacting sets of generalizations (*propositional statements*) whose

application depends on historically evolved *collective understandings* and experiences.
(Tsoukas and Vladimirou, 2001, p. 983)

Intellectual capital, a concept relevant to organizational knowledge, is defined by Youndt et al. (2004, p. 337) as “the sum of all knowledge an organization is able to leverage in the process of conducting business to gain competitive advantage,” thus emphasizing two fundamental aspects: 1) Intellectual capital is the sum of all knowledge on different levels both within and outside the organization; 2) intellectual capital requires utilizing knowledge for competitive advantage, indicating that knowledge must be leveraged to be considered intellectual capital. Youndt et al. (2004) suggest that intellectual capital has three main subsets: 1) Human capital, the collective knowledge, skills, and abilities residing in and utilized by individual employees (Lepak & Snell, 2002; Snell & Dean, 1992); 2) social capital, which resides at neither the individual nor the organizational level but is an intermediary form of intellectual capital consisting of knowledge in groups or networks of people (Nahapiet & Ghoshal, 1998). Social capital can also be conceived of as the knowledge resources embedded within, available through, and derived from a network of relationships (Burt, 1992; Coleman, 1988); 3) organizational capital, which represents institutionalized knowledge and codified experience stored in databases, routines, patents, manuals, structures, etc; thus, knowledge captured in processes, systems, and structures (Kang & Snell, 2009). All three subsets represent distinctive knowledge stocks accumulated in and distributed through organizational members, relationships among them, and structures and processes (Colakoglu et al., 2014).

1.4 Knowledge processes and organizational performance

Just as there is no coherent definition of knowledge, neither is there of the different elements belonging to the different knowledge processes in firms. Spender (1996) stated that knowledge management processes include knowledge creation, knowledge transfer, and knowledge application. The systematic review by Al-Emran et al. (2018) uses the following main processes: knowledge acquisition, sharing, application, protection, storage, and creation. Anand and Singh (2011), meanwhile, identified the following main categories: knowledge capture and creation, knowledge organization and retention, knowledge dissemination, and knowledge utilization.

Szulanski (1996, p. 28) described knowledge transfer as the “exchange of organizational knowledge between a source and a recipient.” Knowledge transactions can be defined as “the

transfer of an identifiable 'piece' of knowledge from one individual to another" and "are involved in knowledge sharing, integration and creation" (Foss, 2009, p. 24). Organizational knowledge transfers refer to the process through which organizational actors exchange, receive, and are influenced by the experience and knowledge of others (Argote & Ingram, 2000). While some studies focus explicitly on knowledge transfer, several label knowledge transfer processes in alternative but related ways (knowledge sharing, knowledge flows, knowledge acquisition) (Wijk et al., 2008). Kalling and Styhre (2003) conclude that knowledge transfer theories emphasize the nature of the knowledge shared, the cognitive abilities of those "receiving" knowledge, the organizational context within which transfer occurs, and the motivation to share and receive knowledge. This conclusion implies that all types of knowledge can be involved, that it is necessary to consider several types of factors influencing the knowledge processes, and that such processes can take place on both the individual and organizational levels. Specifically, the direction of knowledge transfer is essential, as knowledge transfer manifests itself through changes in the knowledge or performance of the recipient unit.

The separation between the different types of knowledge processes is not always clearly defined and sometimes overlapping. For example, the definition of knowledge transfer can include knowledge application (e.g., Frost & Zhou, 2005; Gooderham et al., 2011) or only refer to the transfer process itself (e.g., Adenfelt & Lagerström, 2008; Chung, 2014; Harzing et al., 2016; Welch & Welch, 2008). The following sections briefly elaborate on the different stages and their relations, focusing on the relations between knowledge-sharing, transfer, creation, and application. All stages can apply to both individual and organizational levels.

Knowledge acquisition and capture occur when knowledge is identified and acquired (Anand & Singh, 2011). This stage also includes search activities, such as tasks involving searching for and identifying relevant knowledge in the organization, where personal ties would be a factor that can influence the available search sources (Hansen, 1999). The literature uses the concepts of **knowledge transfer and sharing** alternately, and the two overlap, since they both comprise a process in which there is a sender and receiver (Hislop, 2009). However, it is possible to argue that knowledge transfer only indicates that knowledge is transferred in one direction (sender–receiver). On the other hand, sharing indicates an act of reciprocity where the transfer of knowledge travels in more than one direction and thereby requires other

mechanisms to be successful (Hislop, 2009). The actual process of knowledge sharing entails interaction and communication between those who are sharing and those who are receiving the knowledge (Nohria & Ghoshal, 1994). Knowledge sharing occurs “when people who share a common purpose and experience similar problems come together to exchange ideas and information” (MacNeil, 2003, p. 299). Dyer and Nobeoka (2004) define knowledge sharing as the activities helping communities of people to work together, facilitating the exchange of their knowledge, enhancing organizational learning capacity, and increasing their ability to achieve individual and organizational goals. This definition supports the notion that socialization and network structures are efficient knowledge-sharing mechanisms (Hislop, 2009). Knowledge transfer can also be defined as the process whereby one person is affected by the experience of another (Dinur et al., 2009), implying that it does not necessarily comprise an exchange of information, as with knowledge sharing, but knowledge moving from one party to another. The word “transfer” can be separated from “diffusion” to emphasize the movement of knowledge within the organization as a distinct experience, rather than a gradual process of dissemination (Szulanski, 1996).

According to Andersson et al. (2015), most studies have focused on the extent of knowledge flows between firm subsidiaries instead of the degree of transfer effectiveness, which is the actual adoption and use of the knowledge in the receiving subsidiary. Ambos and Ambos (2009) refer to the emerging field of research that questions whether knowledge flows create value through their mere occurrence or whether, to be valuable, the knowledge transferred must be used by the receiving unit (e.g., Haas & Hansen, 2005; Minbaeva et al., 2003). This brings us to the concept of **knowledge application**, which is sometimes used interchangeably with knowledge transfer, for example when the latter is defined as the identical or partial replication of knowledge from one place to another (Lucas, 2006; Szulanski, 1996). Knowledge is transferred when the received knowledge is used by its recipients and this use results in changing behavior (Argote & Ingram, 2000). For the transfer to have taken place, some change in knowledge or performance in the recipient unit must be involved (Inkpen & Tsang, 2005).

Ambos and Ambos (2009) employ a contingency perspective on the value of knowledge transfers for the recipient unit. The value of obtaining and using knowledge should be assessed by evaluating the benefit of the received knowledge to the recipient unit rather than by measuring the quantity of knowledge flows. According to Minbaeva (2003, p. 587), “the

key element in knowledge transfer is not the underlying (original) knowledge, but rather the extent to which the receiver acquires potentially useful knowledge and utilizes this knowledge in its own operations.” Other forms of knowledge application used in the literature include knowledge integration, defined as “the utilization by one multinational subunit of knowledge originating in another” (Frost & Zhou, 2005, p. 676); ceremonial adaptation (Kostova & Roth, 2002); and implementation, integration, and internalization (Ahlvik & Björkman, 2015). The common notion is that successful knowledge transfer has taken place once the recipient utilizes the knowledge rather than the latter being just stored in for future use in organizational products such as routines and production rules (Olivera, 2000).

Knowledge creation can be defined as “the process by which companies combine and recombine knowledge in order to generate a competitive advantage” (Regnér & Zander, 2014, p. 552). It can be understood as a continuous process (Nonaka et al., 2006), where creation leads to innovation and competitive advantage (Nonaka & Takeuchi, 1995). According to Nonaka et al. (2006, p. 1179), “organizational knowledge creation is the process of making available and amplifying knowledge created by individuals as well as crystallizing and connecting it to an organization’s knowledge system.” Hence, knowledge creation is context-dependent (Nonaka et al., 2006). As Van den Hoof and Huysman (2009) point out, knowledge sharing is more than transferring knowledge; it is about creating it through social interaction. Knowledge creation can apply to all areas of activities within the MNC, such as process knowledge in operational areas (e.g., management, marketing, sales, and production) (Andersson, Björkman, & Forsgren, 2005). In the MNC literature, knowledge creation is often associated with innovations and limited to a subsidiary’s capability to generate new technical knowledge, as measured by patents, or as a function of its R&D intensity (e.g., Cantwell & Mudambi, 2005).

Organizational performance and effectiveness are, in this context, closely connected to knowledge application. Knowledge processes must add value to organizational performance to be a source of competitive advantage, which brings us back to the different ways of measuring knowledge sharing and transfer effectiveness. For example, Argote and Ingram (2000) suggest that knowledge transfer can be measured through changes in knowledge or performance, whereas Ambos and Ambos take a contingency perspective.

Transferring knowledge from one organizational part to another is a hard-to-measure activity because it often produces soft outcomes. It is also challenging to link outcomes to specific actors in the MNC, primarily since other factors influence overall performance, or a focal subsidiary might depend upon the performance of other subsidiaries. Other challenges might be task characteristics, such as extended time frame for completion, joint team efforts, and soft outcomes (Persson, 2006).

The contingency perspective applied by Ambos and Ambos (2009) emphasizes the importance of contextual variables, assuming they influence the extent to which the recipient unit is able to benefit from a knowledge transfer. Several studies investigating the effectiveness of knowledge flows (e.g., Ambos et al., 2006; Haas & Hansen, 2005; Mahnke et al., 2005) indicate that not every transfer is beneficial and that the relevance, task-unit performance, and application of knowledge in a new context will depend on important contingencies, such as absorptive capacity, levels of social capital, motivation, and similar factors. Davenport and Pruzak (1998) propose that the method of the knowledge transfer process must suit the organizational context, which shapes the individual's mindset, behavior, and corresponding relationships. Thus, organizational context determines how knowledge is created and diffused (De Long & Fahey, 2000). According to Brachos et al. (2007), notions of organizational context, culture, and social climate represent overlapping perspectives on the same phenomenon. The following factors have been identified as influencing the context for knowledge transfer: social interaction (Hansen, 1999; Reagans & McEvily, 2003), trust (De Long & Fahey, 2000), management support (Vera & Crossan, 2003), motivation (Gupta & Govindarajan, 2000; Osterloh & Frey, 2000), learning orientation (Crossan et al., 1999; Tsai & Ghoshal, 1998), and organizational culture (De Long & Fahey, 2000). A related concept is the observation that MNCs often experience internal "stickiness," which is the difficulty of transferring knowledge within an organization (Chang et al., 2012; Szulanski, 1996).

1.5 Perspectives on intra-MNC knowledge flows

Noorderhaven and Harzing (2009) distinguish between two perspectives on intra-MNC knowledge flows: the sender–receiver model (Gupta & Govindarajan, 1991, 2000) and the social learning perspective (e.g., Kogut & Zander, 1996). The two approaches have significant differences but are partly complementary. Social learning theory enriches the sender–receiver model (Noorderhaven & Harzing, 2009), proposing that learning occurs and knowledge is

created through conversations and interactions between people. Hence, knowledge is socially constructed through collaboration and common objectives or exchanging different perspectives (Easterby-Smith et al., 2000; Plaskoff, 2003). Thus, intra-MNE knowledge flows can only be realized when individuals from different units in the MNC engage in social interaction (Noorderhaven & Harzing, 2009).

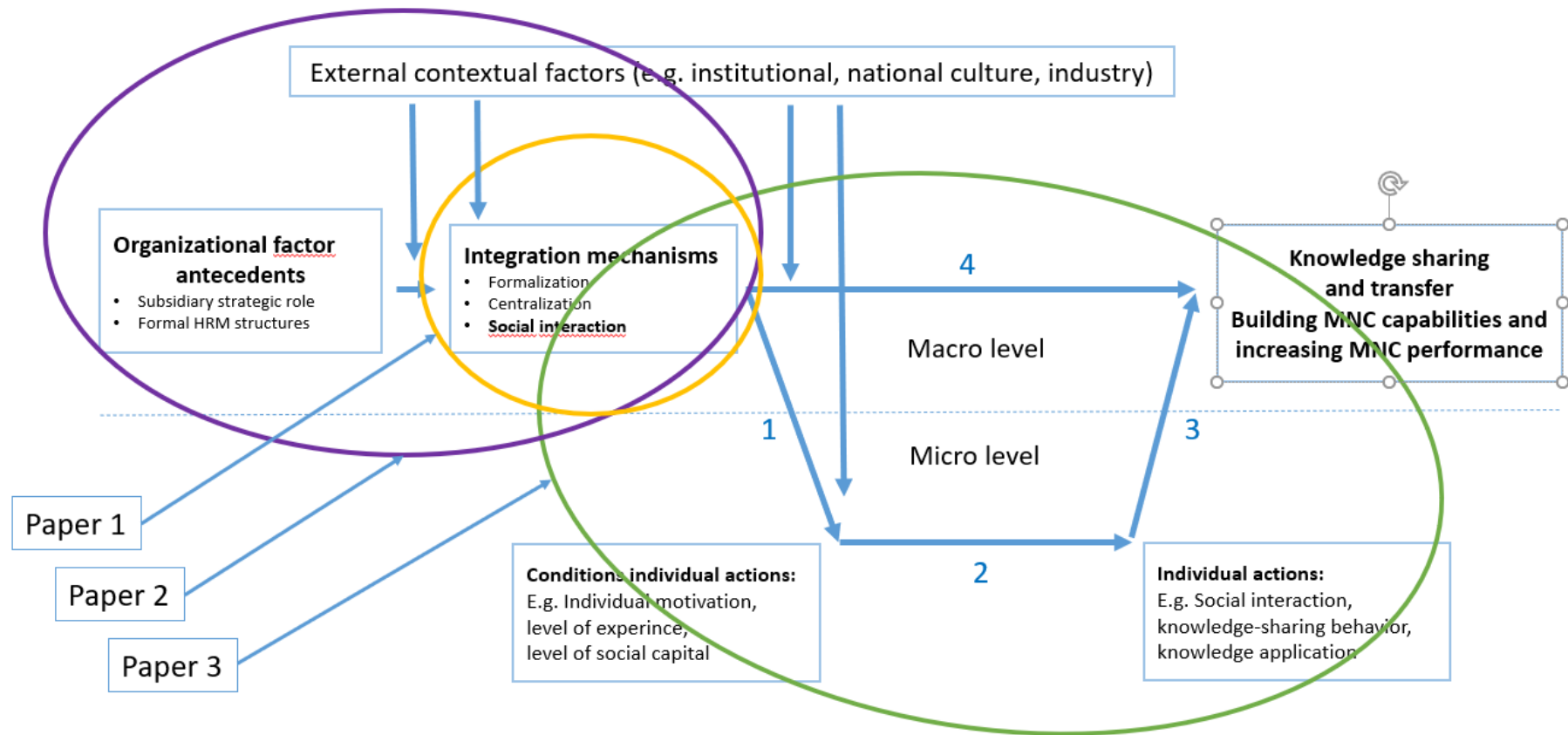
Investigations of intra-MNE knowledge flows commonly focus specifically on social interaction between the focal subsidiary and other parts of the MNE, the integration of the focal subsidiary in terms of workflows, the level of capabilities, and subsidiary autonomy. Under the sender–receiver model, the expectations are that factors such as relative capabilities, level of autonomy, and integration in intra-MNE workflows of the subsidiary are the main factors promoting or impeding knowledge flows. The existence of communication channels (social interaction) is the moderator of these main factors. Social learning theory expects social interaction to be a knowledge-generating factor: an independent factor causing knowledge flows. This expectation is directly linked to the view that social capital within the MNC and internal knowledge flows hinge on the effects of facilitating socialization and social capital between individuals (Gooderham et al., 2011; Simonin & Özsomer, 2009). Gupta and Govindarajan (2000, p. 479) claim that socialization mechanisms within the MNC act to “build inter-personal familiarity, personal affinity, and convergence in cognitive maps among personnel from different subsidiaries.” Ghoshal et al. (1994, p. 101) emphasize that “lateral interpersonal networking is considered to be one of the most important elements in managing information flows within MNCs.”

Socialization within the MNC supports goal sharing and willingness to share knowledge (Björkman et al., 2004; Gupta & Govindarajan, 2000). Further, social interaction builds trust, which positively influences resource exchanges across units in the MNC (Tsai & Ghoshal, 1998). Good quality relationships facilitate the transfer of practices among units in the MNC (Kostova & Roth, 2002), emphasizing the importance of social interaction to facilitate knowledge sharing and transfer, where socialization and social capital are important facilitators (Andersson et al., 2015; Gupta & Govindarajan, 2000; Nahapiet & Ghoshal, 1998).

1.6 Governance of knowledge in MNCs – conceptual model

This section draws on the theoretical background presented in the previous sections to present an overall model (Figure 1) illustrating how the three papers are linked.

Figure 2: Overall model and the three papers



Coleman (1990); Van Wijk et al. (2008); Mäkelä, Sumelius, et al. (2012); Zeng et al. (2018); Foss & Pedersen (2019)

The left part of the model represents **organizational factor antecedents** associated with the use of integration mechanisms within the MNC. As elaborated on in previous sections, the strategic role of the subsidiary influences the degree of integration with the parent company and other units in the MNC; where the model illustrates how these antecedents influences the degree of need by the MNC to integrate and control the flows of knowledge sharing and transfer related to the focal unit. Two specific areas of organizational factors are investigated in Paper 2: strategic factors, based on the role of the focal subsidiary, and cross-border HRM structures in the MNC. While formal HRM structures are not necessarily directly connected to the strategic role of the subsidiaries, previous research indicates that subsidiaries with high-level HR capabilities and involvement in the development of corporate HR practices are more likely to implement corporate initiatives locally than units not involved in the development of corporate HR practices (Björkman & Lervik, 2007). HR practices can be considered as antecedents to a MNC's knowledge stocks (human and social capital) (Yamamoto et al., 2009; Youndt & Snell, 2004). Further, HR practices can nurture relationships that enhance a firm's social capital by partnering with line managers and employees (Yamamoto et al., 2009), and research on HR has noted that there is a relationship between HR practices and social capital (Gomez & Sanchez, 2005).

The next part of the model directly affected by organizational factors consists of **integration mechanisms**, which are the main focus of this dissertation. The terms "integration mechanisms" and "coordination and control mechanisms" are used interchangeably in the literature. The term "integration mechanisms" is chosen in this setting, since the focus is on how to integrate the different units in the MNC in terms of governing knowledge sharing and transfer.

Additionally, this dissertation focuses on integration mechanisms represented by organizational mechanisms enabling social interaction. A common term for this category is "socialization" (e.g., Zeng et al., 2018). However, the term "social interaction" is chosen since this describes the activities, and, as we will see from the arguments in Paper 1, socialization or degree of socialization is only anticipated as an effect of these activities. As regards coordination and control by social interaction, the focus is on situations where information and knowledge are best transferred face-to-face (Noorderhaven & Harzing, 2009), often referred to as "people-based" integration (Kim et al., 2003).

Due to the growing complexity in MNCs and their aspiration to control their subsidiaries, the trend is toward using more informal mechanisms, such as teams and networks, organizational culture, and shared norms and values (Gomez & Sanchez, 2005). As regards socialization, specifically, as a coordination and integration mechanism in MNCs, the creation of social capital has gained considerable attention (Kostova & Roth, 2003). In the context of knowledge sharing and transfer, social capital is important in bridging relationships that provide connections between different units of the MNC. Facilitating the social capital embedded in these bridging relationships is therefore considered to be an essential integration mechanism (Adler & Kwon, 2002; Mäkelä et al., 2012).

The literature review in Paper 1 elaborates on how organizational mechanisms enabling social interaction has been covered in the international management literature over the last four decades. The paper maps different types of organizational mechanisms covered in such literature, with a specific focus on social capital and socialization. Essentially, it suggests a distinction between socialization and social capital, with the concept of socialization being seen as an antecedent to the development of social capital. Additionally, the review provides a framework for separating formal and informal organizational mechanisms enabling social interaction and illuminating how these two categories are linked to socialization and the different dimensions of social capital. The dependent variable in Paper 2 is a measure for TSLS, based on mechanisms facilitating organizational learning through social interaction and socialization among managers within the MNC. Paper 3 investigates a knowledge network in one specific MNC which represents an integration mechanism enabling social interaction.

Moving further to the right in the model, we find the division between the **macro and micro levels**. The model draws on Coleman's (1990) "bathtub," emphasizing that macro-level factors influence the **conditions of individual actions** (in this context, this macro factor could be an integration mechanisms, e.g. an organizational mechanism enabling social interaction which influences the motivation of an individual). The conditions of individual action, in turn, influence **individual actions**, the actual behaviors in which individuals engage (e.g., knowledge sharing). Thus, Coleman's bathtub connects a macro-level phenomenon (arrow 4; e.g., knowledge sharing between subsidiaries) through the micro level, as denoted by arrows 1, 2, and 3 (individual knowledge-sharing behavior). Arrow 3 illustrates how the aggregated level of individual actions generates the macro-level phenomena, such as **knowledge sharing and**

transfer between MNC units, located in the upper-right corner of the bathtub. In this way, micro-foundations emphasize that individual behaviors impact the knowledge-sharing flows at the aggregated unit (macro) level, such as a group, unit, or company.

The focus on the individual level does not discard contextual. or macro. factors, since the behaviors are shaped by the contextual factors on the macro level (e.g., organizational mechanism enabling social interaction) (Foss & Pedersen, 2019). Therefore, it is essential to understand further how organizational mechanisms for social interaction influence both individual and unit levels. According to Mäkelä, Andersson, et al. (2006), current organizational-level explanations may – in some cases only to a certain point – capture the aggregate effects of individual-level inputs, thus over-attributing causality to collective-level factors. To fully understand and explain the causal link between any governance mechanism and intra-organizational knowledge transfer, it is necessary to identify the underlying mechanisms and establish how they interact on the individual level (Minbaeva et al., 2012). A focus on people is therefore required where, for example, individual heterogeneity (Felin & Hesterly, 2007), individual-level motivations (Osterloh & Frey, 2000), and interpersonal interaction (Argote & Ingram, 2000) are significant.

However, knowledge exchange can take place on different levels, and it can be argued that knowledge flows between units (inter-unit level) also take place at the interpersonal level, to a certain degree (Mäkelä, Andersson, et al., 2012). When such interpersonal-level exchanges take place across unit boundaries, they become an essential micro-foundation of unit-level knowledge flows (Argote & Ingram, 2000; Foss, 2007; Minbaeva et al., 2009). The literature presents several organizational-level factors that influence knowledge transfer processes (e.g., organizational structure, power, resource dependency). However, insights on important micro-foundations are lacking (Minbaeva et al., 2009). Although the main focus has been on organizational-level knowledge transfer, the argument is that the level of human interactions is the primary source of knowledge transfer (Argote et al., 2000; Foss, 2007).

Hence, explanations of organizational-level phenomena must be based on explanatory mechanisms on the individual and interpersonal levels (Felin & Hesterly, 2007), where the arrows in the “bathtub” figure represent the causal mechanisms that produce the observed associations between phenomena. Applied to the focus of this dissertation, these are the

consequences of implementing an organizational mechanism enabling social interaction. The organizational mechanisms are located in the upper-left corner of the bathtub and are, in Paper 3, represented by the disciplinary network. The upper-right corner of the bathtub represents the observed organizational phenomena, which, in our case, are knowledge sharing and transfer in general, and knowledge application in the home unit specifically. The phenomena in the upper-right corner are further explained by the aggregation and emergence of the actions of individual actors, such as knowledge sharing activities between individuals – the lower-left corner of the bathtub. These individual and interpersonal level actions follow from individual-level conditions. Organizational-level determinants located in the upper-left corner influence the lower-left corner of the bathtub; for Paper 3, this is the disciplinary network (network management).

The last element of the model is **external contextual factors**, which are regularly referred to in the literature but seldom clearly defined (e.g., Foss & Pedersen, 2004). Commonly, they refer directly to specific contextual contexts in light of the phenomena being investigated (e.g., to organizational context (Lam & Lambermont-Ford, 2010)). Kronsbein et al. (2014) refer to the context as implicit and explicit information about the circumstances or situations affecting the focal entity. Johns (2006, p. 386) defines context “as situational opportunities and constraints that affect the occurrence and meaning of organizational behavior as well as functional relationships between variables.” Often are context associated with factors associated with units of analysis above the level of those phenomena that is under investigation.

Johns (2006) further refers to two different levels of context, namely “omnibus” and “discrete.” The former refers to the macro context, which consists of more distant features (location, culture etc.), while the latter refers to particular contextual variables that shape behavior or attitudes. The discrete context is nested within the omnibus context, so the effects of the latter can be mediated or moderated by discrete contextual variables. However, the omnibus context can also directly influence behaviors (Foss & Pedersen, 2019). The upper-left corner of the “bathtub” represents the contextual factors, while the lower-left corner represents the conditions for individual actions, which is the proximate context of an individual. As related to Paper 3, the upper-left corner of the model is represented by the knowledge network implemented by the MNC, while the lower-left corner represents the

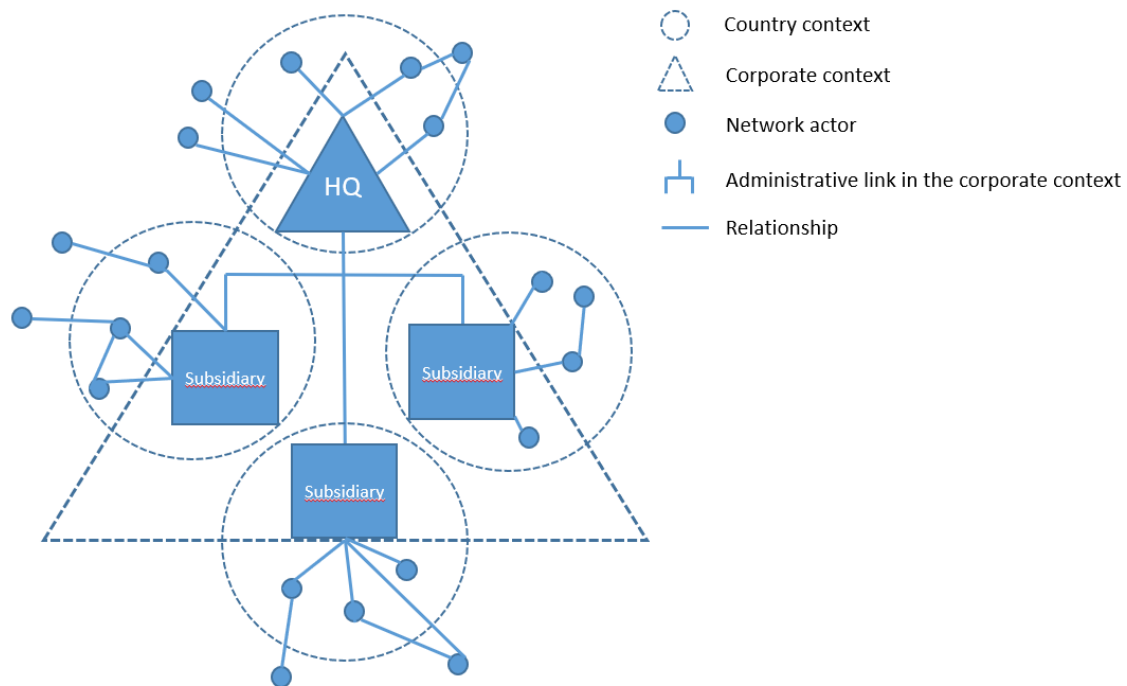
specific network of which the individual is a member. The individual characteristics can also be seen to be influenced by the context, dependent on what is being investigated. However, the external contextual factors comprise omnibus contexts on the macro level outside the focal unit of analysis but are still considered able to influence both the macro level and the micro level in the “bathtub” or to interact with other parts of the model, such as organization factor antecedents.

Context has been broadly applied in the international management literature, with levels covered ranging from micro and macro factors within a specific organizational setting (e.g., differences in interaction context (Mäkelä & Brewster, 2009); team learning and performance (Zellmer-Bruhn & Gibson, 2006), environmental factors (Ilhan-Nas et al., 2011), and national institutional context and relational context within the MNC (Kostova & Roth, 2002; Tregaskis et al., 2010)).

Dinur et al. (2009) identify five contextual dimensions which influence the transfer of best practices in MNCs: culture, strategy, decision-making structure and process, environment, and technology and operations. They find that as the similarity in contextual factors decreases between the sending and receiving unit of the best practice, the eventfulness of the transfer increases, illustrating the influence of contextual factors on knowledge transfer processes and the challenges of MNCs when transferring knowledge between units. Ilhan-Nas et al. (2011) include the following in environmental context: socioeconomic context, institutional context, cultural background, financial factors, labor market, and geographic context. Thus, contextual factors can comprise both internal organizational factors (e.g., the MNC context) and external factors in the environment where the focal unit is embedded (e.g., national cultural and institutional context or the industry of the focal unit of interest).

Forsgren et al. (2005) divide embeddedness into 1) the MNC context and the embeddedness of focal units in different local business networks; and 2) the home country context, influenced by the differences in institutional and cultural environments, as well as language differences. Figure 3 draws on Forsgren et al. (2005):

Figure 3: The embeddedness of the multinational



The filled triangle represents the headquarters of the MNC, commonly located in the home country of the MNC, and the filled squares represent its foreign subsidiaries. The stippled triangle represents the corporate MNC context in which all the units in the MNC are embedded. In contrast, the stippled circles represent each separate unit's business network and home country context. The hierarchical lines represent the administrative link in the corporate context. The straight lines between the units and network actors can differentiate the degree of embeddedness (e.g., light connection/arm's-length relationship). The embeddedness of the focal units in the corporate network varies, referring to the I-R framework and the strategic approaches to units in the MNC previously presented. Foreign subsidiaries are confronted with the need to maintain legitimacy within both the host country (external) and the MNC (internal) (Kostova & Roth, 2002). Saka-Helmhout (2016, p. 2) refers to an MNC embedded in multiple institutional settings as experiencing institutional complexity, further defined as "competing and potentially incompatible prescriptions from multiple institutional logics."

Scott (1995a, p. 33) defines institutions as consisting of "cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour. Institutions

are transported by various carriers – cultures, structures, and routines – and they operate at multiple levels of jurisdiction.” The normative dimension refers to the value system and norms, authority systems, and performance of duty in the national culture. The regulative dimension builds on the formal rules, governance systems, power systems, regulations, and laws that make up the country’s legal system (Prince et al., 2011). The cognitive dimension refers to the cognitive constructs and processes used to make socially acceptable decisions in a given institutional environment (Scott, 1995).

According to Gooderham et al. (2019), the influence of institutional differences between home and host countries on knowledge transfer has been mainly studied within two main streams: institutional theory in sociology (DiMaggio & Powell, 1983; Scott, 1995) and institutional economics (North, 1990). The underlying rationale in the former is commonly referred to as “neo-institutional theory.” It emphasizes that the peculiarities of a given national system of industrial production are associated with the variation in actors’ ability to act legitimately across institutional settings. Organizations and their members require and seek legitimacy to survive; therefore, the national context supports different patterns of managerial practices, such as information sharing (Prince et al., 2011).

While neo-institutional theory emphasizes the cognitive aspects of institutions, economic institutional theory emphasizes their formal regulative aspects (Gooderham et al., 2019). Here, the core lies in how institutions form the “rules of the game” in a society, which defines the structure that further shapes human interaction (North, 1990). These rules comprise formal rules, including laws, contracts, and judicial systems, and the informal constraints embodied in traditions and codes of conduct. The explanation of why institutions exist is that they are there to reduce uncertainty and avoid opportunism that will hinder complex economic exchange (Gooderham et al., 2019). These “rules of the game” conceptualize a national economy as a “national business system,” where a set of connecting structures and institutions in different spheres of economic activity together produce a nationally distinct way of organizing economic activity (Whitley, 1999, 2010). Based on the observed practices, values, and coordination in national systems, the dominant practices of firms’ work systems, reward systems, and employee governance together form distinctive configurations of the “national business systems,” which further shape firm strategies and enable action (Saka-Helmhout et al., 2016; Whitley, 2010). The governance principles of each market economy or

business system are historically identified as the state, financial system, public training system, legal system, authority relations, and union strength (Saka-Helmhout et al., 2016; Whitley, 2010).

Saka-Helmhout (2016) argues that these distinctive configurations of national business systems shape the ways the subsidiaries learn from and in the MNC's context. According to Saka-Helmhout (2016), attention has mainly been given to the constraints on actors' behavior through transaction costs represented by the institutional context rather than such context as a potential driver of competitive advantage. Multiple embeddedness presents MNCs with both opportunities and challenges. One example is how institutional heterogeneity in certain areas, such as corporate social responsibility (CSR), can provide learning opportunities to MNCs (Marano & Kostova, 2016).

Paper 2 focuses on the difference in institutional context represented by the comparative institutional analysis approach (Ahmadjian, 2016; Almond et al., 2005; Ferner, 1997; Kostova et al., 2008). This approach strives to understand national diversity by identifying, classifying, and explaining the distinctive configurations of institutions that characterize national business systems. The approach is applied through varieties of capitalism (Hall & Gingerich, 2009; Hall & Soskice, 2001) commonly used in the comparative IHRM field (e.g. Schotter et al., 2021) which is further elaborated on in Paper 2.

This section has provided a background to the three papers and an explanation of how they are connected. The next section provides more background on the methodology used in the three papers, after a brief introduction to the research approach.

2 Methods

This dissertation reports on a literature review and two quantitative studies. The information and description provided on the methodology in this introductory chapter are only supplementary to the method described in the individual papers. My primary focus is on the methodology in Paper 2, a research networks study, as this required most time for data collection and the paper does not fully capture the extensive work done. I was a member of the Norwegian data collection team. For Paper 3, I provide more details about the decisions made during my analysis work, as I was not involved in the data collection process. I refer to the methodology section in each paper for further details not given in this section.

2.1 Research approach and paradigm

The management of knowledge presupposes that knowledge may be dealt with just like any other organizational resource. According to Kalling & Styhre (2003), this is a very simplified view since knowledge can be anything, and only a subset of all the resources that can be regarded as knowledge is of interest from a management's perspective to control and manage. "Knowledge management seeks to control what really cannot be fully controlled, but it is exactly in that ambition that the dynamics of the concept lie: To handle what cannot be fully captured. ... To be able to exploit intangible resources, firms and organizations need to develop practices wherein knowledge can be captured, understood, and shared by individuals, communities of practice or the organization per se" (Kalling & Styhre, 2003:13).

For any scientific study, the assumptions about ontology, epistemology, and methodology create the study's framework (Bryman, 2016; Shah & Corley, 2006). The methodology chosen reflects an underlying philosophy comprising an ontological view and associated epistemological assumptions (Bisman, 2010).

Ontology refers to the philosophy of reality, or how the researcher views the world and what they consider to be "real" (Bisman, 2010). A central question is the subjective-objective divide, whether the social world is real and external to an individual human being or whether the individual creates his own social world and where the social world becomes a product of his cognition (Bryman, 2016). Traditional opposing viewpoints on the nature of reality can be divided between materialistic (reality is objective and concrete) or idealistic (subjective) (Bisman, 2010).

Epistemology refers to the philosophy of knowledge, or the theory of knowledge, its nature and limits, and how people acquire and accept knowledge about the world. The researchers' ontological viewpoints shape their epistemological beliefs regarding how knowing and understanding reality can be developed and the relationships between the researcher and that which is researched (Bisman, 2010).

Methodology deals with the methods or practices used to achieve this knowledge of reality (Krauss, 2005; Shah & Corley, 2006). The methodology should reflect the researcher's view on ontology and epistemology (Bisman, 2010).

Based on the viewpoint of ontology and epistemology, different research paradigms can be described. A paradigm might be defined as "the basic belief system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways" (Guba & Lincoln, 1994, p. 105). On one end of the spectrum, we find the traditional dominant paradigm within the social sciences, positivism; on the other, we find constructivism (Guba & Lincoln, 1994). Positivism has a highly objectivist view of reality, assuming that anything the senses can perceive is real. In this way, reality is an externality that exists independently of human thought and perception. Therefore, positivism assumes that reality can be accurately captured and described and, as such, represents an objectivist view of a single reality (Bisman, 2010). This represents the objectivist perspective within knowledge management, assuming that knowledge can take the form of a discrete entity, separate from people who may understand and use it, it is possible to make tacit knowledge explicit (Hislop, 2009).

Constructivism suggests that there are multiple realities because reality is subjective and socially constructed (Berger & Luckman 1966). This aligns with the practice-based perspective on knowledge management, assuming that knowledge has the following characteristics: embedded in practice, tacit and explicit knowledge is inseparable, knowledge is embodied in people, socially constructed, culturally embedded, and contestable (Hislop, 2009).

Critical realism represents a third alternative to positivist and constructionist philosophies that have dominated organizational research in the second half of the 20th century (Reed, 2009). Critical realism offers a modified objectivist view (Guba & Lincoln, 1994) that builds on the assumption that there are multiple perceptions about a single reality (Bisman, 2010). Realism shares two features with positivism: 1) the natural and the social sciences can and should apply the same kinds of approach to collecting data and explanation. 2) there is an external reality to which scientists direct their attention – a reality that is separate from our descriptions of it (Bryman, 2016). Therefore, critical realism aims to identify and verify underlying generative mechanisms or structures that cause actions and events that are observable in the empirical domain. Generalizations derived based on critical realism do not reflect an absolute truth but a probabilistic truth (Bisman, 2010). I lean towards the critical realism paradigm, where I believe that we can detect universal underlying mechanisms. However, there are always limitations presented in the research within social sciences that

make it difficult to grasp the objective reality fully. For knowledge management the critical realism perspective propose a middle way between the objectivist and the practice-based perspective, suggesting that different forms of knowledge imply different forms of truth, and different ways of justifying their claim to truth (Mingers, 2008).

2.2 Assessing data quality

Quantitative research is commonly evaluated by validity and reliability (Hair et al., 2006; Pedhazur & Schmelkin, 2013). Validity is concerned with how accurately a method measure what it intends to measure. Cook & Campbell (1979) identified four types of validity: statistical conclusion validity, construct validity, internal validity and external validity. Statistical conclusion validity refers to the validity of conclusions based on statistical test of significance. Construct validity is the correspondence between a measure and the construct that it is presumably measuring, i.e., how well the operationalized measure captures the theoretical construct (Pedhazur & Schmelkin, 2013; Tan, 2019). Reliability refers to the consistency of measurements. It is not related to what is being measured but how it is measured (Hair et al., 2006). Reliability is a necessary but not sufficient condition for validity (Pedhazur & Schmelkin, 2013, p. 81). Internal validity refers to the validity of causal relationships, whether the independent variable(s) effects on the dependent variable(s) are valid. This comprises design characteristics supporting the confidence in the findings of or inference from a study, assuring that the effects are caused by the variables that the researcher claims to be operating and not other alternative variables. External validity refers to the validity of generalizing the result beyond the sample, whether it is possible to generalize the findings to other populations or across populations and situations (Pedhazur & Schmelkin, 2013).

Considerations on validity and reliability are addressed in both empirical papers and their respective sections below in this introductory chapter. General reflections common between the two papers, especially related to external validity, follow this section's end.

2.3 Methodology Paper 1: Systematic Literature Review

The literature review for Paper 1 was guided by the methodology provided by systematic review (Denyer & Tranfield, 2009). The approach was evaluated to be suitable based on the aim to structure the review in a systematic way to provide an overview of the available research comprising organizational mechanisms enabling social interaction in the context of knowledge sharing- and transfer in MNCs.

The systematic review approach was initially developed in the medical field by the Cochrane Collaboration, which can be traced back to the 1970s and has later been introduced in other consortia dedicated to commissioning and disseminating systematic reviews (Denyer & Tranfield, 2009). A systematic review has been fronted as replicable, scientific, and transparent. This requires the reviewer to summarize all current information about a phenomenon thoroughly and unbiasedly. However, when applied to the social sciences, the systematic reviews have been criticized for applying the methodology in an uncritical memetic application (Denyer & Tranfield, 2009). According to Denyer & Tranfield (2009), reviewing management and organization studies is particularly challenging due to the fragmented nature of the field and its transdisciplinarity. Subfield academic communities easily detach from identification with the whole and can often engage in their research unaware of work in associated areas. According to Trainfield et al. (2003), the management field is relatively immature compared to other disciplines, still developing in terms of agenda and focus. However, recently several literature reviews within the International management literature have been published (Foss & Pedersen, 2019; Foss & Saebi, 2016; Kostova et al., 2016; Michailova & Mustaffa, 2012); indicating that the field has reached a point where several topics within the field now are ready to take status.

Tranfield et al. (2003) suggest that the original Cochrane-style systematic review is questionable and potentially undesirable for use in the field of management and organization studies. They further claim that the original Cochrane four core principles all have limitations when applied to the management field. Denyer & Tranfield (2009) argue that a revised and fit-for-purpose systematic review methodology might be more appropriate and propose four alternative principles for systematic reviews for use in management and organization studies, summarized in the four sections below. Due to the nature of this review, this specific literature review does not follow the principles slavishly. Further elaboration specifically related to Paper 1 is therefore described under each principle summarized below, based on Denyer & Tranfield (2009):

- 1) **Transparency** – the main reason for documenting the review methods is to aid transparency:

- a. Reviewers must be open and explicit about the process and methods employed; this determines the scope and boundaries. The review methods should be made explicit before the review commences, but the protocol is not fixed.
- b. The review findings should be presented so that there are clear links between the evidence found and the reviewers' conclusions and recommendations.
- c. The reviewer should clarify the assumptions underpinning the review and engage in a mindful questioning of a priori beliefs regarding the scope and implications of relevant research.

This principle was followed in the review and is elaborated further within Paper 1. The coding manual is to be found in Appendix B in the paper. The coding was documented in excel. Due to the nature of this review, where this paper is being included as an independent work in my dissertation, only one person conducted the coding in this review. Therefore, an intercoder reliability check was not performed.

2) **Inclusivity** – due to the difficulties in appraising the quality of information sources in the management field, for example, the authors sometimes fail to report on the data and analysis methods in sufficient detail, making it impossible to assess the study quality. Little uniformity in methods of data collection and analysis also makes it difficult. Therefore, the selection of articles should be based on the criterion 'fit for purpose,' guided by whether the literature retrieved adds anything new to our understanding of the intervention. In this way, a wide range of studies can be included, with diverse research types and data forms, to promote a complete understanding of the phenomenon of interest. The inclusion of a wide variety of sources compensates for different validity threats and opens for investigating contextual factors influencing the study's design and findings. The more variation, the greater validity. Therefore, according to Denyer & Tranfield (2009), systematic reviewers in management should be careful when implementing proxies as the quality rating of journals as a basis for exclusion since this might exclude central studies. However, if such proxies are used, the reviewers should apply the criteria to all relevant studies and communicate the warrants underpinning their claims.

In order to narrow the search of the pervasive literature on knowledge management, the search was limited to the top journals within the international management literature and only to peer review articles. Even though securing the quality of the articles included leads to

the exclusion of relevant articles both within this field and adjacent fields. However, especially the limitation to only includes MNCs most likely excludes relevant literature on organizational mechanisms in general, and literature from other related areas. Therefore, the review falls a bit short regarding this principle. The intention of using the generic search words was to secure the inclusion of the relevant papers; however, this led to a relatively extensive screening and selection process with almost 5000 articles being included in the initial screening process. This illustrates the extensive selection process. Therefore, I will argue that despite the limitation given by only including the top journals within the field, the generic search words and extensive screening secured the inclusion of a wide range of relevant articles from the area.

Further details on the screening are provided in the paper's methodology section. However, I would argue that within the established limits and the main research question of the paper, the search criteria and selection process were thorough, securing the inclusion of the most relevant articles. Further, the selection of only some journals follows the same outline as recent systematics reviews within the field (e.g., Foss & Pedersen, 2019).

3) **Explanatory** – the synthesis of the findings should bring the pieces from individual texts together to make a whole that should be more than the sum of its parts. The review should transform the texts into a systematic organization of the data into formats that allow summary. This body of evidence is then probed, sifted, coded, and cross-tabulated in numerous ways. Generalization is sought not in terms of the associations among variables but in the role and impact of generative mechanisms that play out in different ways over time (Denyer & Tranfield, 2009).

I would argue that this is applied according to the review's focus. The different mechanisms are mapped and presented, and the distinction and relationship between socialization and social capital are explored and presented in this context. One area that would have added more value to this principle would have been the inclusion of a summary of the results in the individual articles; however, this was not within the scope of this review.

4) **Heuristic nature** – Given the complexity of organizational settings, outputs from a review in management will describe what works, why or how the relation occurs, and in what circumstances. This will most likely be relatively abstract and considered 'best practice' for a practitioner. Therefore, these outputs can be considered heuristic – where a heuristic rule may help solve a problem but is not guaranteed to provide a detailed solution. The

output of systematic reviews is likely to be rules, suggestions, guides, or prototype protocols that may be useful in making progress toward a solution of a problem rather than providing a detailed solution to a specific problem.

This is partly described in the presentation of the articles, and the section of contributions and implications. However, in general are the topics covered in relation to the organizational mechanisms somewhat divergent. Further, it is not necessarily possible to jointly conclude on heuristics other than there is a strong link between social interaction and the processes of socialization and development of social capital; and its facilitation of knowledge sharing and transfer. However, this paper has identified the studies that can further provide the basis for relevant heuristics. As identified in the paper, the field is still fragmented, and there is a need to explore further and understand how these mechanisms can be designed and used in different contexts.

The conclusion is that the literature review that constitutes Paper 1 is based on the systematic review methodology. Most of the required research criteria were closely adhered to, and the detailed explanation has been provided above, for any criteria that were not entirely fulfilled.

2.4 Methodology Paper 2: The Intrepid Network

Paper 2 is based on data from a large-scale survey on "Employment Practices in Multinationals in Organizational Context." The survey has been conducted in multiple countries by an international research network named Intrepid. Four countries initially started the network (UK, Ireland, Canada, and Spain), and four more countries joined the network as the second wave of data collection (Mexico, Denmark, Norway, Australia). The third wave of countries joined later (Singapore and the Netherlands). Therefore, the data collection period varies between countries involved in the analysis (see table 3). Four countries are included in the analysis conducted in Paper 2: Denmark, Norway, Spain, and the UK. The surveys were, at the time, the most comprehensive investigations conducted of the employment practices among MNCs in the respective countries. The network had annual physical meetings once a year hosted by one of the network member institutions. The meetings coordinated data collection, methodological considerations, and research/publication planning. All countries own their country datasets. Access to publishing on data from other countries was granted by inviting the network members in the specific country in specific analysis/papers where it was up to

the focal country to decide whether they would like to join the proposed work. However, there was an expectation to contribute if joining.

The survey instrument

The survey questionnaire was developed drawing on measures used in previous survey work such as CLIRS (Marginson et al., 1995) and case study research that the initial group of members in the Intrepid network had been involved in. The overall focus of the survey instrument was on the MNC as a strategic unit in each national setting. The dependent variables covered different types of substantive HR and IR practices (for example, employee representation versus reward systems, organizational learning, and work organization), the relative control and autonomy of MNC operations on a range of substantive HR and IR policy areas, and the diffusion of innovations across borders. The key independent and control variables included: MNC characteristics (sector, size, degree of transnationality), value chain characteristics (degree of in- and out-sourcing, and relative distribution of different types of activity across global value mechanisms, for example, R&D as opposed to manufacturing). HR/IR structures (especially at international corporate levels): differences in practices between the largest occupational group (as self-defined) and managers/other key groups, types of company settings, MNC mechanisms for global and international regional integration of their activities, and the existence of other forms of international social regulation (for example corporate codes of conduct, European Union or NAFTA requirements, etc.). There was a shared focus on four aspects of employment policy and practice: pay and performance management, organizational learning and development, employee communication and involvement, and employee representation. Different groups within the workforce needed to be identified. Because policies were likely to vary across groups, the questionnaires identified the main groups: managerial employees and the largest occupation group (LOG) amongst non-managerial employees. A core of common questions was developed addressing each of these areas, the structure of the HR function and the demographic profile (board sector, employment size, age of national operation), ownership structure, and the strategy of the MNC. The questionnaires were not identical in all countries mainly due to two reasons: first, the different modes of administration required some minor adjustments to the structuring of some questions, for example, concerning the filtering. The second is that the national context meant that some questions that made sense in one country made little sense in others. In

addition, some of the teams added a series of questions that were unique for the focal country survey due to special research interests, e.g., The Spanish team added questions on employee diversity and the Canadian on the position within the global value chains. The questionnaire was thoroughly piloted and tested by the first wave countries. The questionnaire was primarily standardized but allowed for some local adjustments, e.g., the UK conducted an extensive screening process and added additional questions related to the core questions. The survey instrument contained identically framed questions (e.g., country-of-origin and size thresholds were phrased in the same way in each survey). Questions were asked about the same functional area and were identically framed as far as possible. However, it was open for individual adjustments by the local teams according to variations in norms and institutions governing the focal activity. For example, regarding questions related to the influence of unions, the survey instrument had to reflect different national arrangements. However, to be able to compare data between countries, it was essential to maintain the survey instrument as identical as possible. A core group of comparable variables was therefore identified. The questionnaire was designed in English (which was the working language of the international research team) and subsequently translated into the home language of the survey country (see the procedure for the Norwegian team below). Back-translation was conducted for each translation to assess that the equivalences in meaning had not been distorted through the language translation.

Data collection method

The data collection varied between the countries through face-to-face interviews, mail, or online surveys (see table 3). Where an online survey was used, each respondent was personally contacted and informed about the survey by phone. The link to the online survey was then sent in a personalized e-mail, with contact information in case of questions. The separate national data sets were finally recoded in the same format and merged into an international databank. The data were treated confidentially, and it is impossible to trace the data back to the source company. One team member has only handled the detection of duplications in the Norwegian/Danish dataset, and it is impossible to identify the respondent company in the final dataset. The variation in the timeframe of the fieldwork/surveys was from late 2005 - to 2009, where such a time lag between surveys used in comparative analysis is not unusual but represents openings for issues regarding the influence of the financial crisis

in late 2008 and 2009. Such a time lag between surveys used in comparative analysis is not unusual (e.g., Whitfield, Marginson, & Brown, 1994). However, it is potentially important given the change in economic conditions based on the 2008 financial crisis. It was checked whether the data gathered towards the end of the fieldwork period in Spain differed significantly from those gathered earlier, before 2008. Regression analysis of the Spanish data for the six practices examined here revealed insignificant differences between the data collected pre- and post-crisis.

Data collection overview of the countries included

Country	Databank for population development	Data collection time frame	Method
Denmark	AMADEUS, CD-Direct	April – June 2009	Online survey
Norway	Dun & Bradstreet, AMADEUS, proff.no, bedriftsdatabasen.no	Dec'2008-Aug' 2009	Online survey
Spain	AMADEUS, SABI, HOOVERS, ORBIS	June 2006 – Feb 2009	Face-to-face
UK	FAME, AMADEUS	Nov 2005 – June 2006	Face-to-face

Population and sample

The final estimate of population of MNCs was developed from multiple listings in the respective countries to derive the total population (table 4). This was a lengthy process due to the lack of a consistent single set of listings following the population criteria. This presented numerous reliability and comprehensiveness issues regarding the available sources. This applied to all countries participating in the survey (McDonnell et al., 2007). To ensure representativeness, we used multiple listings and resolved discrepancies through labor-intensive cross-checking. All teams encountered the same problems during the identification of the population. Examples were establishing the correct nationality of the foreign-owned firms. Some were characterized as having a shared percentage, where it was unclear how the ownership was decided between firms in different countries. Other were apparently a "flag of convenience," such as Bermuda and the Virgin Islands. The resulting list was 'screened' to check crucial aspects, a time-consuming but essential process; it revealed that many companies were smaller than the initial listing had suggested or were part of the same

multinational as another firm in the listing. Thus, the surveys are based on comprehensive and reliable population listings.

The survey comprised both indigenous-owned MNCs (parent companies) and subsidiaries of foreign-owned MNCs operating in the focal countries. Two separating subsets defined the population:

Indigenous-owned MNCs: All wholly or majority-owned organizations in the country concerned with 500 or more employees worldwide and at least 100 employees in one or more countries outside the country of origin.

Foreign-owned MNCs: All wholly-owned or majority foreign-owned organizations operating in the country concerned with 500 or more employees worldwide and 100 or more employed in their operations in the country concerned.

The respondent was the highest representative within the HR function in the company. In cases where the company's ownership was a part of a corporate group, only the highest level of HR within the corporate group was targeted as the respondent. This also applied in cases where the corporation consisted of multiple companies qualifying as parent companies of MNCs; these single companies were then excluded from the population. The response rate varied from 14% to over 50% in the different countries, where the lowest response rate was in the countries with the largest populations. The number of participating companies from each country does not vary as much as the response rates. Only data from the foreign-owned countries were used in the analysis for Paper 2.

Table 4 gives an overview of the sample/population in each country included in the analysis:

Sample/population (response rate)

Country	Indigenous-owned	Foreign-owned	Total
Denmark	30/115 (26%)	81/311 (26%)	111/426 (26%)
Norway	31/73 (42%)	45/217 (21%)	76/290 (26%)
Spain	83/ 191 (44%)	247/ 894 (27%)	330/1085 (30.4%)
UK	44/ -	258/ -	302/1729 (17.5%)*
Total	188	631	1079

*The UK had a response rate of 17,5% of estimated population (for both foreign and indigenous-owned companies), and 33,3% of screened population.

Norway/Danish survey instrument, population, and sample

This section will give a more detailed description of how the Nordic country's dataset was collected and coded. Due to small populations and cultural/institutional proximity, it was decided by the Intrepid network that Denmark and Norway would be considered as one country in the analysis. The Intrepid network decided on a lower limit of 150 cases (including home and foreign companies) to be considered one country unit. The Norwegian team worked independently with the Norwegian data collection; however, this was done in close collaboration with the Danish team to streamline the dataset and secure the ability to consider this as a common dataset for the Nordic countries. The same applied to data cleaning and coding. As a second-wave country, the time frame was limited compared to the first-wave countries; in addition, it was limitations in funding and resources for conducting face-to-face interviews. It was therefore decided to use an online survey for the data collection.

The survey instrument was mainly based on a combination of the UK and Irish questionnaires to secure comparability. The survey was initially in English and was translated into Norwegian for the Norwegian-owned MNCs, which checked for accuracy after it was translated back again to English. The final questionnaires were pre-tested on two external managers in Norwegian MNCs. The process and numbers for both indigenous-owned and foreign-owned MNCs are included since it was the core of the structure for the data collection process. Only foreign-owned MNC is included in the analysis in Paper 2. The questionnaire for the foreign-owned companies used in Norway can be found in Appendix A1.

There was no easy way to identify the population of foreign-owned MNCs neither in Denmark nor Norway. There were at the time several lists of multinational companies available, but none of them could be considered sufficiently comprehensive and accurate. Especially the criteria of the number of employees were difficult to obtain in detail in many cases. In some cases, it was also challenging to identify the ownership structure of the company in order to fulfill the criteria of identifying the respondent on the highest level of HR in the corporate group, most senior HR executive. There were also issues with double listings and missing information, especially country of origin, subsidiaries, and ownership. We, therefore, had to construct the population by combining several resources; in addition to the available databases, we did manual checks by searching information on the intranet and contacting the companies directly. In Norway, the sample was mainly drawn from a combination of the

database Dun & Bradstreet and the prior developed list provided by Samfunns- og næringslivsforskning (SNF, Centre for applied research at NHH). The list from SNF was further based on DN 500 (an annual list published by Dagens Næringsliv of the 500 largest companies in Norway) and the encyclopedia Norges Største bedrifter. The list was further checked by listings provided by www.proff.no. The situation of getting access digitally to this sort of information was limited in 2008/2009 compared to the situation today. The Danish team mainly used Amadeus and CD direct.

All firms were contacted by telephone to explain the purpose of the study, identify key informants and request their participation, and confirm some of the main criteria for being included in the population (number of employees in Norway/abroad). The final questionnaire was made available online, and its link was sent by e-mail to the identified respondents. The questionnaire was available in Norwegian and English for the parent companies and only in English for the subsidiaries. The anticipation was that subsidiaries would most likely have English as their corporate language due to foreign parent companies. This is in line with previous research suggesting that managers of European MNCs generally have a good command of English (Harzing, 1999). The incentive offered was a report based on the results sent to the participating respondents.

A personal text accompanying each questionnaire explained the purpose of the study and provided assurances regarding confidentiality. Through the online questionnaire, help options defined and explained the context of the questions. All participants were offered direct help/assistance by the local project team (e-mail/phone contact). One month after sending the first e-mail, a follow-up reminder by mail was sent if the firm had not answered. After that, non-responses were followed up by personal phone calls, and the link was resent to the focal respondent. Non-response bias was tested by comparing early and late respondents on all key constructs, where there was no significant difference for any of the variables.

Data screening and coding

The Intrepid network team defined a comprehensive codebook identifying comparable international questions and the SPSS transformations for the international dataset. An international working group did the work connected to developing the codebook from the Intrepid research network. The recoding of the data collection conducted in Denmark/Norway

was done in collaboration between the two teams and was a very comprehensive and time demanding manual process.

In the final international dataset, the handling of duplicates was not consistent in all cases (subsidiaries of the same international parent company or subsidiary of either Danish or Norwegian-owned MNC). Eight cases were identified between the Norwegian and Danish datasets (five relevant for the foreign-owned respondents). This was evaluated as not representing an extensive problem or risk to the research, and thus all cases were included in the analysis. Paper 2 comprises only of data from respondents in foreign-owned companies in the respective countries.

This is the first comprehensive study on HR practices in MNCs covering multiple countries. The same applies to the Norwegian context. The Cranet study has conducted surveys and studies on comparative HRM in multiple countries for more than three decades but is not explicitly cultivated on MNCs. This makes this dataset unique thus every effort was made to ensure its internal validity, as described above, especially given the international context of the research. The efforts to mitigate for errors were thorough, but were within the limits of the research situation, timeline, and limited resources available as described above.

Construct validity and reliability of dependent construct

There is no standardized measure for international social learning structures. In the Intrepid network, the items have been used differently in analysis by the different national teams on national levels, where the measure's reliability is addressed differently (McDonnell et al., 2010; Tregaskis et al., 2010). In this paper, the measure's validity for the dependent variable, international social learning structures, was based on the Mokken scale. The Mokken scale can assist in determining the dimensionality of tests or scales and enables consideration of reliability without reliance on Cronbach's alpha. See the methodology section in Paper 2 and Appendix 1B for more details. Further details on the measures and the hierarchical regression analysis that was conducted are provided in Paper 2.

Generalizability and internal validity considerations

The representativeness of the MNC survey data is quality checked by the way the population is generated and is unique in terms of previous studies at this time. Checks were also undertaken to examine the consistency between the sector, size, and country of origin.

Especially was this secured by the concordance between the digital listings and manual checks directly with the companies. There was no sampling for the Norwegian data collection; due to the relatively small population identified, the whole population was contacted to participate in the survey. Representativeness was one of the major focus areas when identifying the population. Several listings were available for all countries involved, but none of them could be considered comprehensive, accurate, or reliable. Checking information provided on websites, also had some limitations. The information required was not always listed, or some companies did not have homepages. Other issues that arose during the compilation of the population were lack of comprehensiveness, duplication of companies, and inaccuracy of company details. It was difficult to map the total number of employees worldwide in Norway, especially for the foreign-owned companies. The companies were also directly contacted, but we did not always succeed in getting in touch with the right person to provide this information. Additionally, not all persons we e-mailed and contacted were interested in contributing. Therefore, an extensive manual job was done to identify the population, using multiple sources.

Another question is if it is possible to really consider Denmark and Norway as one country, and it is questionable whether it is possible to generalize to a "Nordic" population in all instances. This, therefore, needs to be considered carefully for each study where it is relevant to apply the data. However, the main reason for the Intrepid networks approach was that Denmark and Norway are relatively similar. Due to the relatively small populations, a common dataset would help increase the number of respondents to be included, hence increasing the statistical power.

In all of the surveys, the teams checked the representativeness of the responding firms towards the population according to the three criteria of nationality, size, and sector. In Spain, larger and home-based MNCs are over-represented, and weights were being constructed to adjust for this. Likewise, in the UK, the firms taking part in the main survey were found to be mildly skewed towards manufacturing. This was adjusted by weighting the data. For the Norwegian data, the representativity was a bit skewed, where manufacturing and other were higher, than compared to the service sector. The number of employees in Norway was a bit skewed towards the larger companies. Nevertheless, no weights were being constructed due

to the small sample and complexity of combining the Danish and Norwegian data. See Appendix 1C for more information on representativity.

Another challenge for the representativity and internal validity is the single respondent, preferably being the most senior executive HR person in the company. This, together with the requirement of only including the highest unit within a company group structure, may have excluded some relatively large sub-units within the group, with higher levels of international activities than the mother company. The implications of this survey requirement, is that it may limit the possibility of mapping the diversity of HRM practices between units belonging to the same group structure.

2.5 Methodology Paper 3: Disciplinary Networks

Paper 3 was written with my two co-authors who initially collected the data. The dataset was evaluated to represent an excellent opportunity to build on the work of Nesheim et al. (2011) and to further investigate my research topic by using structural equation modeling (SEM). The data are from a dataset based on a survey of 2 516 members of 131 discipline networks in a large Norwegian MNC. Further details of the context are provided in the methodology section in Paper 3. The questionnaire is to be found in Appendix 2A.

Extensive analysis was conducted prior to the final analysis presented in Paper 3. This introductory chapter and attached appendixes present additional relevant results and in-depth information to report on the paper analysis more fully.

SEM gives the advantage that the hypothesized model can be tested statistically in simultaneous analysis of the entire system for variables and determine the extent to which it is consistent with the data (Byrne, 2010). To gauge model fit, we examined: the index of absolute fit by chi-square (χ^2) values Kline (2016), Comparative Fit Index (CFI; Bentler, 1990), Steiger-Lind Root Mean Square Error of Approximation (RMSEA; Steiger, 1990), the Standardized Root Mean Square Residual (SRMR; Hu & Bentler, 1999)

Invariance testing (multigroup analysis) was applied in the analysis to test for cross-validation. To control the stability of the results, one can randomly split the data in half, estimate the model twice, and then compare the results (Pohlmann, 2004). Due to the relatively high N, the opportunity of cross-validating between samples was initiated by randomly splitting the data file into two groups in SPSS before analysis. The groups are in the analysis referred to as

Group1 and Group2. According to Kline (2016), cross-validation between samples should always be conducted when the sample size is large enough. Cross validating between random samples allows for confirming that the measurement theory initially tested is valid and stable between the samples (Hair et al., 2006).

The invariance analysis indicates no differences between the two groups, indicating that the model is valid and stable between samples. More details on invariance testing and the results from the analysis can be found in Appendix 2B, 2C, and 2D.

Before the analysis, the data were screened and prepared based on procedure suggested by Hair et al. (2006) and Kline (2016) (evaluating skewness and kurtosis, outliers and careless responses, homoscedasticity, linearity, multicollinearity, missing variables). Some non-normality was detected in terms of skewness and kurtosis. The analysis was therefore based on estimators for non-normal data (MLM/listwise and MLR/FIML). Estimator for assumption of normality, ML, was tested throughout the analysis. There were no significant differences in results between estimators. Missing variables was handled by multiple imputation using Full Information Maximum Likelihood (FIML) and Multiple Imputation (MI) provided by Mplus. FIML and Multiple imputation (MI) in general are asymptotically equivalent, but in MI the generation of the multiple imputed data files gives the opportunity to include auxiliary variables. When using FIML estimation only the variables included in the model of substantive interest are used in the imputation of the missing variables (Asparouhov & Muthén, 2010; Graham, 2009). Thus, there are recent methods for FIML that can include auxiliary variables in Mplus (Graham, 2009). However, I was not able to retrieve information on how to do this in Mplus at the time when the analysis was conducted.

The analysis was conducted in three steps. First, an explorative principal component analysis (EPCA) was conducted in SPSS to examine whether the items expected to represent the concepts demonstrate such a structure. According to Medsker, Williams, & Holahan (1994), an exploratory factor analysis gives valuable information regarding the adequacy of items and scales before using confirmatory factor analysis to assess the measurement model. See Paper 3 for more details.

Anderson & Gerbing (1988) recommend using a two-step approach to structural modeling by first examining the measurement model before testing the structural model. A confirmatory

measurement model specifies the relations of the observed measures to their posited underlying constructs, where the constructs are allowed to intercorrelate freely. A confirmatory structural model specifies the casual relations of the constructs to one another, as posited by the theory. Therefore, it is a theory-driven confirmatory technique (Schreiber et al., 2006).

The second analysis step used confirmative factor analysis (CFA) to develop the measurement model. The item structure identified during the EPCA was included in the CFA. The operationalizations of the variables are described in the paper. All items in the model are modeled as reflective indicators because they are viewed as effects (not causes) of the focal construct. For further details on the respecification of the measurement model, see Appendix 2E. Specifically, the use of single and two-item constructs was considered thoroughly. See Appendix 2E for more information.

In the third and final analysis step, a final measurement model was used to test the theoretical structural model (SEM). See Paper 3 for more information.

In SEM, the measurement model provides a confirmatory assessment of convergent validity and discriminant validity. The following structural model test constitutes a confirmatory assessment of nomological validity, assessing whether the constructs are related as expected (Anderson & Gerbing, 1988). The validity of the measurement model depends on goodness-of-fit for the measurement model and specific evidence of construct validity. Construct validity assesses how a set of measured variables actually represents a theoretical latent construct as designed for and expected. Construct validity consists of four components (Hair et al., 2006): Convergent validity – indicators of a specific construct should converge or share a high proportion of common variance (evaluating factor loadings, variance extracted and construct reliability); discriminant validity - assessing the extent to which a given construct differs from other constructs, and implies that a construct is unique and captures phenomena not represented by other constructs in the model; Nomological validity – refers to the degree that the summated scales makes accurate predictions of other concepts in a theoretically based model, evaluates the correlations among the– in other words the scales predicts as theoretically suggested; face validity - the subjective assessment prior, to the CFA, of the correspondence between the individual items and the concept with the objective to ensure that the selection of scale items extends past just empirical issues to also include theoretical

and practical considerations (Hair et al., 2006). Reliability is commonly estimated in SEM by construct reliability (CR) instead of coefficient alpha (Fornell & Larcker, 1981). Reliability is a required, but not a sufficient, condition for validity (Hair et al., 2006). These elements were all evaluated to be sufficient in meeting the requirements of validity and reliability in the final analysis presented in Paper 3.

2.6 General methodological concerns and reflections

The above presentation of the methodological approach and concerns for the respective papers represents both strengths and weaknesses. This section will sum up some of the most important methodological implications common for both empirical papers.

A strength of this study, is that both of the empirical papers are based on a survey design allowing the collection of data from a large number of respondents simultaneously on a range of different variables (Saunders et al., 2019). However, response rate for Paper 2 might be considered in the lower range (Mellahi & Harris, 2016), but is still within normal range if compared to the response rate for the other countries included in the Intrepid survey. The response rate for Paper 3 was evaluated to be relatively high. One challenge is that we have very little insight into non-respondents in both datasets, which can represent a bias since they can be skewed or not fully representative. One possible bias is that those most oriented towards the research area respond to the surveys. For example, was there a tendency for larger MNCs in Norway (suggested by the number of employees in Norway) to respond to the survey used in Paper 2. The same applies to Paper 3, relying on self-reporting data, where one may anticipate that the respondents are the ones most active in the knowledge network.

Both datasets are limited in claiming internal validity based on causal relations due to the nature of cross-sectional data. The causal effects presented in the papers are estimated by fitting cross-sectional models to the data describing the relations among variables at only one point in time. The direction of relationships is therefore hypothesized in the proposed models. Causes take time to exert their effects (Gollob & Reichardt, 1987). However, cross-sectional data are widely used in the management literature, as was confirmed by the review in Paper 1. This is further confirmed in additional reviews in other adjacent research areas such as marketing (Rindfleisch et al., 2008).

Establishing external validity is the basis on which research results can be generalized to other settings or populations. A primary difference between the two in this study, is that one is conducted within one single company, and the other is conducted across multiple companies across four countries. In addition, the level of analysis is different, where one is on the company unit level and the other on the individual level. These aspects represent several implications for generalizability. Pedhazur & Schmelkin (2013) refer to two types of generalizability: The first is generalizing *to* a population presumably represented by the sample included in the research. This is closely linked to the sample-selection procedures. The other is generalizing *across* populations from samples given in one population (e.g., one employee category to another) or one setting to another population or setting (e.g., this specific knowledge network to another knowledge network in another company). For Paper 2, the aim was to generalize to the population of MNCs. Extensive efforts were made to identify the populations in the respective countries to secure the internal validity and representativity of the data collected. One challenge is the limitations set by the network of the number of employees. As we can see from the identification of the population, this most likely restricted the number of MNCs included, especially in Norway. For Paper 3, generalization to a broader population is limited since the survey was conducted in one company and one company-specific disciplinary network. The question is then the degree of transferability of the findings from this specific context to a similar context, e.g., another knowledge network in another company. Based on the thoroughness of the analysis in Paper 3, I argue that the findings can provide guidelines for how knowledge networks, in general, can be designed, not just in this specific context. However, exploring the replication of these relations in other studies should be conducted, to further examine the assumption of transferability.

One final aspect to consider is the degree of MNC-specific context, i.e., where specific refers to a phenomenon that essentially does not exist in the non-MNC context (Roth & Kostova, 2003). This dissertation focuses on the MNC context, where both Paper 1 and Paper 2 are MNC context-specific. The data collection in Paper 3 is conducted in a Norwegian MNC and therefore represents an MNC context. However, I can see the argument that it is only partially MNC-specific, where only one item used to measure structural social capital can clearly be connected to an MNC-specific context. However, I argue that the MNC-specific context is

relevant. Roth and Kostova (2003) emphasize three aspects of the heterogeneity and complexity that characterize MNCs: external environment, intraorganizational diversity, and individual variability, all of which are covered in this study. All three papers address the richness of the external environment (e.g., different institutional contexts in Paper 2), which is one area of interest for MNC research. Paper 2 also considers the intraorganizational complexity of the MNC (i.e. the strategic role and HRM structures). This is especially relevant to the different strategic roles of MNC units and different governance and control mechanisms (Roth & Kostova, 2003). In this study, the individual variability aspects of MNCs is partly represented in Paper 3, both by the social capital construct and the fact that the respondents are located in different national contexts. Hence, the three papers in this dissertation address all three of the key characterization aspects of MNCs, albeit to different degrees.

3 Presentation of the papers

This section presents the three papers that constitute the dissertation. The papers can be read independently of one another, although they cover different aspects of the overall study model presented in the introductory chapter. Each paper specifically addresses the organizational mechanisms enabling social interaction in different ways. Paper 1 is a literature review, while Papers 2 and 3 are empirical papers that used a quantitative design. Different sections highlighting the discussion, contributions, and implications follow the presentations of the papers. Finally, the primary limitations and suggestions for future research are presented.

Paper 1: Governing Knowledge in MNCs by Organizational Mechanisms Enabling Social Interaction - A Literature Review on Socialization and Social Capital

Given the lack of coherent definitions and operationalizations of organizational mechanisms that enable social interactions, along with the thematic variations in the literature, Paper 1 had two main aims: (1) identify organizational mechanisms enabling social interaction used to govern knowledge processes in MNCs, and (2) focus on socialization and social capital, providing further insights into both concepts and clarifying their distinction. The interest in conducting this review came out due to the lack of a consistent view in the literature on governance and control mechanisms for knowledge sharing and transfer in the context of MNCs, especially those identified by Martinez and Jarillo (1989) as more subtle and informal coordination mechanisms.

Socialization and social capital are of particular interest, as they have been promoted as explanations for why social interaction facilitates knowledge processes (e.g., Andersson et al., 2015; Gupta & Govindarajan, 2000; Nahapiet & Ghoshal, 1998). However, as this review confirms, there is a lack of consistency in how socialization and social capital have been operationalized and used. Moreover, “socialization” and “social capital” are sometimes used interchangeably. Zeng et al. (2018, p. 421) referred to this inconsistency as the “jingle-jangle problem,” wherein authors use the same term to mean different concepts or various terms to mean similar concepts. Yet, most of the relevant organizational mechanisms in the context of MNCs are based on social interactions. Hence, this review sets out to identify relevant organizational mechanisms enabling social interaction within MNCs, with a focus on socialization and social capital.

The literature review was conducted following the systematic approach (Denyer & Tranfield, 2009). To narrow the scope of the search and secure the quality of the articles included, the search was limited to top journals in the field of international management. This review proposes that social interaction can be established as an overarching category for governance mechanisms covering knowledge processes in MNCs. It also provides an overview of how these organizational mechanisms have been discussed in top journals within the field of international management. The review comprised 96 articles and identified seven categories of organizational mechanisms: formal cross-departmental and informal non-regular structures, staff mobility, integrative personnel/roles, parent company involvement, training, and socialization/relationship-building activities. The results indicate that most of the mechanisms enabling social interaction are within staff mobility as well as formal cross-departmental and informal non-regular structures. Only approximately 20% of the articles explicitly included socialization or social capital. The distinctions and similarities between these concepts are elaborated upon, providing further insights into these concepts, definitions, and operationalizations. Furthermore, I suggest a distinction between socialization and social capital, where the former is seen as an antecedent to the development of the latter.

The review also provides a conceptual model for distinguishing between formal and informal organizational mechanisms enabling social interaction and how these facilitate socialization mechanisms and social capital development. This model proposes that formal organizational

mechanisms are coordinated and integrated through pre-established mechanisms and interfaces based on formal communication. Such formal mechanisms primarily lead to structural social capital. In turn, the social interaction that follow from formal physical interaction and the development of structural social capital facilitates informal social interaction and the facilitation of socialization mechanisms. The model suggests that socialization further facilitates the two other dimensions of social capital: relational and cognitive. In this way, the model proposes that formal and informal organizational mechanisms may both play roles in facilitating processes that contribute to socialization and social capital. The model further suggests that in the context of the MNC cross-national differences will possibly have a moderating negative effects.

Moreover, this review identifies the need to understand the underlying processes and mechanisms affected by these organizational mechanisms and how they are effectively designed in different organizational contexts, thus emphasizing the importance of microfoundations. Finally, the need to further explore the differences between social interactions on virtual platforms and face-to-face physical interactions is underscored.

As Paper 1 focuses on organizational mechanisms enabling social interaction, Paper 3 later covers the "Integration mechanisms" box in the overall model.

Paper 2: Transnational Social Learning Structures in Multinational Companies: The Role of Strategic Characteristics, Human Resource Structures, and Institutional Context

The main objective of Paper 2 is to examine the association between factors on both the organizational and institutional levels and with the use of organizational mechanisms enabling social interaction in MNCs. The extant literature has demonstrated a high interest in knowledge sharing and transfer in MNCs. However, only a few studies have empirically investigated how MNCs internationally use organizational learning practices by leveraging the advantages of social interaction to facilitate learning and knowledge transfer between units. Thus, Paper 2 aims to deepen our understanding of what factors influence the use of these mechanisms in MNCs operating in different institutional contexts.

In particular, Paper 2 proposes a theoretical model, which predicts the strategic role of the subsidiary and HR structures and assumes that differences in institutional context will influence the use of transnational social learning structures (TSLs). As a dependent variable, TSLs is a construct based on four items measuring four types of organizational mechanisms

enabling social interaction: expat assignments, international project groups/task forces, international formal committees, and international informal networks. By implementing and using TSLS, MNCs can govern learning and knowledge sharing between managers by facilitating socialization and social capital development. This creates transnational social spaces for learning among managers to enable the transfer, creation, and dissemination of knowledge in MNCs.

Both strategic and HR structures were included at the company level. The theoretical standpoint is that subsidiaries' roles within MNCs may vary due to different strategic factors, influencing the need to control the subsidiaries through integration mechanisms, such as TSLS. For the strategic factors, the following were included; degree of autonomy (measured by the degree of standardization of products within the MNC); a high degree of resource interdependency with other units in the MNC; and MNC-specific R&D capabilities generated by the subsidiary. All of these were expected to have a positive association with use of TSLS. Surprisingly, only two factors, autonomy and R&D capabilities showed significantly positive results, while the third factor, resource interdependency unexpectedly failed to show a positive association.

We further suggest that HR structures can support learning initiatives in the MNC and specifically support the implementation of TSLS. The HR structures in the model included the use of international HR networking structures (a HR manager network and the presence of an international HR policy committee in the MNC), an organizational learning policy for the focal unit, and a management development program used by the focal unit. As expected, they all showed a positive association with TSLS. Meanwhile, the institutional context was shown to be theoretically grounded on varieties of capitalism (VOC) (Hall & Gingerich, 2009; Hall & Soskice, 2001), which were separated into coordinating market economies (CME), liberal market economies (LME), and mixed market economies (MME). Based on VOC, we suggest that regardless of country-of-origin in the MNC, it is more challenging to transfer knowledge and practices to a CME context than to an LME context. Hence, the use of TSLS would be lower in subsidiaries located in a CME context than in subsidiaries located in an LME context.

While the home institutional context of the parent company showed no significant impact, the results revealed a significantly negative "country-of-operation effect" for subsidiaries operating in a CME context, indicating that such foreign subsidiaries make less use of TSLS

than those operating in an MME or LME context. This finding is in line with the expectation that a foreign CME context might be more challenging because it is less transparent, and the rules of the game are more intricate. Thus, MNCs transfer/implement fewer practices in general to/in subsidiaries operating in a foreign CME context. This finding supports the expectation that the CME context is more complex for foreign subsidiaries.

This paper provided the opportunity to test our model using a unique dataset from a survey that included over 600 foreign subsidiaries spread across four European countries. The construct of TSLS has not previously been tested on a dataset expanding multiple countries. As there is no standardized measure of TSLS, this approach contributes to test the operationalization of this construct on data from multiple institutional contexts. Even though the strategic role could explain the variance to a certain degree, HR structures contributed the most in explaining TSLS utilization. Hence, the opportunity to investigate the institutional context by using VOC contributes to our understanding of the use of these mechanisms at the subsidiary level and how country-of-operation effects and MNCs, in general, respond across different institutional settings.

Paper 2 is positioned on the left side of the overall model, which comprises the firm and institutional levels.

Paper 3: The Governance of Knowledge Sharing and Application in MNCs: The Role of Management and Autonomous Motivation

Paper 3 explores microfoundations in a knowledge network setting by examining the important conditions that ensure the success of knowledge network utilization for knowledge sharing and application. Thus, we propose a model that suggests that different types of autonomous motivations are associated with knowledge sharing and application. Furthermore, we suggest that formal network management is essential for knowledge sharing behavior, knowledge application, and structural social capital development across borders.

Paper 3 aims to provide insights into the process by which knowledge networks are used as governance mechanisms to facilitate knowledge sharing and knowledge application in MNCs. It does so by focusing on the role of formal network management and the autonomous motivation of the individual members. Thus, this paper has a three-fold aim. First, it aims to examine how formal network management facilitates knowledge sharing behavior and knowledge application among network members. Second, it seeks to understand how two

types of autonomous motivation (intrinsic and extrinsic) influence the degree of knowledge application and knowledge sharing behavior within the knowledge network. The concept of motivation is grounded in self-determination theory. Two types of autonomous motivation are highlighted: (1) intrinsic autonomous motivation, which is linked to activities that have direct value or purpose, and (2) extrinsic autonomous motivation, which is fully volitional and cannot be defined as intrinsic because the activity to which it is linked does not have a direct value or purpose in itself. However, for the first form of motivation, individuals identify with the importance of the behavior and integrate such identification with their own values and other aspects of their selves, thus becoming a part of their values and identity. The third aim of Paper 3 is to determine how structural social capital across borders is facilitated in the network by knowledge management and knowledge sharing behavior and to identify the links between structural social capital and knowledge application.

The analysis is based on a survey of 2,517 employees who are members of formal intraorganizational knowledge networks within MNCs. Mainly, the findings indicate that formal network management is essential for facilitating knowledge sharing in the network, the development of structural social capital across borders, and knowledge application. Knowledge sharing, extrinsic autonomous motivation, and structural social capital across borders are all positively associated with knowledge application; however, the analysis suggests that network management has the most extensive influence, thus underlining the importance of network management in this setting. Furthermore, knowledge sharing and application are influenced in different ways by diverse types of motivation, wherein intrinsic and extrinsic autonomous motivations are positively associated with knowledge sharing and knowledge application, respectively. The findings also support the anticipated positive association between structural social capital across borders and knowledge sharing. The results also suggest that this is even more important for those outside the parent company's home country.

This paper contributes to the knowledge management literature by identifying important conditions for effective knowledge networks and the importance of different types of autonomous motivation. It also contributes to the understanding of microfoundations, especially in relation to individual motivations in the context of knowledge sharing and transfer within a knowledge network in MNCs.

Paper 3 is positioned on the right side of the study model, where the focus is on the individual level, as indicated by the micro-level in the model.

4 Contributions and implications

This section provides an overview and discussion of this dissertation's main contributions and implications for practitioners. The overall aim of this dissertation was to investigate how MNCs govern knowledge sharing and transfer within their companies using organizational mechanisms enabling social interaction. In different ways, various insights into the relatively broad research question presented in the introduction have been provided by the three papers in this dissertation and where they contribute to their respective areas in the overall model for this introductory chapter. The overall model illustrates how a company's external context, company-level factors and organizational design, governance mechanisms, and subsequent microfoundations are connected to governing knowledge processes in MNCs. The main focus is on the organizational mechanisms enabling social interaction as integration and governance mechanisms for such processes.

Theoretical and other contributions

The three papers comprising this dissertation make several theoretical contributions. First, Paper 1, the literature review, contributes to the categorization of organizational mechanisms enabling social interaction, thus identifying and providing a structured overview of the mechanisms covered in different ways in the literature. Based on the author's research, this is the first systematic review of such mechanisms. While the literature has shown a lack of consistency in how the mechanisms have been labeled and operationalized (López-Sáez et al., 2021), the review suggests ways to distinguish between formal and informal mechanisms. However, it is recognized that the separation between formal and informal is not always clear-cut. Paper 1 further provides a description of the split between formal and informal mechanisms which depicts the distinct characteristics of these two categories'. Paper1 proposes a model which clarifies how informal and formal mechanisms are related to socialization and social capital and how these two concepts can be distinguished from each other. Specifically relevant for the MNC context, the model further includes cross-national differences as an important moderator that represents a possible negative influence on the effect of social interaction, the socialization process and the generation of social capital and thereby its impact on knowledge transfer.

Paper 2 contributes to our understanding of how firm-level structures and institutional contexts influence the utilization of organizational mechanisms enabling social interaction. Although the TSLS in Paper 2 comprises only organizational learning mechanisms for managers, it still provides insights into the utilization of such organizational mechanisms and may prove valuable for other employee groups. Both strategic and HR structures are associated with TSLS utilization in MNCs. For strategic structures, the low degrees of autonomy and MNC-related R&D capabilities in subsidiaries are positively associated with the use of TSLS. This indicates that high-autonomy subsidiaries make less use of TSLS because they are less dependent on interactions with other units in the MNC. Further, subsidiaries with critical R&D resources are important knowledge hubs in the MNC and play a crucial role in developing sustainable development and competitive advantages for the MNC. HR networking structures, manager development programs, and organizational learning policies are all positively associated with the utilization of TSLS, thus implying the HR structures' essential role in supporting cross-unit learning and knowledge transfer within the MNC.

A central theoretical contribution of Paper 2 is that the institutional context-of-operation for foreign subsidiaries seems to influence the utilization of TSLS in the focal subsidiary, where it is less present in subsidiaries located in a CME context than in those located in an MME or LME context. This phenomenon occurs regardless of the parent company's institutional context-of-origin. This indicates that the CME context is considerably more complex for foreign subsidiaries. Hence, this finding contributes to the comparative literature, in which the effects of country-of-operations received considerably less attention compared to the country-of-origin effects. However, these results should be handled with caution because the explanatory effect in the results is relatively small, and more research is needed to support this association. The final contribution of Paper 2 is the operationalization and testing of TSLS. Although the reliability measure of the TSLS is sufficient, it could be further strengthened. Thus, the development and further testing of this concept should be conducted.

Paper 3 contributes to the theory by indicating how formal network management and the differences between extrinsic and intrinsic autonomous motivations are linked to knowledge sharing and application. The result from the paper gives us a better understanding of the microfoundations of network management and how the individual types of motivation interact with knowledge sharing behavior and application. Furthermore, the paper

contributes to our understanding of the distinction between the types of motivation that are crucial in knowledge sharing and application processes. On the one hand, extrinsic autonomous motivation is essential for knowledge application, but it has no direct association with knowledge sharing. On the other hand, intrinsic autonomous motivation is essential for knowledge sharing but has no direct association with knowledge application. Therefore, the two types of motivation are vital for different parts of the knowledge transfer process, and both are crucial to achieving successful knowledge application outcomes in the context of knowledge networks in MNCs. Paper 3 further suggests that high-quality network management and knowledge sharing behavior are positively associated with structural social capital across borders, which, in turn, is positively associated with knowledge application. This implies specifically the relevance of the importance of network management as a vital part of the design of such a knowledge network in order to facilitate knowledge processes in the cross-national context of an MNC. Nevertheless, as a word of caution, further research should be conducted before the associations supported in these empirical findings can provide solid conclusions and be generalized to other knowledge networks and settings.

This dissertation adds further insights to and builds on the stream of other recent and central contributions in the field of international management, which has specific relevance for knowledge management in MNCs (e.g., Zeng et al., 2018; Foss & Pedersen, 2019; Gooderham et al., 2019; Kostova et al., 2016; Gaur et al., 2019) and the field of comparative IHRM (e.g. Cooke et al 2019; Farndale et al., 2022; Gooderham et al., 1999; Schotter et al., 2021). As demonstrated in the literature review, the interest in understanding knowledge sharing and transfer processes in MNCs has continued to grow over the last decades. Many of the initial issues identified related to MNCs and their continuous challenge in integrating and facilitating knowledge sharing and transfer between their units are just as relevant today, emphasizing the role of social integration mechanisms in facilitating knowledge sharing and transfer in MNCs.

As proposed by the overall model, understanding how these knowledge processes based on social interaction can be managed and facilitated requires insights into how they work on several levels. The contributions from this dissertation provide further insights into the "toolbox" of transfer mechanisms (Ciabuschi, 2011) by investigating relevant factors and mechanisms on these respective levels. The overview of the available organizational

mechanisms enabling social interaction provides a framework of which mechanisms might be appropriate for different situations by separating formal and informal mechanisms and proposing how they are related to socialization and social capital (Gooderham et al., 2013). Extant research has also investigated antecedents at the firm level that explain variations in how organizational mechanisms are utilized by the MNC. They indicate that the strategic role of the subsidiary is relevant, as is the role of international HRM structures (Gooderham, 2007). The findings also demonstrate how microfoundations and the design of these mechanisms are relevant to the desired effect of implementing organizational mechanisms based on social interaction (Foss, 2007; Foss, 2006; Gooderham et al., 2013). Findings further indicate that concerning the external context, cross-national differences might play a central role in how MNCs utilize these organizational mechanisms across borders and the moderating effect these factors have on the effectiveness of using these mechanisms in knowledge transfer processes (e.g. Gooderham et al., 2019; Gaur et al., 2019).

These aspects from both the institutional context and firm levels are especially relevant for the field of International HRM (e.g., Schotter et al., 2021; Gooderham et al., 1999) in that they address how MNCs can effectively use interpersonal networking and organizational design, enabling social interaction to facilitate and govern knowledge sharing and transfer within the company (Zhou et al., 2020). These findings contribute to the comparative IHRM field and the contextual paradigm in IHRM research (Farndale et al., 2022).

The separate contributions of this dissertation give insights into how companies can implement and utilize these integration mechanisms thereby enabling social interaction and knowledge sharing processes across their dispersed units. This is done by:

- 1) providing a better understanding of how to view specific types of organizational mechanisms enable social interaction in MNCs and their connection to socialization and social capital; 2) providing insight into which factors influence the use of these mechanisms on individual, firm and external context levels; and 3) articulating how these factors influence the way these mechanisms can be designed and utilized. Overall, this contributes to the understanding of how MNCs can utilize social interaction in the creation-, sharing- and transfer of knowledge as the source of sustainable differentiation and competitive advantage (Kogut & Zander, 1993).

Practical implications

Several aspects of the papers' findings have practical implications for MNCs and their practitioners, including managers in general and HR professionals in particular.

First, by offering awareness of these organizational mechanisms, Paper 1 provides practitioners with a structured approach to and an overview of the different types of mechanisms enabling social interactions. This might facilitate reflections on when it is appropriate to use informal versus formal mechanisms, especially regarding the intention of what type of socialization processes and social capital are beneficial. These are valuable inputs when evaluating the kinds of organizational mechanisms appropriate for meeting the goals of knowledge transfer processes.

Paper 2 identifies TSLS as a transnational practice for managers, highlighting how these organizational mechanisms enabling social interaction can be used by managers regardless of institutional context. However, the results indicate that the facilitation of learning and the transfer of knowledge, in general, might be more complex in a foreign CME context than in a foreign MME or LME context. On the one hand, these are aspects deemed relevant for managers and HR practitioners. On the other hand, the results also indicate that organizational-level factors are most important in utilizing TSLS. While strategic factors (e.g., R&D capabilities and the low autonomy of subsidiaries) increase TSLS use, the most influential factor is the HR structure, where international HR networks and committees for HR policies seem to support the utilization of TSLS. The same applies when the unit has a management development program or an organizational learning policy. These are not just essential aspects of the HR structure that seem to support the utilization of TSLS in foreign subsidiaries but are especially relevant for HR practitioners who intend to use HR structures to integrate the different units in the MNC.

Paper 3 contributes important inputs for practitioners in designing and organizing knowledge networks. In particular, the paper demonstrates the importance of formal network management in facilitating structural social capital, especially the interplay between knowledge sharing in the network and knowledge application in the home unit. Knowledge application is especially relevant for practitioners, as it demonstrates how a company can influence target outcomes, such as knowledge sharing and application, when implementing a knowledge network. These results thus demonstrate that by implementing high-quality

network management, MNCs can—to a certain degree—facilitate and govern their knowledge sharing and application.

Paper 3 further reveals the importance of having knowledge network members with both extrinsic and intrinsic motivations. For practitioners, it might be useful to understand why some employees prefer to participate in knowledge sharing while others are more efficient in their implementation of acquired knowledge. Although this is most likely difficult to manage in practice, it is something managers and HR resources should consider when hiring personnel for positions involved in knowledge transfer tasks or potential candidates who will participate in knowledge networks. It is also essential for practitioners to understand why both types of motivation should be present to ensure the full utilization of a knowledge network setting, as in Paper 3. Candidates should not only be motivated by intrinsic autonomous motivation and enjoy the knowledge sharing part of the process. Rather, to be able to achieve effective knowledge application and utilize the transferred knowledge in the home unit, MNCs must also have network members with extrinsic autonomous motivation, whose core values drive them to do excellent, high-level professional jobs. It is also relevant for practitioners and HR personnel to recruit outstanding network managers who will facilitate knowledge sharing behavior and knowledge application in a good way and at the same time positively influence the structural social capital of network members. This latter point seems to be even more relevant for those members located abroad (remotely located) compared to others residing in the MNC's home country.

5 Limitations and future research

Combining the three different studies into a unified, holistic view represents a challenge in itself, and as in most research, several limitations are identified below. Some of these have been briefly addressed earlier. Further are areas that might be of interest for future research highlighted.

Limitations

Common methodological limitations are shared between the two empirical papers (Papers 2 and 3). First, their cross-sectional design limits their ability to conclude causality and raises concerns about endogeneity and reverse causality. Therefore, the direction of the relationships between the variables is hypothesized in the two proposed models in the

empirical papers. For example, could structural social capital influence knowledge sharing behavior, or is it the latter that influences the development of the former? Especially in light of social interaction, the results of these activities are products of processes that are facilitated over time. For example, claiming that the social interactions enabled by these organizational mechanisms facilitate socialization and social capital development requires a protracted process over time. As a result, it would be problematic to claim that such underlying mechanisms can explain why social interaction facilitates knowledge sharing and transfer if only cross-sectional data are used. This is especially relevant in measuring the effects of these organizational mechanisms on the knowledge transfer process and how such mechanisms influence socialization and social capital development. For example, this may be relevant to the model in Paper 3, in which ensuring the quality of network management is expected to continue over time and where the time aspect is important in achieving knowledge network outcomes (e.g., knowledge application efficiency). Thus, longitudinal studies are recommended for future research.

Second, all three articles have issues regarding sampling and generalizability. Paper 1 is limited to top journals in the fields of international management, HRM, and management. It excludes other areas of research and other relevant journals. For Paper 2, the lack of public lists resulted in the demanding work of manually creating a representative list of all MNCs in Norway, which is essential in generalizing the findings. This was a challenge for all countries included in the research network study. Further research on MNCs in a Norwegian context would benefit from developing and maintaining a database of Norwegian MNCs and securing the representativeness of the population. To my knowledge, such a database has yet to be established. Furthermore, the criterion of speaking only to the highest personnel on the group level might have led to the exclusion of some important subsidiaries. At the same time, in Paper 3, the survey was conducted only within one company, making it difficult to generalize its findings to other organizations. Therefore, further research is needed to test the generalizability of the proposed associations.

Third, self-reported data pose limitations, as their use might lead to common method bias. Such bias may appear when both the independent and dependent variables are captured by the same response method, leading to the correlation between variables being attributed to the common source of measurement instead of the constructs represented by the measures

(Chang et al., 2010; Podsakoff et al., 2003; Podsakoff & Organ, 1986). However, in Paper 3, the checks we performed indicated that common method bias was not a problem. Studies have also shown that common method bias/variance does not normally represent a serious threat to the validity of the research findings (Doty & Glick, 1998) as long as the reported reliability is within acceptable limits (Fuller et al., 2016). In Paper 2, all measures were perception-based and provided for the MNCs by individual respondents. However, to enhance validity within the study's limits, the most relevant respondent within the company was selected to respond on behalf of the company (Montabon et al., 2018). This was the person occupying the highest-level HR position in the company.

A fourth common limitation of Papers 2 and 3 is related to the constructs included in both empirical analyses. In particular, these measurement instruments are not well-established. This is reflected in the two- and one-item constructs in Paper 3. Additionally, some of the effects in the analysis are relatively low. These warrant caution in drawing final conclusions on the results. Therefore, future research should build on these findings by further developing measurement instruments and testing theoretical models.

As the sole methodological approach employed by the empirical articles is the use of a quantitative design, this narrows the opportunity to investigate the research question from different angles. In retrospect, using a longitudinal design and a mixed-method approach, including qualitative research, would have led to the collection of richer data that could help us gain further insights into the main research question. The study of Espedal et al. (2013) is an example of how qualitative research can gain insights into how the designs of these organizational mechanisms either promote or inhibit the effectiveness of knowledge sharing and transfer.

Future research

Solutions to some of the limitations identified are more accessible than others. A mixed-method approach that included a qualitative study, may have increased the richness of the available data, but would have required considerable more resources and time to generate.

Foss and Pedersen (2004) pointed out that the literature on how MNC managers can best orchestrate knowledge processes by designing and implementing organizational control mechanisms has a somewhat ad hoc nature. Based on the work conducted in this dissertation,

I believe that this is still a valid assessment. Future research has several steps to go, especially in terms of understanding how to effectively design interventions for knowledge sharing and transfer, understanding the microfoundations involved in these processes, and gaining insights into the factors influencing the use of such organizational mechanisms enabling social interaction in an MNC context.

Based on this dissertation's contributions, the categorization of formal and informal organizational mechanisms enabling social interaction presents a framework that could be further developed. This can be achieved by bringing in aspects of efficiently designing the contents of these mechanisms. We recognize that the separation between formal and informal in the real world is not always clear and distinct. However, an overall framework and a set of general guidelines could prove valuable, as the literature does not provide a substantial and coherent framework. By primarily focusing on the types of organizational mechanisms, the related factors (e.g., absorptive capacity), findings, and other aspects of the knowledge transfer processes are left out. A future review could possibly provide information on the findings in the relevant literature and report on the effectiveness of the different organizational mechanisms reported therein. For example, Persson (2006) demonstrated that having permanent teams as lateral integration mechanisms negatively influences knowledge transfer, while liaison mechanisms and temporary teams have a positive influence. Further examples of relevant factors that may influence the use of social interactions as governance mechanisms include intercultural competencies (Bartel-Radic, 2006), language (Klitmøller & Lourcing, 2013; Welch & Welch, 2008), absorptive capacity (Reiche, 2011; Yildiz et al., 2019; Zhou et al., 2020), and motivation (Liu & Meyer, 2020; Oddou et al., 2009).

Another area that could be explored further is the appropriate design for use in formal and informal settings and which mechanisms are appropriate in terms of the type of knowledge being transferred. Furthermore, even though socialization and social capital have been promoted as explanations to the black box of why social interaction facilitates knowledge sharing and transfer, this dissertation comes short in contributing to further investigating this empirically. Paper 3 does include a construct for structural social capital. However, this area could benefit from further investigation. Thus, we suggest further exploring the role of socialization and social capital in this context. From my point of view, socialization has been granted a relatively larger part of the literature compared to social capital. As Paper 1

suggests, there is a need to further develop the operationalizations of socialization and social capital and the distinction between them. Most of the operationalization presented in the current literature is linked to socialization and is often represented by the frequency of social interactions. Therefore, this calls for further development of the instruments for operationalization, where the focus should be on measuring the degree of socialization and social capital development in this context.

Further development of TLS and similar operationalizations of these mechanisms would also be an advantage. As previously mentioned, although the reliability measure of the TLS is sufficient, it could have been even stronger. Thus, future studies could further develop this construct, along with discussions on how these mechanisms can be measured to secure both validity and reliability.

In Paper 2, the institutional factors' low degree of explained variance warrants further investigation before any causal relations can be concluded based on the institutional context of operation. The significant results indicate that this is something that should be further investigated. Another aspect that is worthy of consideration is that the variation of institutional context explored in Paper 2 is somewhat limited, as the countries included are located in Europe. Therefore, including a broader selection of institutional contexts would add more variation to the analysis.

Furthermore, I suggest exploring the institutional context together with other aspects of distance. For example, the findings of López-Sáez et al. (2021) indicate that formal mechanisms for integration seem to work independently in terms of the type of distance between the units involved in knowledge transfer. On the contrary, their findings indicate that the knowledge transfer effectiveness of informal integration mechanisms is likely to be influenced by certain types of distances between units involved in knowledge transfer.

At the same time, exploring the distinctions among knowledge sharing, knowledge transfer, and knowledge application could also be an area for further investigation. Today, these concepts partly overlap in the literature and clarifying the difference would contribute to understanding individual antecedents in how MNCs can facilitate knowledge processes. This is related explicitly to Paper 3 and the different types of autonomous motivation, and how the

findings indicate that they relate differently to knowledge sharing and application. This area also warrants further investigation.

Further developing what constitutes high-quality network management is also a topic of interest. Other variables could be included to explain how different types of autonomous motivation are facilitated. For example, Nesheim et al. (2011) included line manager support in their model. This topic could be further explored together with other aspects (e.g., individual goal alignment) and how this influences knowledge application related to the knowledge network.

Returning to the overall model, the three papers in this dissertation cover all levels of the model: the macro-level, subsidiary level, and the micro-level of individual factors. Pedersen and Foss (2019) reported that the international management area has mainly focused on context- and macro-level factors in explaining knowledge sharing and transfer. Despite the representations of both individual- and macro-level research, the integration between micro and macro has been neglected. The authors, therefore, call for more multilevel research.

I also recognize that the studies in this dissertation cannot deliver a multilevel analysis (Peterson et al., 2012), which could have facilitated a full investigation of organizational mechanisms enabling social interaction within the framework of microfoundations. Foss and Pedersen (2004, 2019) pointed out that this is essential in studying both organizational-level antecedents and microfoundations. Furthermore, the individuals—and not the subsidiaries—are the agents for knowledge sharing. For Paper 3, a multilevel analysis was considered, but the response rate for some networks was deemed insufficient for conducting this in SEM. Therefore, future research should investigate how organizational mechanisms enabling social interaction are designed and how relevant contextual factors influence the micro-level.

As described in the introduction and in the three papers, this dissertation is placed within the domain and theoretical lens of the knowledge-based view (KBV). When the KBV was introduced as an alternative theory of the firm in the 1990s, this sparked debates on whether it was a stand-alone theory of the firm, especially by those supporting the well-established view of transaction cost economics (Ghoshal & Moran, 1996; Moran & Ghoshal, 1996; Williamson, 1996). Yet, despite the influence of the KBV on the international management literature since the 1990s, this debate still continues. The authors claim that it has failed to

establish itself as a stand-alone and internally consistent theory of the firm, as the theory still appears fragmented, although it continues to influence to several areas of the international management and strategy literature (Grant & Phene, 2022; Pereira & Bamel, 2021). Nevertheless, the KBV seems to continue its development as an important theoretical lens. In their review, Pereira and Bamel (2021) identified the future of KBV as highly relevant in this field of study, especially considering the important role played by social capital and intellectual capital in firms in creating and applying firm-specific knowledge.

This dissertation aims to advance the understanding of how MNCs can use organizational mechanisms enabling social interaction to govern knowledge sharing and transfer within companies. While this study provides several implications that practitioners can consider, yet this area still has a way to go before we can fully understand how we can utilize these organizational mechanisms efficiently. A final comment is related to what has already been highlighted: due to the ongoing digital transformation, social interaction today involves aspects other than the traditional physical and social interactions. These digital and virtual arenas have implications for how MNCs can most effectively utilize social interaction to govern their knowledge processes. Digital and especially virtual arenas add new dimensions to social interactions as integration mechanisms; thus, they are of high interest for future research. Increased insights into how digital transformation influences socialization and social capital development are important directions for future studies.

However, the core question remains: How can MNCs effectively use organizational mechanisms enabling social interaction to facilitate knowledge sharing and transfer to build competitive advantage? Even though the contexts and conditions change and new platforms for social interactions are made available, one of the key assumptions of the KBV remains valid: "The critical source of competitive advantage is knowledge integration rather than knowledge itself" (Grant, 1996, p. 380). Emphasizing the fact that it is not necessarily the knowledge itself that generates competitive advantage, the key is how MNCs can integrate knowledge among their units in the most effective and efficient way.

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Paper 1

Governing Knowledge in MNCs by Organizational Mechanisms Enabling Social Interaction
- A Literature Review on Socialization and Social Capital

Governing Knowledge in MNCs by Organizational Mechanisms Enabling Social Interaction - A Literature Review on Socialization and Social Capital

Christina Roe Steen

Norwegian School of Economics, NHH

Abstract

This paper reviews the literature on the organizational mechanisms used by multinational companies (MNCs) to enable social interactions and facilitate and coordinate knowledge sharing and transfer. Due to the complexity deriving from having business units operating in diverse national contexts, the literature on the governance and coordination of knowledge sharing and transfer in MNCs contains a particular focus on the role of socialization and social capital. Organizational mechanisms comprise ways of organizing concrete activities and interventions (e.g., formal knowledge networks, expatriation, teams, etc.). This review focuses on intra-organizational knowledge processes. A systematic review approach was used to examine previous studies in the relevant literature published in top international business and management journals. Seven main categories of organizational mechanisms enabling social interaction were identified, and a framework for separating formal and informal mechanisms was presented. The findings of the present review confirmed that there has been growing interest in knowledge processes and their organizational mechanisms in MNCs over the last four decades. Most articles were concerned with knowledge transfer, and secondly, knowledge sharing. Only approximately 20% of the articles explicitly included socialization or social capital. Distinctions and similarities between socialization and social capital were highlighted, providing insights into these two concepts, their definitions, and their operationalization. The paper draws attention to the need to further understand the underlying mechanisms affected by these organizational mechanisms and how the latter are organized effectively in different organizational contexts, thus emphasizing the importance of microfoundations. Additionally, is the need to explore differences between social interaction on virtual platforms versus physical face-to-face interaction lifted.

Introduction

Over the last four decades, there has been a growing interest in knowledge processes and knowledge management in companies in general, which is reflected in the literature on multinational companies (MNC) (Foss et al., 2010; Gupta & Polonsky, 2014). The knowledge sharing and transfer process in MNCs is distinct from that within national companies because, in the former, multiple units operate across national borders, which presents challenges deriving from geographic distance and differences in language, cultures and institutions (Gupta & Govindarajan, 2000; Martin & Salomon, 2003; Minbaeva, 2004; Gooderham (2007)). The context of cross-national differences represents both complexity and diversity, making the knowledge transfer processes in MNCs especially challenging (Martinez & Jarillo, 1991; Gaur et al., 2019; Zeng et al., 2018). The differences are associated with increased difficulties that can result in incompatibility, friction and conflict that further can obstruct the communication, coordination of employees and units, and application of knowledge. In this way can national differences be considered a barrier to effective knowledge transfer (Gaur et al., 2019). Additionally, MNCs are usually large, and their activities are often spread across multiple divisions and areas. Therefore, a critical and challenging task for an MNC is the extensive coordination, integration, and exchange of resources required between and among its units across borders (Kostova & Roth, 2003).

The knowledge-based view of the firm (KBV) conceptualizes the MNC as a knowledge-sharing network in which the existence of the MNC depends on its ability to share, transfer, create, and apply knowledge more efficiently than markets do (Kogut & Zander, 1993). The KBV rests on the idea that the analysis of firms should be based on their knowledge resources (Grant, 1996); moreover, the organization's capabilities' of knowledge sharing and transfer is one of the sources of "organizational advantage" and the firms' ability to build a competitive advantage (e.g., Nahapiet & Ghosal, 1998). Furthermore, how MNCs leverage their knowledge through knowledge flows within their networks is an essential aspect of building competitive advantages (Kogut & Zander, 1993). Social interaction has been highlighted as a facilitator of intra-MNC knowledge sharing and transfer, mainly with regard to different types of integration

mechanisms (Björkman et al., 2004; Persson, 2006; Subramaniam & Venkatraman, 2001; Zeng et al., 2018). Norderhaven and Harzing (2009) put forward two theoretical views on social interaction. The first is the sender–receiver model, which views social interaction as an efficient conduit or channel for knowledge transfer, especially complex context-specific knowledge. The authors argued that the existence of the channel alone cannot explain the knowledge flows that it hosts. The other perspective is social learning theory, which suggests that in this context, learning takes place in communities where knowledge is not only an object passed from the sender to the receiver but is also “socially constructed through collaborative efforts with common objectives or by dialectically opposing different perspectives in dialogic interaction”(Plaskoff, 2003, p. 163). Knowledge flows in MNCs are therefore enabled when individuals from different units in the MNC engage in social interaction (Noorderhaven & Harzing, 2009). Both socialization and social capital have been promoted as explanations of how this social knowledge is generated and how firms develop an organizational advantage. The suggestion is that companies with the ability to facilitate socialization and develop social capital build capabilities for knowledge sharing and transfer (e.g., Andersson, Gaur, et al., 2015; Gupta & Govindarajan, 2000; Nahapiet & Ghoshal, 1998). This brings us to the main question addressed by this literature review: What are the organizational mechanisms MNCs use to enable and promote the social interactions necessary for the facilitation of socialization and social capital that underpin knowledge sharing- and transfer.

Although limited, a few previous literature reviews have focused on antecedents and other aspects of the knowledge transfer process (Asrar-ul-Haq & Anwar, 2016; Van Wijk et al., 2008). Other reviews have focused on specific elements of the knowledge transfer process in MNCs. For example, Michailova, and Mustaffa (2012) considered the subsidiary the focal unit of analysis in knowledge flows within MNCs. Foss and Pedersen (2019) examined microfoundations and knowledge sharing in international management research. Zeng et al. (2018) provided a meta-analysis identifying socialization as one of three integration mechanisms for governing knowledge transfer in MNCs. However, no previous study has conducted a comprehensive review of the literature on organizational mechanisms that enable social interaction through

the coordination and governance of intra-organizational knowledge processes in MNCs. Furthermore, relevant organizational mechanisms in the context of intra-MNC knowledge transfer have received little attention (Ambos & Ambos, 2009), and there is a need to clarify the difference between formal and informal coordination mechanisms used by MNCs and their effectiveness in different contexts (López-Sáez et al., 2021). Hence, the purpose of this review is to provide an overview of the developments in the knowledge management literature over the last four decades, with a specific focus on organizational mechanisms that enable social interaction and facilitate knowledge sharing and transfer in MNCs. In this context, a mechanism is defined, based on Chou and Tsai (2004, p. 207) as “a structural arrangement or a variety of design actions to facilitate interactions and knowledge exchange among organizational members.” The organization is thus understood as the MNC, and social interaction refers to the face-to-face nature of social interactions promoted by focal mechanisms (Noorderhaven & Harzing, 2009).

The aim of this review is twofold. First, to provide an overview of how mechanisms enabling social interaction, used to coordinate and govern knowledge sharing and transfer in MNCs, have been covered in the knowledge management literature. Second, to present an overview of the roles of socialization and social capital in the context of the governance and coordination of knowledge transfer and sharing in MNCs. The focus is on intra-organizational knowledge processes and not inter-organizational knowledge processes, that is, between companies and their external networks (e.g., Khan et al., 2015).

Figure 1 provides an overview of the primary purpose of this review in the context of governing knowledge sharing and transfer in MNCs, which is to identify the organizational mechanisms that enable social interaction and the role of socialization and social capital.

Model

Insert Figure 1 about here

The following sections provide a brief background on knowledge sharing and transfer and introduce the concepts of social capital and socialization. This is followed by a description of coordination and control in the context of organizational mechanisms that enable social interaction. The methodology and criteria for this review are then described, followed by the results and insights gained from the review.

Knowledge sharing and transfer

The concept of knowledge in an organizational setting has been described as “a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms” (Davenport & Prusak, 1998, p. 5).

Knowledge transfer refers to the process through which organizational actors exchange, receive, and are influenced by the experience and knowledge of others (Argote & Ingram, 2000; Van Wijk et al., 2008). The literature alternately uses the concepts of knowledge transfer and sharing alternately (Hislop, 2009). However, it is possible to argue that knowledge transfer indicates that knowledge is transferred in one direction, whereas sharing indicates an act of reciprocity in which the transfer of knowledge travels in more than one direction and thus requires other mechanisms to be successful (Hislop, 2009). Knowledge sharing entails interaction and communication in which people who share a common purpose exchange ideas and information (MacNeil, 2003; Nohria & Ghoshal, 1994). However, there is a close link between knowledge sharing and transfer, and in this context, knowledge sharing is

often considered part of the knowledge transfer process. A common focus has been on the extent of knowledge flows within an MNC instead of the degree of transfer effectiveness, which is the actual adoption and use of knowledge by the receiving party (Andersson et al., 2015). This includes knowledge application, which is sometimes used interchangeably with knowledge transfer, where knowledge transfer is defined as the identical or partial replication of knowledge from one place to another (e.g., Lucas, 2006; Szulanski, 1996). For knowledge transfer to take place, some change in knowledge or performance in the recipient must be involved (Inkpen & Tsang, 2005).

A distinction is made between tacit and explicit knowledge. Tacit knowledge is uncodified knowledge; that is, it is highly personal and often context-dependent, which makes it difficult to transfer (Nonaka, 1994). Explicit knowledge is codified knowledge and can thus be transferred more easily (Kogut & Zander, 1993). Therefore, a common assumption is that the transfer of tacit knowledge requires social interaction because it is difficult to articulate (Chang et al., 2012; Noorderhaven & Harzing, 2009).

Socialization and social capital

In the context of MNCs, socialization refers to organizational mechanisms that build interpersonal relationships, shared goals, and values between employees in an MNC and that form the foundation of a common organizational culture (Hedlund & Kogut, 1993; Nohria & Ghoshal, 1994; Persson, 2006; Zeng et al., 2018). An early definition of socialization in an organizational context was by Van Maanen and Schein (1979, p. 21): organizational socialization is the process by which “an individual is taught what behaviors and perspectives are customary and desirable within the work setting.” Through socialization, organizational members are believed to increasingly identify with corporate goals and values. Individuals gain common knowledge and develop a shared technical language and semantics that subsequently facilitate communication (Persson, 2006). According to Gupta and Govindarajan (2000, p. 479), corporate socialization mechanisms “build interpersonal familiarity, personal affinity, and convergence in cognitive maps among personnel from different subsidiaries.”

Informal connectedness and shared values lead to increased openness of communication and richness of communication channels. In the context of knowledge transfer and sharing, units in the MNC that share the same goals and vision are more likely to transfer resources and exchange complementary knowledge. Close interpersonal networks facilitate the diffusion and creation of knowledge between members and units within an MNC (Björkman et al., 2004; Nahapiet & Ghoshal, 1998; Persson, 2006). In this way, socialization strengthens interpersonal networks, which positively influence the available communication channels, open communication, and willingness to share knowledge among members and units in the organization (Gupta & Govindarajan, 2000; Björkman et al., 2004; Zeng et al., 2018). This further increases the opportunities and access to knowledge throughout the MNC network, supporting knowledge creation, sharing- and transfer in intra-firm networks (Zeng et al., 2018; Gupta & Govindarajan, 2000; Björkman et al., 2004; Persson, 2006; Tsai, 2001; Tsai & Ghoshal, 1998). Socialization is lifted as specifically relevant to the transfer of tacit knowledge, which is found to be difficult to codify and communicate (Nonaka & Takeuchi, 1995). The assumption is that the use of organizational mechanisms facilitating socialization will be positively related to knowledge sharing and transfer within MNCs (Zeng et al., 2018; Gaur et al., 2019).

The theory of social capital serves as a basis for identifying how organizations are uniquely equipped to develop the sharing of knowledge. Nahapiet and Ghoshal (1998, p. 243) defined social capital as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit.” Nahapiet and Ghoshal distinguished three dimensions of social capital: structural, relational, and cognitive. The *structural dimension* is “the overall pattern of connections between actors – that is, who you reach and how you reach them” (Nahapiet & Ghoshal, 1998, p. 244). The *relational dimension* of social capital refers to facets of personal relationships, such as trust, obligations, respect, and even friendship, all of which increase the motivation to engage in knowledge exchange and teamwork. The *cognitive dimension* refers to shared interpretations and systems of meaning and shared language and codes that provide the foundation for communication. Knowledge transfer is the most effective

if it is a natural part of an organization's doing and being, that is, when it is embedded in the established organizational culture (i.e., the core values in use), implicitly guiding individual, group, and organizational behavior. The three dimensions are not mutually exclusive and are interrelated with intellectual capital. Social capital provides organizations with a supportive environment conducive to learning through social exchange and relational networks, which suggests that organizational knowledge also resides in interactions among organizational members and their networks of interrelationships (Nahapiet & Ghoshal, 1998). Adler and Kwon (2002, p. 23) provided a general definition of the concept of social capital as "the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor." The authors defined social capital specifically related to knowledge processes as "the goodwill that is engendered by the fabric of social relations that can be mobilized to facilitate action" (2002, p. 17).

Both socialization and the development of social capital presuppose social interaction. Hence, this review maps the organizational mechanisms and structures that MNCs can implement to facilitate social interaction. The links among social interaction, socialization, and social capital development are evident (Tsai & Ghoshal, 1998). The association between socialization and social capital with knowledge transfer processes is well established in the literature over (Zeng et al., 2018). However, definitions of and distinctions among concepts related to socialization, socialization mechanisms, and social capital have not always been clear; therefore, they are an area of focus in this review. Table 1 provides an overview of the three constructs social interaction, socialization and social capital and how they overlap:

Insert Table 1 about here

Governance of knowledge processes in MNCs: Coordination and control

One challenge for MNCs is finding the right balance in integrating their units across borders and business areas while considering the requirements of multiple local contexts. According to Cray (1984), integration consists of two processes: coordination and control. Control refers to processes that bring adherence to a goal or target through the exercise of power or authority, while coordination refers to the processes that enable and provide appropriate linkages between tasks and units in the MNC to accomplish collective goals. A common view is that in the context of MNCs, global integration refers to the organizational mechanisms of control and coordination used in combination to achieve consistency of international business activities across borders (Kim et al., 2003). These mechanisms are deployed in the belief that they will influence organizational members' actions and lead to favorable decisions on organizational outcomes and the achievement of common organizational goals (Foss, 2007; Harzing, 1999). In contrast to control, coordination is more relevant for mechanisms aimed at knowledge transfer and sharing through social interaction because of its inherent elements of collaboration and voluntary action (Gooderham et al., 2011; Kalling & Styhre, 2003).

According to Martinez and Jarillo (1989, p. 490), "a mechanism of coordination is any administrative tool for achieving integration among different units within an organization." Knowledge is embedded in how organizations are organized, and it influences how people cooperate and share knowledge (Kogut & Zander, 1992). By implementing coordination mechanisms for knowledge sharing and transfer, MNCs can govern their knowledge resources and enable the ways in which parts of the organization are linked together (Kogut & Zander, 1992; López-Sáez et al., 2021).

Martinez and Jarillo (1989) divided coordination mechanisms into two main groups: 1) structural and formal mechanisms (e.g., formal structures, centralization /decentralization of decision making, formalization and standardization, planning, output, and behavior control); 2) other mechanisms that are less formal and more subtle. Other scholars have offered slightly different definitions of coordination. Zeng et al. (2018) referred to three divisions of coordination mechanisms: 1) centralization

(control by HQ and decision making by hierarchy); 2) formalization (standardization of processes and procedures across MNE units); 3) socialization, which emphasizes informal normative mechanisms (using organizational mechanisms to build interpersonal relationships, shared values, and goals).

The focus on informal mechanisms in the context of knowledge sharing and transfer has increased over the last decades, in which the emphasis has moved away from examining the use of technology and “hard” knowledge management infrastructure to more informal mechanisms of knowledge flows, such as social networks and socialization (Kostova et al., 2016; Michailova & Mustaffa, 2012). However, so far, there has been no coherent way of categorizing informal mechanisms, especially regarding the degree of formality. Martinez and Jarillo (1989, p. 491) divided less formal structures into three groups: 1) lateral or cross-departmental relations (e.g., direct managerial contact, temporary, or permanent teams, task forces, committees, integrators, and integrative departments; 2) informal communication (e.g., personal contacts among managers, management trips, conferences, and transfer of managers, etc.); 3) socialization (e.g., building an organizational culture of known and shared strategic objectives and values by training, transfer of managers, career path management, measurement and rewards systems, etc.). The three categories represent three different outcomes for enabling social interaction. Group 1 initiates formal structures for communication, and Group 2 initiates informal structures for communication. The activities suggested to enable social interaction in Group 3 also initiate informal communication; however, the primary intent is to facilitate socialization mechanisms. Therefore, participation in activities facilitating socialization mechanisms is expected to facilitate and enhance the knowledge transfer between units in the MNC (Simonin & Özsoy, 2009), which has been supported by findings in the literature (see Zeng et al., 2018).

Gupta and Govindarajan (2000) claimed that knowledge transfer cannot occur without transmission channels, which they divided into formal and informal channels. Formal transmission channels refer to integrative and structural mechanisms, such as liaison positions, task forces, and permanent committees, which corresponds with Martinez

and Jarillo's (1989) Group 1 or lateral or cross-departmental relations. Informal transmission channels involve corporate socialization mechanisms, which Gupta and Govindarajan (2000) separated into lateral and vertical socialization mechanisms. Examples of lateral mechanisms include job transfers to peer subsidiaries or participation in multi-subsidiary executive programs. Examples of vertical mechanisms include job transfers to headquarters and corporate mentoring programs.

Reger (2004) referred to structural and formal mechanisms, such as "structural coordinating bodies" including liaison persons, committees, integrators, integrating department/teams, and two subcategories of informal mechanisms: 1) personal contacts/informal communication; and 2) socialization, that is, the creation of a general organizational culture through joint goals, shared values/norms, and job rotation. Reger (2004) introduced hybrid/overlaying integration mechanisms, presupposing social interactions of temporary duration (e.g., teams with limited life spans, such as task forces and interdisciplinary projects). López-Sáez et al. (2021) referred to organizational integration mechanisms, dividing them into two groups: formal interunit communication and informal connectedness and shared values. The former represents formal integration mechanisms that coordinate and integrate differentiated activities through pre-established mechanisms and interfaces, while the latter refers to emergent social properties that facilitate communication and knowledge transfer (Jansen et al., 2009; López-Sáez et al., 2021). However, López-Sáez et al. (2021) did not explicitly define which organizational mechanisms fall within the two categories. Some authors referred only to socialization, not formal integrative mechanisms (Williams & Lee, 2016; Zeng et al., 2018). Others included the operationalization of socialization as comprising organizational mechanisms that had been defined as formal by other authors. For example, Björkman et al. (2004) referred only to corporate socialization mechanisms, where operationalization consists of subsidiary managers interacting with other units in interunit trips, international committees, teams, task forces, and training. Ambos and Ambos (2009) considered that organizational mechanisms that had previously been labeled "formal" were "personal coordination mechanisms."

The variations in how these organizational integration mechanisms were categorized and operationalized in the literature is what Zeng et al. (2018, p. 421) referred to as the “jingle-jangle problem,” where different authors use the same term to mean different concepts or use various terms to mean similar concepts. However, despite inconsistency in the definitions and operationalizations, what they have in common is that they all comprise or presuppose social interaction in which the nature of social interaction is characterized by face-to-face interaction (Noorderhaven & Harzing, 2009). Social interaction can be both formal and informal. Therefore, social interaction can be defined as an overarching category of coordination mechanisms, including the informal, subtle organizational mechanisms defined by Martinez and Jarillo (1989). These mechanisms can be further categorized into formal and informal organizational mechanisms, as defined above. The MNC can initiate both formal and informal mechanisms; however, the ways in which they are implemented and facilitated by interactions (i.e., socialization or social capital) determine their degree of formality. Nevertheless, the distinction between formal and informal communication is not always clear-cut, as demonstrated by Reger’s (2004) hybrid coordination mechanisms. Thus, it can be argued that both formal and informal communication can facilitate socialization and social capital to different degrees based on the nature of the interaction mechanism, which further complicates distinguishing these mechanisms. Thus, different organizational mechanisms might facilitate different dimensions of social capital and socialization to varying degrees. For example, Gooderham (2007) argues that formal organizational mechanisms are primarily associated with the structural dimension of social capital, as they provide structured communication channels that support learning and knowledge transfer (Ado et al., 2017; López-Sáez et al., 2021). For example, the creation of formal teams might, initially, facilitate structural capital by bringing relevant people and roles together to a higher degree than less formalized mechanisms, such as informal visits. However, not only does structural capital facilitate the development of the other two dimensions of social capital (Gooderham, 2007) but it has also been argued that formal communication channels such as management development programs contribute to facilitating socialization and the development not least of cognitive social capital and , more

indirectly, relational social capital (Espedal et al., 2013). Furthermore, different organizational mechanisms can complement each other (e.g., management development programs combined with specific permanent teams for strategy follow-up and implementation). Additionally, any specific coordination mechanism can have several purposes (e.g., the same organizational mechanisms can be used to achieve specific goals/tasks as well as the corporate socialization of organizational members). Table 2 illustrates the “jingle-jangle problem” and how formal and informal mechanisms facilitating social interaction can be linked to socialization and the different forms of social capital:

The “jingle-jangle problem”

Insert Table 2 about here

Nevertheless, it is clear that the organizational mechanisms that enable social interaction vary in terms of both how they are organized and their content, as does the degree of their influence on socialization and social capital development. It can thus be argued that in categorizing organizational mechanisms for social interaction, the separation should be between formal and informal organizational mechanisms, where the primary division between the groupings is based on the degree of formality of the communication and the initially facilitated activities. Formal mechanisms are characterized by formal communication based on a formal structure and agenda, whereas activities are coordinated through pre-established mechanisms and interfaces for social interaction (Jansen et al., 2009). Informal mechanisms enabling social interaction, mainly facilitate informal communication and socialization and the interfaces are not necessarily pre-established. These mechanisms further facilitate socialization between the involved parties and social capital development through interpersonal relationships (Zeng et al., 2018). In summary, formal and informal organizational mechanisms that enable social interaction influence both socialization and social capital to a certain degree. Table 3 provides a summary of the various organizational mechanisms.

Organizational Mechanisms Enabling Social Interaction

Insert Table 3 about here

Methodology

The method applied in this study was based on the systematic review approach (Denyer & Tranfield, 2009), which has been used in several recent reviews in the international management literature (e.g., Cordero & Ferreira, 2019; Foss & Pedersen, 2019).

The Business Source Complete database was used to identify relevant articles. This database provides access to relevant journals and advanced searchable fields. Searching the entire body of international management literature is clearly an overwhelming task. According to Tranfield et al. (2003), there is a tradeoff between the statistical benefits of including many primary studies and conducting high-quality reviews. To narrow the scope of the review and focus on identifying high-quality articles, the search was limited to 19 top international business (IB) and general management (GM) journals, which is in line with previous review studies, such as Foss and Pedersen (2019) and Michailova and Mustaffa (2012). Top management journals apply strict quality selection criteria and provide good examples for future scholars (Michailova & Mustaffa, 2012). The selection of IB journals is self-evident because this review focuses on MNCs. The *Academic Journal Guide* (2018) by the Chartered Association of Business Schools was used to ensure quality data and limit the search, including articles at levels three and four. Relevant generic terms were used in the search to include appropriate articles and ensure that they comprised knowledge processes in a multinational setting (i.e., knowledge, international/multinational, MNC/MNE). It was more challenging to limit the relevant articles on organizational mechanisms that facilitate social interaction because many previous descriptions were not always explicitly mentioned in the relevant search fields (e.g., expat, teams, networks, etc.). Similarly, using “social capital” and “socialization” as search terms would have resulted in too narrow a search. Therefore, the search was not limited to

the use of these terms, which resulted in an extensive manual selection process. The selection and screening were guided by four principles:

First, the search and focus of the review were limited to intra-organizational knowledge processes (e.g., between units, groups, or individuals within the MNC). Previous studies on knowledge transfer between MNCs and external firms have been fully acknowledged. However, internal knowledge flows have been promoted in the knowledge-based view as the foundation for the existence and competitiveness of MNCs, and the logic and objectives of internal knowledge flows differ from those of external knowledge flows (Michailova & Mustaffa, 2012). For example, the review did not include articles that focused on inter-firm relations, such as firm-level social capital related to relationships with other companies, suppliers, and customers (Castro & Roldán, 2013; Hitt et al., 2002), or the external embeddedness of the subsidiary (Andersson, 2003; Andersson et al., 2005; Chang et al., 2012). Some studies have examined both intra-organizational and inter-organizational knowledge processes (e.g., Zou & Ghauri, 2008). These were included only if they were evaluated as relevant to intra-organizational knowledge processes.

Second, to be included, the article must have specifically addressed at least one knowledge process. Articles on organizational mechanisms that enable social interaction but not knowledge processes were excluded (e.g., Athanassiou & Nigh, 2002). For example, Luo and Schenkar (2006) was excluded although they addressed global strategy and language in several relevant mechanisms, such as expatriation, but knowledge transfer processes were not an explicit part of the research model. Reiche et al. (2015) was excluded although they addressed language, knowledge inflows, and social identity. However, they did not explicitly address any specific organizational mechanisms that enable social interaction in their research model, or social capital or socialization.

Third, organizational mechanisms enabling social interaction must have been discussed in the article in the context of MNC knowledge processes, with the following exceptions: articles were included in which socialization or social capital were antecedents to the knowledge processes in MNCs (e.g., Gooderham et al., 2011; Zeng

et al., 2018), or in which socialization or social capital was the dependent variable (e.g., Espedal et al., 2012), even if they did not explicitly refer to organizational mechanisms enabling social interaction. Articles on social interaction and socialization/social capital, related to topics other than knowledge (e.g., only values) were excluded. Other closely related topics were language-sensitive recruitment (Peltokorpi & Vaara, 2014) and individual boundary spanning capabilities related to cultural and linguistic capabilities (Barner-Rasmussen et al., 2014). These were excluded, even though they addressed important moderators because they did not directly address organizational mechanisms enabling social interaction. Other articles addressed tools or interventions, such as virtual teams and language, which are important mechanisms in social interaction (Tenzer & Pudelko, 2016), yet these were also excluded because they did not explicitly address knowledge processes.

Fourth, to be included in the review articles must have focused explicitly on MNCs. As noted above, MNCs are qualitatively different not just because of geographical distance but, more significantly, because they have to contend with cross-national differences such as cultural and institutional differences that make achieving the shared interpretations and systems of meaning necessary for knowledge sharing problematic (Gaur et al., 2019; Tsai & Ghoshal, 1998). Thus, for example, Tsai (2000) was not included because although the study was conducted in an MNC the focus is limited to the multiunit organization. To be included in the review articles had to address the multinational context. However, findings from the review will show that cross-national distance or differences are not always explicitly addressed.

Additionally, to be included, articles had to have been published in a peer-reviewed journal (i.e., not a book, conference paper, dissertation, reply, etc.). The coding manual (Appendix B) was generated based on the research questions and other relevant literature (Aykol et al., 2012; Gaur & Kumar, 2018). One researcher conducted both the research and all coding, completing the search in June 2020. An additional search was completed in November 2021, which included recently published relevant articles (see Table 4).

The screening was conducted in five steps. Table 4 provides an overview of the journals and the number of articles included, as well as the search results for each step.

List of Journals, Search Results, and Screening Steps

Insert Table 4 about here

Five screening steps

Step (1): Overall search completed, based on the described search terms, listed in column “Final search.”

Step (2): From step 1, a list of possible relevant articles was compiled based on a brief title and abstract review. A cautious approach was used to include articles in which the title and abstract were unclear whether the article met the criteria. A total of 446 articles were identified, which are listed in the column, “Number of identified articles.”

Step (3): The collected articles were briefly reviewed based on the selection criteria, which generated a shortlist of 173 articles.

Step (4): The articles were thoroughly reviewed and coded; 84 articles were excluded because they contained misleading keywords and did not meet the selection criteria. The final selection of articles is listed in Appendix A, with the relevant coding.

Step (5a): The focus was narrowed to socialization and social capital to retain only articles that implicitly or explicitly included socialization and/or social capital, either in general as a concept/construct or specifically as a variable in the model. To further narrow the scope, this stage comprised only empirical articles that included knowledge sharing and transfer as dependent variables.

Step (5b): The search was further narrowed to select articles that explicitly included social capital or socialization, either in general as a concept/construct or specifically as a variable.

Insights and findings from the literature review

The findings of the literature review are presented based on the screening steps described in the previous section. It includes an overview of the literature and the identified organizational mechanisms that enable social interaction. Further follows an elaboration of the findings in which socialization and social capital were the focus.

Development over the last four decades and summary of descriptives

Articles identified in screening step 4 provided an overview of the development in the literature over the last four decades. Because of the mandatory MNC context, most articles were selected from journals in the international management area. The findings demonstrated that increasing amounts of attention were paid to relevant organizational mechanisms. Only two articles were published in the late 1970s and 1980s, followed by an increase in the number of articles until the most recent decade, 2010–2021.

Of the 96 identified articles, 85 were empirical, 10 were conceptual, and 1 was a review. Of the empirical articles, 50 were quantitative, 22 were qualitative, and 13 were mixed methods. Most of the empirical studies were based on cross-sectional data, and nine articles were based on longitudinal studies.

Figure 3 illustrates the number of articles per decade:

Number of articles by decade

Insert Figure 3 about here

The articles examined comprise multiple knowledge processes, which were grouped into categories. All the categories apply to knowledge transfer process in one way or the other. However, the majority explicitly referred to knowledge transfer or sharing. Even though the majority of the articles applied knowledge transfer, only 21 either explicitly defined knowledge transfer as comprising knowledge application or included

knowledge application as part of the knowledge transfer process or the operationalization of knowledge transfer. Articles published in the last two decades explicitly addressed reverse knowledge transfer, showing that the focus had shifted from the exploitation of home-based firm-specific global advantages to the facilitation creation, and dissemination of knowledge both laterally and vertically within the MNC network (Kostova et al., 2016; Michailova & Mustaffa, 2012). Figure 4 shows an overview of the knowledge processes mapped during the review.

Step 4: Categories of knowledge processes and percentage of articles per decade

Insert Figure 4 about here

Organizational mechanisms enabling social interaction

In step 4, a total of 35 types of organizational mechanisms that enable social interaction were identified. Some articles examined multiple types of organizational mechanisms (a total count of 212 mechanisms were identified). The 35 types of mechanisms were further grouped into seven categories and into formal and informal mechanisms, as shown in Table 5:

Overview of Identified Organizational Mechanisms and Categories

Insert Table 5 about here

During the review, it became evident that these organizational mechanisms were often used in a generic way, yet they represented multiple variations. Furthermore, the authors often used different notations for the same type of mechanism; hence, there was no formal standardization. Additionally, even though an organizational mechanism enabling social interaction was explicitly mentioned, the article did not necessarily evaluate the mechanism itself but rather other mechanisms relevant in

the context of knowledge processes, such as absorptive capacity (Zhou et al., 2020). This led to multiple definitions and names of the same type of organizational mechanisms, and few details were provided regarding structure, content, design, or their implementation. Figure 5 lists the findings and the seven categories developed during the review:

Step 4: Categories of organizational mechanisms enabling social interaction and percentage of articles per decade

Insert Figure 5 about here

The percentages of articles published in each decade were calculated for the seven categories. The increasing number of relevant articles over the past four decades affected the proportion of identified mechanisms in the initial decades. To 1989, only two articles were included. These covered the topics of informal non-regular structures, staff mobility, and socialization/relationship building. From 1990–1999, formal cross-departmental structures and informal non-regular structures received the most attention, followed by staff mobility and socialization/relationship building. During the period from 2000–2009, the focus on formal cross-departmental structures remained high and staff mobility was unchanged, while informal non-regular structures decreased markedly from 50% to less than 30%. In the most recent decade, 2010–2021, the focus shifted. Staff mobility was still a rising trend, but attention given to formal cross-departmental structures declined. The focus on informal, non-regular structures remained unchanged. The focus on the socialization/relationship building category steadily declined over the four decades. From 2010–2021, it was confined to integrative personnel/roles, parent company involvement, and training.

During the entire study period, the category of staff mobility had the highest representation, followed by formal cross-departmental structures and informal non-regular structures. Drawing on these articles, the following sections provide a generic description of the categories mapped during the review. Appendix C provides a full overview of the articles included in the various categories.

Formal cross-departmental structures

These are formal structures of social interaction. In this category, the mechanisms were defined as formal because they are characterized by formal communication based on a structure and agenda, and activities are coordinated and integrated through pre-established mechanisms and interfaces in social interaction. This category had seven submechanisms, which are listed below. ***Global or transnational teams*** are similar to ***knowledge sharing projects***. However, while knowledge-sharing projects are established for specific goals/tasks and often have a limited timeframe (Ciabuschi et al., 2011), teams may have an extended role in relation to their activities and goals. In some instances, they may not necessarily be established for a specific period, but as part of the daily operational tasks across units in the MNC, hence representing a more permanent structure for multiple activities or functional areas, built into the organizational structure, having formal responsibility and accountability for their assigned tasks (Persson, 2006). Adenfelt and Lagerström (2008, p. 322) defined a transnational team as “a temporary organizational mechanism organized across subsidiaries, geographical borders and hierarchal levels, and it comprises individuals of different nationalities, working in different cultures and functions.” Teams may include several types, such as R&D, which has been considered a separate category in the literature (e.g., Lee et al., 2020). ***Centers of excellence (CoE)*** can comprise both small groups of individuals and a particular organizational unit. However, to be defined as such, they must possess strong competencies (e.g., technical, marketing, and managerial), which are recognized by other units of the MNC and used by other internal members of the MNC network (Reger, 2004). Adenfelt and Lagerström (2008) defined ***CoE*** as a subsidiary that has developed knowledge in its interactions with customers, suppliers, and other counterparts in its local business environment. According to Gupta and Govindarajan (1991), the ***international committee*** is a formal integrative mechanism, and the term was later adopted to refer to different constructs, such as corporate socialization, organizational learning mechanisms, and coordination mechanisms (e.g., Björkman et al., 2004; McDonnell et al., 2010; Reger, 2004; Tregaskis et al., 2010), demonstrating that the line between formal and informal social interactions has sometimes been blurred. ***Temporary task***

forces/workshops/groups refers to organizational mechanisms for specific tasks or topics. While similar to a team the concept involves formal communication, structure, and pre-established interfaces, as well as fixed timeframes. However, the jingle-jangle problem (Zeng et al., 2018) has frequently emerged because these organizational mechanisms are used in multiple operationalizations simultaneously, such as in relationship building (Andersson et al., 2015), corporate socialization (Björkman et al., 2004; Persson, 2006), social integration (Gupta & Govindarajan, 1994), coordination (Ambos & Ambos, 2009; Reger, 2004), social control (Chen et al., 2009), social interaction (Harzing & Noorderhaven, 2006; Minbaeva et al., 2012; Noorderhaven & Harzing, 2009), networking mechanisms (Ghoshal et al., 1994), organizational learning transfer mechanisms (McDonnell et al., 2010; Tregaskis et al., 2010), and knowledge integration mechanisms (Yahiaoui et al., 2016). The term ***formal networks*** applies to networks that are formally initiated and managed, such as a formal online community initiated by the MNC (Hwang et al., 2015). ***Co-practice*** refers to joint technical activities between units, such as R&D practice (Frost & Zhou, 2005).

Informal non-regular structures

This category applies to organizational mechanisms and structures that facilitate social interaction informally and are therefore defined as informal organizational mechanisms. These organizational mechanisms might occur ad hoc without formal facilitation by the MNC. They are not necessarily regular activities on a planned timeline, but they are used when needed to support daily operational tasks. Seven submechanisms were identified in this category, which are listed as follows: Welch and Welch (2008) defined an ***informal network*** as an intricate web of contacts and links based on social and interpersonal relationships. Tsai and Ghoshal (1998) referred to social interaction as a measure of social ties and relationships between units. Others referred to informal networks as informal personal relationships built through social interactions (McDonnell et al., 2010; Tregaskis et al., 2010). ***Meetings*** referred to regular physical meetings, ***virtual meetings/conference calls*** referred to meetings conducted on a virtual platform/conference call system using virtual images/video, ***digital communication*** referred to all other types of social digital communication, such as email and chat platforms, and ***virtual platforms*** were included only if the term

was used in combination with other mechanisms that enabled social interaction (e.g., Williams & Lee, 2016). **Face-to-face communication** referred to physical communication face-to-face, enabling mutual observations, which are especially relevant for tacit knowledge transfer and an open dialog between knowledge senders and receivers (Minbaeva et al., 2018). Several authors referred to the communication mechanisms of **personal contact/interaction/direct communication** as tools for facilitating cooperation and interpersonal relationships that promote knowledge sharing and transfer processes and reduce problems in these processes. However, the mechanism used in communication has not always been clearly defined (e.g., Dinur et al., 2009; Zou & Ghauri, 2008). The term **interunit communication** referred specifically to communication between units in the MNC (e.g., Ghoshal et al., 1994).

Staff mobility

Refers to the mobility of MNC employees between units across borders, specifically international assignments. These organizational mechanisms were defined as informal, even though some were formally initiated, e.g., long-term mobility/expatriation. The main intention was to increase socialization and knowledge transfer based on networks and relationships. In general, international assignments were considered a tool for transferring technical expertise from the parent company to foreign subsidiaries or a mechanism for managing foreign units. It was considered to facilitate knowledge transfer not only laterally from parent to subsidiary or vice versa (i.e., reversed knowledge transfer) but also vertically between MNC subsidiaries (Duvivier et al., 2019; Froese et al., 2021; Harzing et al., 2016).

This category had the following five submechanisms: **Staff movements/international assignments** referred to the mobility of employees between units internationally in the MNC, where the assignment duration was not specified. **Short-term mobility** refers to short-term business trips/visits. **Long-term mobility or expatriation** referred to staff mobility of long durations where the employee was relocated from the home unit to the host unit; it also referred to the return to headquarters, the home unit, or repatriation (e.g. Froese et al., 2021). This submechanism was the most frequently represented in the articles reviewed in screening step 4. **Managerial transfer top**

management positions referred to MNCs nomination of staff top management positions from outside the unit, with the intent of helping subsidiaries access and assimilate valuable information and knowledge from other units, thus supporting organizational absorptive capacity. Such key resources in top management positions facilitated subsidiary knowledge acquisition and counteracted local knowledge stickiness (Park & Choi, 2014). **Job rotation** referred to assignees on job rotation between units in an MNC. According to Hong and Nguyen (2009), job rotation is a social interaction mechanism applied to a situation in which universal system knowledge is to be transferred. It involves local employees changing their approach to their jobs. Job rotation builds in-depth understanding, seeing things from a new perspective, and developing a holistic understanding of tasks. Reger (2004) included job rotation as an informal coordination mechanism.

Integrative personnel/roles

This category refers to personnel with roles in relationship building and integration where the aim is to facilitate knowledge sharing and transfer. Four submechanisms were identified in this category: ***liaison personnel*** have roles in communication and cooperation, which facilitate close working relationships between people or organizations, with the task of exchanging knowledge about the development of new products and production processes with other subsidiaries (Persson, 2006). The term ***local buddies*** referred to Jonsson and Foss's (2011) "buddy" practices, in which an experienced employee helps a newcomer to the firm by facilitating socialization and training, including the sharing of unit-specific tacit knowledge. Both liaison personnel and local buddies were defined as informal because these roles are based on informal communication, and integration links are not necessarily pre-established. However, these roles can be explicitly assigned by the MNC. ***Integrator roles*** are similar to liaison positions, but Gupta and Govindarajan (1991) define them as a key formal structural mechanism for the coordination between subunits in an organization. This was the only formal integrative mechanism in this category. ***Boundary spanners*** are employees who are well connected, both internally and externally, and act as knowledge intermediaries between individuals from within and outside their organizations; they share knowledge across MNC units to a greater extent than non-

boundary spanners (Minbaeva & Santangelo, 2018). Boundary spanners are not necessarily a formal mechanism or a titled person but a role that develops over time. These are usually individuals who possess particular abilities and characteristics that are suited to bridge organizational boundaries (Liu & Meyer, 2020).

Parent company involvement

These mechanisms refer to processes implemented by the parent company to influence management structures in the focal subsidiary. Even though these are formally implemented by the parent company, they are mainly facilitated through informal communication and are not coordinated through pre-established mechanisms or social interaction interfaces. The organizational mechanisms mapped in this category were therefore defined as informal. Three sub mechanisms were identified in this category: ***dual management structure*** refers to temporal dual management constellations, such as a local manager with an expat manager on site or a local manager with a manager at the parent company (Yakob, 2018; Zou & Ghauri, 2008). ***Managerial involvement*** referred to managerial involvement and follow-up in expert groups (Raab et al., 2014). ***Active involvement of parent company/managers*** referred to the increased frequency of interactions between the subsidiary's top management and the parent company (Park & Choi, 2014).

Training

Two sub mechanisms were identified in the category of training: ***training in general*** referred to training activities involving activities used in interunit knowledge transfer. These could include corporate training programs, technical training between units, formal programs, including multiple units, etc. Training was commonly used to operationalize social interaction and socialization (Björkman et al., 2004; Harzing & Noorderhaven, 2006; Noorderhaven & Harzing, 2009). Simonin and Özsomer (2009) referred to corporate training programs as corporate socialization mechanisms. ***Observation and on-site demonstration*** were mentioned as specific techniques in knowledge transfer observation for systemic knowledge that is locally embedded and needs translation. An on-site demonstration was referred to as a creative application for technical knowledge transfer that is locally embedded (Hong & Nguyen, 2009).

In this training category, it was difficult to give a clear-cut evaluation of the degree of formality of the organizational mechanisms. Some training initiatives were pre-established interfaces with a formal agenda (e.g., corporate training programs). Others were based on informal communication and interactions, referring to the socialization and relationship aspects in connection with training. The argument was that these mechanisms were formally initiated and conducted through pre-established interfaces and agendas. Furthermore, López-Sáez et al. (2021) included training as part of the operationalization of formal interunit communication. Both submechanisms were therefore defined as formal.

Socialization/relationship building activities

This category refers to mechanisms and activities that facilitate relationship building and socialization. In some of the reviewed articles, these mechanisms were referred to in general terms, involving only the socialization mechanism, and activities were not necessarily closer defined. Six submechanisms were identified in this category: In ***relationship building***, Andersson et al. (2015) identified differences between lateral and vertical relationship building in the MNC. Their results indicated that lateral relationships within the MNC had a higher impact on knowledge transfer and sharing than vertical relationships. Kostova (1999) emphasized the role of relational embeddedness in knowledge transfer, defining it based on commitment to, identity with, trust in, and dependence on the parent company. Regarding ***established informal relations***, Hansen and Løvås (2004) found that teams preferred to approach people they knew rather than people who knew related technologies well and that the negative effect of large spatial distances could be overcome through established informal relations. Regarding ***active trust building***, Chung (2014) suggested that mutual trust between parties is an important facilitator in transferring knowledge from subsidiaries to the parent company. The authors indicated that this was especially important in transferring tacit knowledge. The ***corporate socialization of employees*** was found to be facilitated by initiatives to build a general organizational culture, such as through joint goals/strategies, common values/norms, job rotation, etc. (Reger, 2004). ***Corporate socialization of managers*** referred to the process through which managers' values and norms become closely aligned with those of the

parent company (Gupta & Govindarajan, 1991). A specific activity that facilitated managers' corporate socialization was the **management development program** (Gupta & Govindarajan, 2000; Espedal et al., 2013) (e.g., executive development programs with participants from several subsidiaries). **Normative integration** was linked to corporate socialization, with the aim of facilitating a common understanding of the overall strategy, goals, and values between the parent company and its subsidiaries (Björkman & Lervik, 2007; Ghoshal & Bartlett, 1988).

Most mechanisms in this category were defined as informal, except for management development programs, which may have the initial aim of facilitating socialization; however, because of its pre-defined agendas and participants, it was equated with training programs.

Socialization and social capital

The focus of the literature review was then narrowed, as outlined in screening step 5a, to consider 58 articles that addressed socialization and social capital both explicitly and implicitly, such as those in which trust was a variable implying social capital or socialization (e.g. Ambos & Ambos, 2009; Hsu et al., 2021).

Informal non-regular structures and staff mobility had the highest representation among the 58 articles, but staff mobility only appears from 2000–2009 and later. Formal cross-departmental structures and socialization/relationship building were also highly represented as organizational mechanisms. However, while both staff mobility and informal non-regular structures showed an increasing trend, formal cross-departmental structures and socialization/relationship building showed a declining trend after the decade from 1990–1999.

The results of the review are summarized in Figure 6:

Step 5a: Categories of organizational mechanisms enabling social interaction, with focus on social capital and socialization (percentage of articles per decade)

Insert Figure 6 about here

The close reading of 19 articles that explicitly included the concepts of social capital and socialization—as outlined in screening step 5b—confirmed that the use of these concepts was not always straightforward. While both were mentioned in the selected articles, they were not always explicitly defined, referred to, or operationalized in the same way, as identified by the “jingle-jangle problem” (Zeng et al., 2018).

The concepts of both socialization and social capital were individually represented in connection with informal non-regular structures, staff mobility, and socialization/relationship building. However, articles on formal cross-departmental structures referred either to socialization and/or a mix of socialization/social capital (SOC/SC). The same finding applied to the smaller categories of integrative personnel/roles, training, and parent company direct involvement. This finding indicated that social capital was connected only to informal non-regular structures, staff mobility, and socialization/relationship building. Figure 7 provides a summary of the findings of the review of these 19 articles.

Step 5b: Categories of organizational mechanisms enabling social interaction, explicit focus on social capital and socialization (percentage of articles represented in each category)

Insert Figure 7 about here

The review of the 19 articles identified whether they focused on informal or formal organizational mechanisms (as identified earlier) and whether they referred to either social capital or socialization. In addition, the category of general communication frequency was added because several articles explicitly included it as an antecedent of knowledge sharing and transfer without necessarily specifying the type of communication mechanism or degree of formality (e.g., Peltokorpi, 2017). The review of the articles on social capital was based on three dimensions, and an extra category was added for those that referred to social capital as a general concept (GSC), as defined by Adler and Kwon (2002, p. 23).

Ten of the 19 articles referred to socialization mechanisms, while seven addressed social capital. The articles were sorted according to the main concepts they described. Only two articles were based on both socialization and social capital (Persson, 2006; López-Sáez et al., 2021). Very few articles addressed both socialization and social capital. However, in some articles, the two concepts were linked in the theory section, but either socialization or social capital was referred to in the operationalization (e.g., Williams & Lee, 2016) or conceptualization (e.g., Oddou et al., 2009).

Table 6 provides a summary of these findings. Further details on the coding and relevant definitions and operationalization in the articles are provided in Appendix D.

Articles Explicitly Including Socialization and Social Capital

Insert Table 6 about here

Most of the articles on ***socialization*** considered it part of both formal and informal organizational mechanisms that enabled social interaction, except for Zeng et al. (2018) and Oddou et al. (2009). The articles that addressed socialization referred to organizational mechanisms that enabled social interaction with the anticipated subsequent facilitation of socialization mechanisms. Only a few articles attempted to operationalize socialization, such as by measuring concrete levels of shared vision and common goals (e.g., Harzing & Noorderhaven, 2006). Most articles referred to either formal or informal organizational mechanisms with the intention of facilitating social interaction and communication. Operationalization was commonly manifested in the frequency of use of these organizational mechanisms. The informal mechanisms presented by Martinez and Jarillo (1989) were often included as a reference in addition to operationalization (Tsai & Ghoshal, 1998; Gupta & Govindarajan, 2000).

Social integrative mechanisms were commonly referred to in the literature. However, the distinction between social integrative mechanisms, such as formal communication versus socialization mechanisms, was sometimes blurred. For example, Gupta and Govindarajan (1991) introduced international committees as integrative mechanisms

that ensured information processing capacity, while socialization was directly linked to socialization of subsidiary managers through job rotation and management programs. Other scholars have included international committees in their operationalization of corporate socialization mechanisms. For example, according to Björkman et al. (2004, p. 447), “organizational mechanisms that facilitate the development of interpersonal ties in the MNC. ...can be expected to enhance the communication between the parties, including transfer of knowledge.” Lagerström & Andersson (2003) referred to socialization in transnational teams as the process by which members become familiar with other members in the team in a personal way to enhance cooperation. One way of viewing these differences is that they are social integrative mechanisms that facilitate socialization by social interaction. Socialization mechanisms refer to the development of common values, shared cognitive frames, and interpersonal ties. The review revealed that most articles did not directly measure the level of socialization or the effects of social interaction on socialization, but rather the implementation of organizational mechanisms that enabled social interaction and its frequency of use. For example, Williams and Lee (2016) used the frequency of conference calls with other unit members as part of the operationalization of subsidiary socialization within an MNC. I therefore argue that there is a need to distinguish between the organizational mechanisms that facilitate socialization through social interaction, the definition of socialization mechanisms, and the degree of socialization. Furthermore, there is a need to investigate differences in organizational mechanisms that enable social interaction and lead to the desired facilitation of socialization mechanisms.

According to Gupta and Govindarajan (2000, p. 479), building on Van Maanen and Schein (1979) and Edström and Galbraith (1977), “Corporate socialization mechanisms refer to those organizational mechanisms which build interpersonal familiarity, personal affinity, and convergence in cognitive maps among personnel from different subsidiaries.”

Among the seven articles that explicitly included ***social capital***, its definition was based on two references. Nahapiet and Ghoshal (1998, p. 243) addressed several

dimensions of social capital and the general concept of social capital (GSC), which was also referenced by Adler and Kwon (2002, p. 23). The articles that addressed social capital operationalized and measured the level of social capital, which was closely tied to their definition of the concept. The dimensions were usually as follows: structural social capital operationalized and measured by social interaction and the strength of social ties; cognitive social capital operationalized and measured by a common vision and goals; and relational social capital operationalized and measured by levels of trust and trustworthiness. Gooderham et al. (2011) operationalized social capital as goodwill in terms of how knowledge sharing and cooperation across the MNC was valued in the company.

Only four articles explicitly addressed social capital as part of the main topic. Two of these studies did not address specific organizational mechanisms that enable social interaction (Gooderham et al., 2011; Tsai & Ghoshal, 1998). Two of the four articles addressed inpatriation/repatriation (Reiche, 2012) and global leadership development programs (Espedal et al., 2012). Of the remaining articles, two addressed communication frequency (Ahlvik & Björkman, 2015; Peltokorpi & Yamao, 2017), and one examined the structural dimension of how social capital is connected to the use of informal integration mechanisms and normative integration (Björkman & Lervik, 2007).

Regarding two articles that included both socialization and social capital, Persson (2006) only briefly mentioned social capital as trust and a shared vision in connection with team structures. Instead, the author focused on lateral integrative mechanisms but distinguished them from socialization mechanisms, which were linked to control mechanisms. López-Sáez et al. (2021) included all three dimensions of social capital and how they were linked to formal and informal social integration mechanisms.

The findings of the review demonstrated that the concept of socialization was used more frequently than the concept of social capital. Nevertheless, neither concept was used frequently; only approximately 20% of the articles in the review explicitly considered these concepts.

In summary, the findings of this review showed that while socialization mechanisms and social capital were closely connected, a clear distinction between these concepts was rarely made.

Only six of the 19 articles explicitly included measures of cross-national distance or differences. Ahlvik & Björkman (2015) included cultural distance as a control variable. Gupta & Govindarajan (2000) investigated how the relative economic level between the home and host countries influenced the knowledge flows between HQ and subsidiaries. Björkman et al. (2004) included MNC home region and subsidiary location as control variables on outward knowledge transfer from the focal subsidiary. Williams & Lee (2016) controlled for institutional differences separation between host countries. In all four articles above, national differences were included as direct antecedents or controls to knowledge transfer processes in the research models. These provide little information on how distance influences the use of organizational mechanisms facilitating social interaction in MNCs. However, the last two articles, Zeng et al. (2018) and López-Sáez et al. (2021) included cross-national differences as moderators between socialization and knowledge transfer. In their metastudy, Zeng et al. (2018) find that socialization leads to better knowledge transfer for subsidiaries operating in a host country context, especially for subsidiaries located in emerging economies. This indicates that mechanisms facilitating social interaction, both formal and informal, play an important role in the knowledge sharing- and transfer processes for subsidiaries located in foreign national contexts. López-Sáez et al. (2021) employ six dimensions of cross-national distance (cultural, economic, geographic, administrative, knowledge, and global connectedness). They found no influence of these on the role of “formal interunit communication” in knowledge transfer effectiveness. However, differences in economic, geographic, and administrative dimensions appear to significantly impact the role of “informal connectedness and shared values” in knowledge transfer effectiveness. López-Sáez et al. (2021) closely link the cognitive and relational dimension of social capital to the organizational integration mechanism, “informal connectedness and shared values,” which partly overlaps with the informal organizational mechanisms proposed in this paper. This suggests that various cross-national differences moderate the influence of social

interaction and development of cognitive and relational social capital facilitated by informal mechanisms and not structural social capital linked to the use of mechanisms for “formal unit communication”. However, López-Sáez et al. (2021) did not directly include measures of the dimensions of social capital in their model. Nevertheless, the results suggest that these cross-national distances might influence the informal mechanisms to a higher degree compared to the formal organizational mechanisms. Further, the results indicates that “formal interunit communication” had a stronger effect on knowledge transfer effectiveness than the mechanisms for “informal connectedness and shared values.”

Based on the findings of this literature review, a revised model is proposed to show how formal and informal organizational mechanisms enable social interaction and are linked to socialization and social capital. Formal organizational mechanisms are used in situations where social interaction is coordinated and integrated through pre-established mechanisms and interfaces, which are initially based on formal social interaction and communication. The involved parties are well defined. As previously argued, this leads directly to structural social capital because it provides structured communication channels (Ado et al., 2017; López-Sáez et al., 2021) where the structural dimension manifests in social interaction ties (Tsai & Ghoshal, 1998). However, because the three dimensions of social capital are not mutually exclusive (Nahapiet & Ghoshal, 1998), the model suggests that the structural social capital generated by the formal communication channels also enhances informal social interaction and communication, which further facilitates socialization mechanisms and leads to the development of relational and cognitive social capital (Tsai & Ghoshal, 1998; Gooderham, 2007). Cognitive and relational social capital can further influence the generation of structural capital, which increases social interaction ties. These different paths for facilitating socialization reflect the mutual influence of the three dimensions (Nahapiet & Ghoshal, 1998). Informal organizational mechanisms are based on informal communication channels and structures, as indicated by the model that directly facilitates informal social interaction and socialization mechanisms, and the further development of relational and cognitive social capital is often manifested

in trust and trustworthiness (Tsai & Ghoshal, 1998). All three dimensions of social capital facilitate further knowledge sharing and transfer.

In this way it is anticipated that both formal and informal organizational mechanisms will facilitate the same processes related to socialization and social capital, but in different orders and in different degrees. While the formal organizational mechanisms will initially facilitate structural capital, the ongoing social interaction deriving from the formal mechanisms will eventually facilitate informal interaction. Thus, while the primary effect is facilitating structural social capital, cognitive and relational social capital are secondary effects. The opposite applies to the role of informal organizational mechanisms. As the model indicates, this is valid on multiple levels in the MNC: individual, interunit, and entire organization.

According to Williams and Lee (2016, p. 235), “the relationship between social capital within the MNC and internal knowledge flows hinges on the effects of socialization between individuals. Socialization mechanisms build interpersonal familiarity, personal affinity, and convergence in cognitive maps among personnel from different subsidiaries. Socialization within the MNC supports goal sharing and willingness to share knowledge.” In this way socialization is a process that is a necessary antecedent to the creation of relational and cognitive social capital, while social interaction is a necessary antecedent for socialization and all three dimensions of social capital. However, I argue social capital, because of its diverse dimensions, represents a wider spectrum of mechanisms and structures than socialization. Thus, even though both the concepts of relational and cognitive dimensions of social capital overlap with socialization, my view is that they are significantly broader in that they span the quality of the relationships or networks between actors (Nahapiet & Ghoshal, 1998). The cognitive dimension of social capital includes shared values and common understandings and the relational dimension of social capital trust and trustworthiness. Thus, Inkpen and Tsang (2005, p. 151) defined social capital as “the aggregate of resources embedded within, available through, and derived from the network of relationships possessed by an individual or organization.” Williams & Lee (2016) defined social capital in an international context as “the intangible resource of

structural connections, interpersonal interactions and cognitive understanding that enables a firm to (a) capitalize on diversity and (b) reconcile differences.” In contrast, socialization is limited to a process that involves social interaction that facilitates socialization mechanisms, creating identification with corporate goals and values, common knowledge, shared technical language and semantics, and ways of communicating (Persson, 2006). Few of the final 19 articles address how socialization and the different dimensions of social capital are connected. Findings from Tsai & Ghoshal (1998) support that both structural and cognitive social capital are antecedents to relational social capital, while their study failed to support the anticipated influence of structural social capital on the cognitive dimension of social capital. However, as argued above and as proposed by Nahapiet & Ghoshal (1998), the social structure and network ties provided by structural social capital facilitate social interaction and the development of the cognitive and relational dimensions of social capital (Gooderham, 2007). The model therefore suggests that structural social capital is an antecedent to both relational and cognitive social capital.

In the context of MNCs, the model further suggests that cross-national differences might moderate the effectiveness of organizational mechanisms facilitating social interaction. Findings in López-Sáez et al. (2021) suggest that formal mechanisms work independently of cross-national differences, while several types of cross-national differences negatively influence informal mechanisms. However, findings from Ambos & Ambos (2009) indicate that cultural differences can have a negative moderating effect on formal mechanisms (article only included in step 5b). Based on this, a moderating effect of cross-national differences is present, but the literature provides somewhat contradicting evidence regarding the degree of influence on formal and informal mechanisms. Cross-national differences are therefore included in the model as a general moderating effect that should be further explored. Further, this also applies to social interaction, socialization processes, and the generation of social capital, where the influence of cross-national differences is not clearly outlined in the literature and should be further investigated. This revised model of mechanisms that enable social interaction suggests that the facilitation of socialization mechanisms initiates a process that develops social capital, where cognitive social capital and

relational capital are emphasized. As shown in the revised model, socialization mechanisms were antecedents of all three dimensions of social capital. Social capital, either as a general concept or represented by the three outlined dimensions, further facilitates knowledge sharing and transfer across MNCs. Based on the findings of this review, Figure 8 provides a revised model of the mechanisms that enable social interaction.

Revised model

Figure 8 about here

Discussion, implications, and suggestions for future research

This review has demonstrated that, over the last four decades, the international management literature has increasingly focused on mechanisms that enable social interaction connected to knowledge processes in MNCs. Based on these findings, seven main categories or groupings of the 35 identified mechanisms were proposed. Staff mobility was the only category that demonstrated an increased focus in the period from 2020–2021. One interesting observation was that category seven, “socialization/relationship building activities,” showed a steadily declining trend over the four decades, indicating that the focus had shifted from including it as a general concept.

The results from this review suggest that formal and informal mechanisms can be clearly distinguished among the 35 mechanisms, thus providing a framework for future development and research. The proposed model suggests that formal mechanisms are primarily linked to structural social capital. Informal mechanisms are suggested as primarily facilitating social interaction and socialization mechanisms, where socialization is anticipated to be an antecedent of the development of cognitive and relational social capital. Relational and cognitive social capital influence the development of structural social capital, illustrating the interdependence of the different dimensions of social capital. This split between formal and informal

mechanisms, their connections to socialization and the dimensions of social capital, and, further, to knowledge sharing and transfer in MNCs, needs to be further explored. However, this review recognizes that the distinction between formal and informal is not necessarily always clear-cut and that the generic categorization of organizational mechanisms is at times insufficient. Thus, the findings of this review suggest the need for further research on both the categorization of mechanisms and the division between formal and informal mechanisms, as well as the influence of context on the use of these organizational mechanisms. Furthermore, the findings of the review demonstrated that the “jingle-jangle problem” is still evident, and a consistent definition and operationalization of organizational mechanisms that comprise social interactions is still lacking.

The findings confirmed the well-established link between social interaction and the facilitation of socialization mechanisms and social capital, which further enables knowledge processes (e.g., Zeng et al., 2018) and showed how the two concepts have been defined. However, the number of articles that explicitly referred to socialization or social capital was relatively low. Although the literature proposes that knowledge sharing and knowledge transfer are positively facilitated by socialization and social capital, there is still a need for a greater understanding of how social interaction can be used effectively. A notable caution is that the design of organizational mechanisms aimed at developing advantageous social capital in MNCs can fail if the design is not aligned with the corporate culture, as highlighted by Espedal et al. (2012). Thus, it is important to take a contingency perspective in the use of these mechanisms because of their context dependency and the multiple other factors that influence their outcomes. Persson (2006) also showed that social interactions do not necessarily provide beneficial results by finding that permanent lateral teams negatively influenced knowledge transfer. This review supports that finding by suggesting the need for better insights into the design and implementation of these organizational mechanisms, which has strong implications for managers and HR professionals. López-Sáez et al. (2021) indicated that formal mechanisms had a stronger effect on knowledge transfer efficiency; further insight into possible differences in effects between formal and informal organizational mechanisms should be further explored.

Moreover, the same applies to other relevant factors. Further insight into the moderating effect of cross-national differences in the proposed model is highly relevant. Additionally, how other factors interact with the formal and informal organizational mechanisms should be further investigated (e.g., frequency, strategic and organizational roles of units, relevant structures such as HRM, motivation). This review also found that the perspective of micro foundations received little attention in the reviewed articles, which represents a general challenge in the international management literature (Foss & Pedersen, 2019). Only 11 of the articles explicitly addressed micro foundations. More articles, approximately 20%, focused on the individual level and did not explicitly consider micro foundations. Micro foundations emphasize that, in reality, it is individuals who comprise the aggregated levels of knowledge sharing and knowledge transfer in the MNC (Foss & Pedersen, 2019). Additionally, five articles included micro foundations in their implications and recommendations for future research. The increased focus on micro foundations is important to understand how these organizational mechanisms work on the individual level and to identify how the mechanisms can be designed and utilized for their intended purpose, such as by paying attention to both organizational-level antecedents (i.e., integration mechanisms that facilitate social interaction) and how they influence micro foundations, which, in this context, are mechanisms that facilitate socialization and the development of social capital on the individual level (Foss & Pedersen, 2019).

The review found that while several empirical studies operationalized socialization mechanisms through interventions used for social interaction, they did not directly address the socialization process. Therefore, I call for research on the effects of social interaction on the levels of social capital and socialization rather than just measuring the frequency of interaction and use of interventions. Furthermore, as social interaction in most MNC contexts facilitates both socialization and the development of social capital, the connection between the two must be further strengthened.

The majority of the studies included in the review were cross-sectional, which limit the insights that could be gained regarding the development of social capital and socialization over time. This is particularly relevant in terms of understanding the

relationships between socialization mechanisms and the three dimensions of social capital. Thus, more longitudinal research should be conducted to explore the causality between the organizational mechanisms that enable social interaction and the facilitation of knowledge sharing and knowledge transfer.

It is recognized that the concepts of socialization and social capital apply to multiple areas and types of social interaction, not only physical social interaction. This is particularly relevant for the increased use of digital and virtual platforms, where these digital social interactions continue to replace physical face-to-face interactions. Welch and Welch (2008) suggested that face-to-face interaction is still viewed as the most powerful medium of knowledge transfer, despite advances in modern telecommunications, while Sambamurthy and Subramani (2005) argued that the link between organizational structures and information and communication technology needs further attention in the context of knowledge transfer in MNCs. However, surprisingly, the findings of this review showed that almost two decades later, the amount of research on social interaction on virtual platforms is still limited. Only 15 articles explicitly addressed digital platforms for communication, and most referred to them only in their discussions, implications, or recommendations for future research. Only four of these articles dealt with virtual platforms as the main theme (Eisenberg & Mattarelli, 2017; Gibson et al., 2019; Hwang et al., 2015; Klitmøller & Luring, 2013). While all four articles contributed to important aspects of social interaction on virtual communication platforms, none specifically explicitly investigated the effects of virtual platforms on socialization or social capital. However, some articles mentioned this in discussing the implications for future research (e.g., Haas, 2006). A key question that remains is how social interaction on digital platforms influences the knowledge processes in MNCs and to what degree this type of social interaction can substitute physical face-to-face interaction (Noorderhaven & Harzing, 2009). Luo (2021) emphasized that the new arena of digitalization has provided multinationals with new integration advantages for intrafirm activities; however, their influence on socialization mechanisms and the development of social capital remain unexplored. There is a need for further research on combining virtual and digital platforms in physical social interactions related to knowledge transfer and sharing,

similar to blended learning initiatives that are concerned with the same questions (e.g., Cocquyt et al., 2019; Kent & Rechavi, 2019).

Limitations and conclusions

While this review makes several contributions to the literature, it is not without limitations. First, although the review was based on the methodology of a structured review, some criteria were not fully met. One issue was the use of a single coder approach, which may have led to reliability issues. Additionally, the coding was conducted over time, which may have been influenced by both the maturation of the coder and the effects of learning. Furthermore, because several concepts overlapped, the coding was prone to inconsistency in some areas and was therefore at risk of subjective interpretation. This was specifically relevant in coding for categories such as trust and relationships, which sometimes overlapped with the socialization category. This risk was mitigated by recoding relevant articles and checking for discrepancies after the full coding of articles for the review was finalized.

The criteria used to select empirical articles that applied knowledge sharing and transfer as a dependent variable and explicitly referred to social capital and/or socialization effectively narrowed the scope of the review. However, this excluded other potentially relevant articles related to social interaction and knowledge processes in MNCs. By limiting the search to articles applying “knowledge,” alternative ways of defining knowledge processes may have been excluded, such as “capability transfer” (Björkman et al., 2007). The descriptions and definitions of the different organizational mechanisms were derived from the articles included in the review. A more coherent definition and explanation of the different mechanisms should include a comprehensive range of relevant articles that address similar mechanisms. For example, there are multiple definitions of “centers of excellence” in addition to that provided in this review. This opens the possibility for future work to define these organizational mechanisms.

This review focused on the literature published in top IB management journals. This supports the quality of the relevant articles included, but relevant research published elsewhere and in other disciplines might have been missed. For example, research on

the use of virtual platforms for social interaction has been conducted in various other areas beyond the context of MNCs. The link to other disciplines, especially with a focus on micro foundations, is suggested as an area for future research.

Finally, this literature review focused on social capital and socialization, excluding other connected factors and integration mechanisms that may be relevant in developing a full understanding of the micro foundations that influence or facilitate knowledge processes, such as language barriers (Tenzer et al., 2021) and absorptive capacity (Chang & Smale, 2013). Connected factors and integrative mechanisms that might be relevant to socialization and social capital have been demonstrated in previous studies, such as the incentive arrangements examined by Jarillo et al. (1989).

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Figure 1. Model



Table 1. Social interaction – socialization – social capital

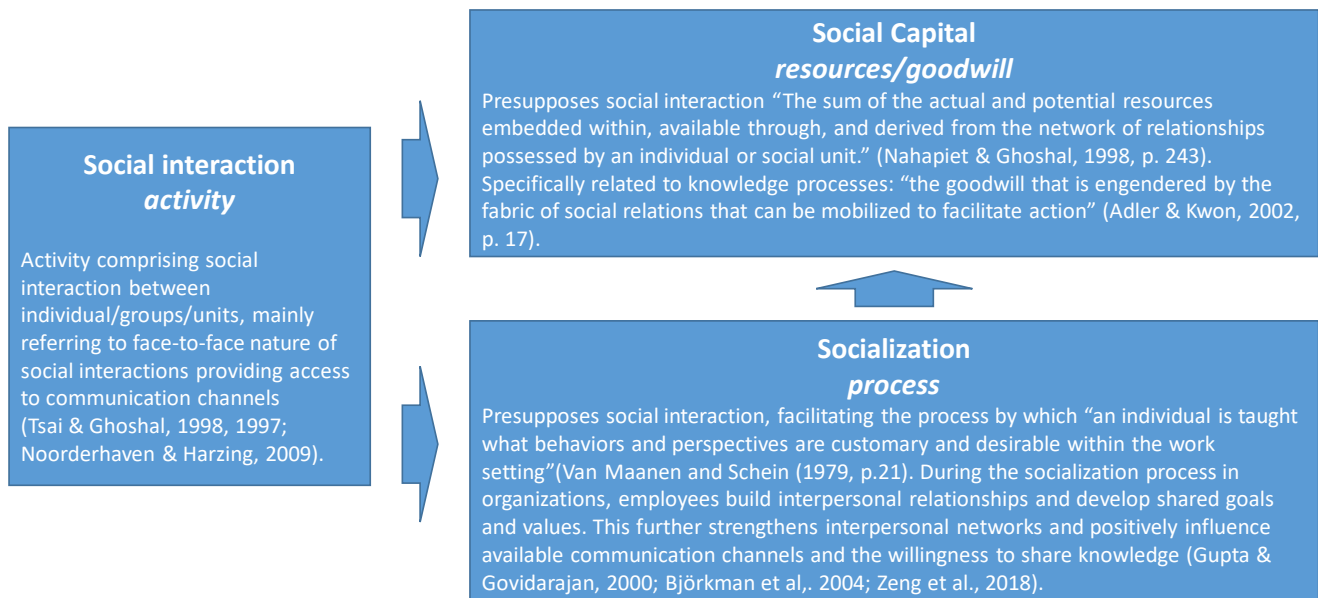


Table 2. The “jingle-jangle problem”

Operationalization/organizational mechanisms in italic.

Reference	Coordination and integration by social interaction		
Martinez & Jarillo (1989)	Less formal and more subtle mechanisms		
	Lateral or cross-departmental relations <i>Direct managerial contact, temporary, or permanent teams, task forces, committees, integrators, and integrative departments</i>	Informal communication <i>personal contacts among managers, management trips, conferences, and transfer of managers</i>	Socialization <i>building an organizational culture of known and shared strategic objectives and values by training, transfer of managers, career path management, measurement and rewards systems</i>
Zeng et al., (2018)	Socialization <i>Meta study where socialization is including all articles within the less formal and more subtle mechanisms (eg. Martinez & Jarillo, 1989).</i>		
Gupta & Govindarajan, (2000)	Formal transmission channels (Formal Integrative mechanisms) <i>Liaison personnel, task forces, teams, committees</i>	Informal transmission channels (corporate socialization mechanisms) <i>Job transfers between subsidiaries/participated in executive development programs (lateral); worked at HQ/Mentor at HQ (vertical)</i>	
Reger (2004)	Structural and formal mechanisms <i>liaison persons, committees, integrators, integrating department/teams</i>	Informal mechanisms	
		Personal contacts/informal communication	Socialization <i>the creation of a general organizational culture through joint goals, shared values/norms, and job rotation</i>
	Hybrid/overlying integration mechanisms social interactions of temporary duration <i>Teams with limited life spans, such as task forces and interdisciplinary projects</i>		
López-Sáez et al. (2021)	Formal inter-unit communication <i>Liaison mechanisms, permanent and temporary team structures</i>	Informal connectedness and shared values <i>Units in our company learn from each other, easy to justify visits to other units, legitimate to adopt knowledge from other units to improve unit performance, executives in unit have same objectives and goals as top management MNC, expatriation is a common practice</i>	
Björkman et al. (2004)	Corporate socialization mechanisms <i>Interunit trips managers, international committees, teams, task forces and training</i>		
Ambos & Ambos (2009)	Personal coordination mechanisms <i>Liaison personnel, temporary task forces, and permanent teams</i>		
Williams & Lee (2016)	Socialization between subsidiaries <i>Employees in this subsidiary frequently:</i> <i>1) use email to communicate with other unit members, 2) join workshops with other unit members, 3) use conference calls with other unit members, 4) join corporate wide committees.</i>		
Persson (2006)	Lateral integrative mechanisms <i>Liaison mechanisms, permanent and temporary team structures</i>	Socialization (control mechanism) <i>Frequency of personnel exchange among subsidiaries and subsidiary participation in meetings at the divisional level.</i>	

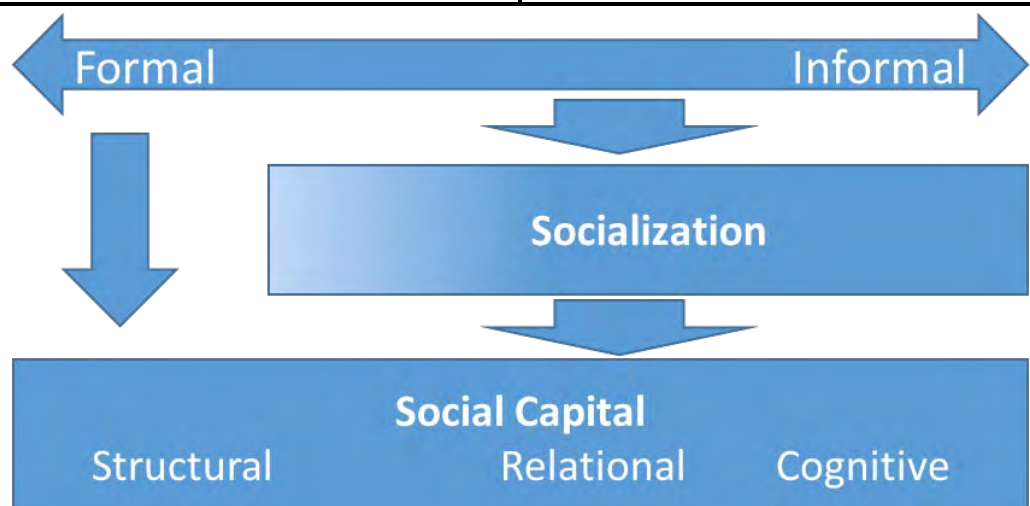


Table 3. Organizational Mechanisms Enabling Social Interaction

Organizational mechanisms enabling social interaction		
	Formal	Informal
Social interaction	Mainly formal	Mainly informal
Mechanisms and interfaces	Pre-established	Both pre-and post-established
Initiation of organizational mechanism	Formally initiated by either parent or subsidiary	Can be formally initiated by the MNC, either parent or subsidiary, but also informally initiated by individuals/units.
Frequency and duration	Pre-decided	Not necessarily pre-decided, can be ad-hoc and spontaneous
Identity and number of participants	Pre-decided	Not necessarily pre-decided
Communication and interaction structure	Initially formal, with formal agenda	Characterized by informal communication, where the interaction links are not pre-established or semi-structured but develop during the interaction.
Facilitation of socialization and social capital dimensions	Primarily structural social capital	Primarily socialization mechanisms and the generation of cognitive and relational social capital

Table 4. List of Journals, Search Results, and Screening Steps

Journal	Area ¹	AJG ² rank 2018	Final search	Number of identified articles	Total number reviewed	Total number identified comprising mechanisms enabling social interaction	Number identified comprising socialization and/or social capital	Number of articles explicitly addressing socialization and/or social capital	Supplementary search 2021 ³
Selection stage:			1	2	3	4	5a	5b	4 (5a,5b)
International Business Review	IB	3	427	44	21	13	9	4	0 (0,0)
Journal of World Business	IB	4	523	42	23	14	11	3	1 (0,0)
Journal of International Business Studies (JIBS)	IB	4	1363	75	26	11	7	3	2 (0,0)
Journal of International Management	IB	3	223	41	10	7	4	0	1 (1,1)
Management International Review	IB	3	427	28	11	7	3	0	1 (0,0)
International Journal of Human Resource Management	IB	3	698	8	8	6	4	0	1 (1,0)
Global Strategy Journal	IB	3	90	7	4	2	1	0	0
Human Resource Management	GM	4	153	9	6	5	5	2	1 (1,0)
Journal of Management Studies	GM	4	108	45	15	5	2	2	0
Organization Science	GM	4	50	20	7	4	1	0	0
Strategic Management Journal	GM	4	155	32	11	4	2	1	0
Academy of Management Journal	GM	4	57	28	7	2	1	1	0
Human Resource Management Journal	GM	4	51	4	4	2	1	1	0
Academy of Management Review	GM	4	55	11	5	2	2	1	0
Administrative Science Quarterly	GM	4	44	7	2	1	-	-	0
Human Relations	GM	4	115	12	4	1	-	-	0
Journal of Management	GM	4	54	16	5	1	-	-	0
Journal of Organizational Behavior	GM	4	33	9	2	1	1	0	0
Management Science	GM	4	144	8	2	1	1	0	0
Total			4770	446	173	89 (96) ⁴	55 (58) ⁴	18 (19) ⁴	7(3,1)

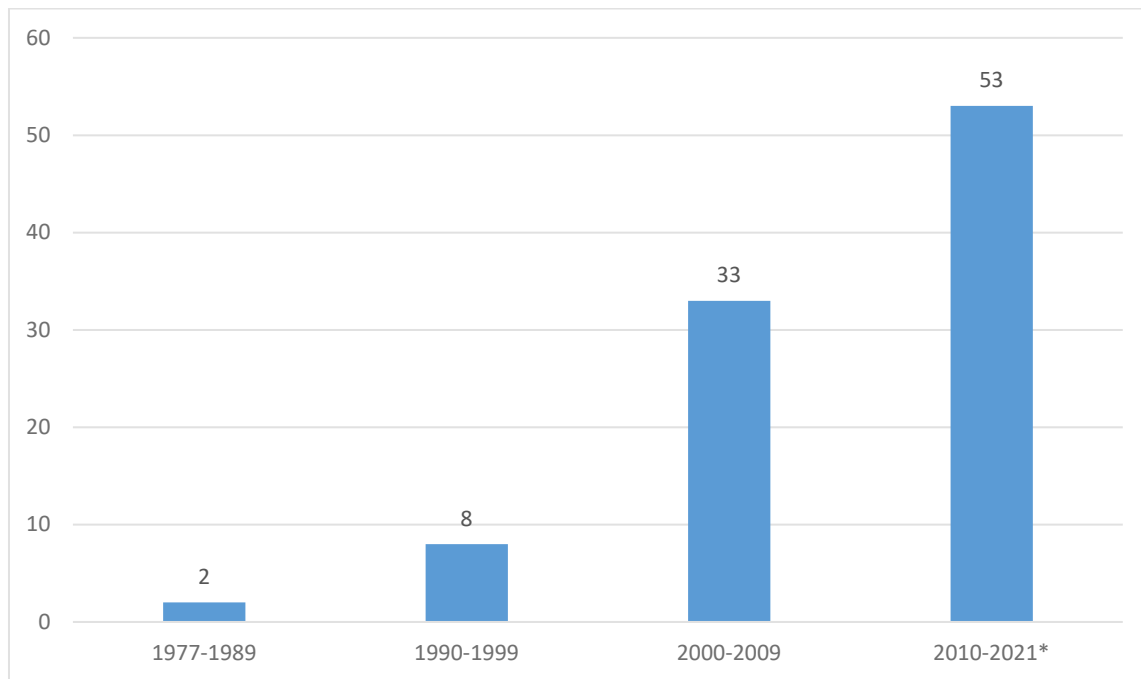
1. IB=international Business journals, GM=general management journals,

2. AJG =Academic Journal Guide 2018 by Chartered Association of Business Schools

3. Supplementary search made on same criteria November 2021, covering July 2020 – November 2021

4. Total including supplementary search 2021

Figure 3. Number of articles by decade



*Including articles from search January–November 2021, total 96 articles

Figure 4. Step 4: Categories of knowledge processes and percentage of articles per decade

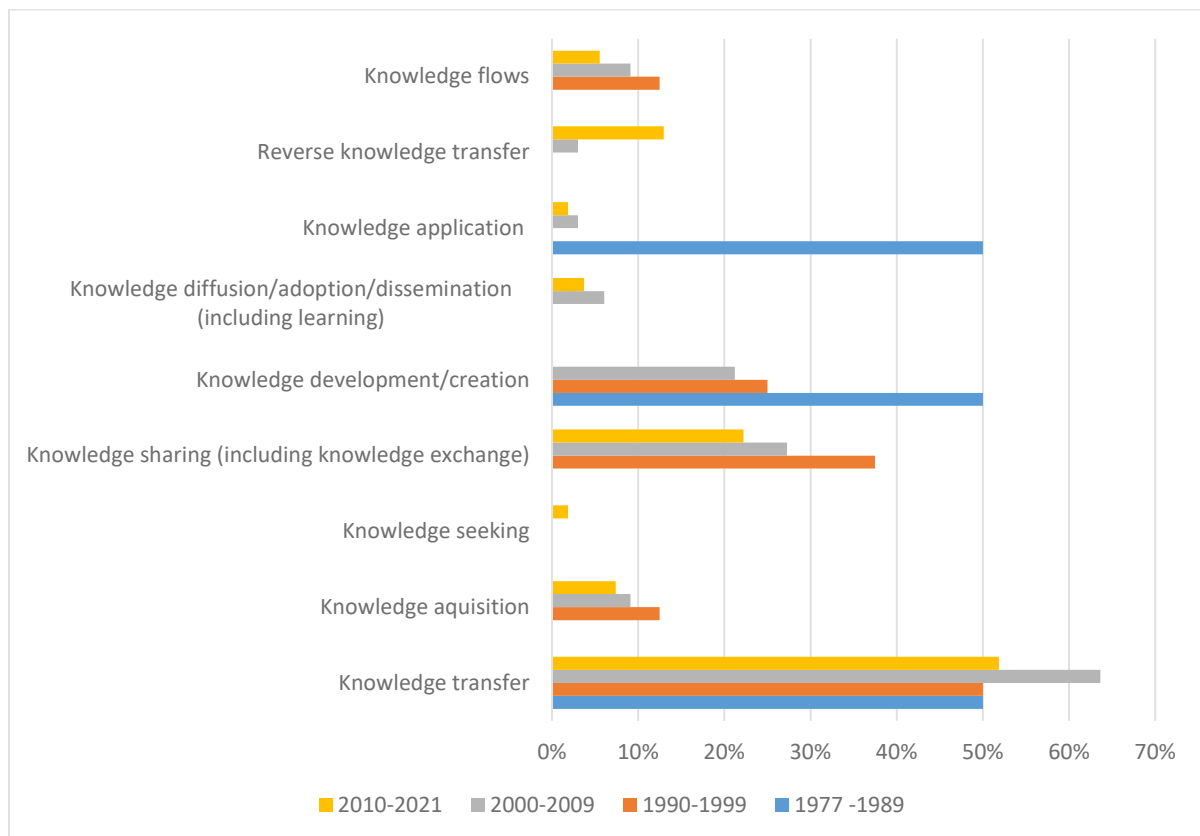


Table 5. Overview of Identified Organizational Mechanisms and Categories

Category	No.	Identified organizational mechanisms	Integration mode	
			Formal	Informal
Formal cross-departmental structures	1	Knowledge sharing projects	X	
	2	Global/transnational teams	X	
	3	Center of excellence	X	
	4	International committees	X	
	5	Temporary task forces/workshops/groups	X	
	6	Formal networks	X	
	7	Co-practice (e.g., R&D)	X	
Informal non-regular structures	8	Informal networks		X
	9	Meetings		X
	10	Virtual meetings/communication		X
	11	Digital communication (excl. virtual communication)		X
	12	Face-to-face communication		X
	13	Personal contact/interaction/direct communication		X
	14	Interunit communication		X
Staff mobility	15	Staff movements/international assignments (duration not specified)		X
	16	Short-term mobility (including interunit trips and visits)		X
	17	Long-term mobility – expatriation		X
	18	Managerial transfer top management positions		X
	19	Job rotation		X
Integrative personnel/roles	20	Liaison personnel		X
	21	Local buddies		X
	22	Integrator roles	X	
	23	Boundary spanners		X
Parent company involvement	24	Dual management structure		X
	25	Managerial involvement		X
	26	Active involvement of parent company/managers		X
Training	27	Training in general (incl. subsidiary employees, formal programs, multiple units, etc.)	X	
	28	Observation and on-site demonstration	X	
Socialization/relationship building activities	29	Relationship building		X
	30	Established informal relations		X
	31	Active trust building		X
	32	Corporate socialization of employees		X
	33	Corporate socialization of managers		X
	34	Management development programs	X	
	35	Normative integration		X

Figure 5. Step 4: Categories of organizational mechanisms enabling social interaction and percentage of articles per decade

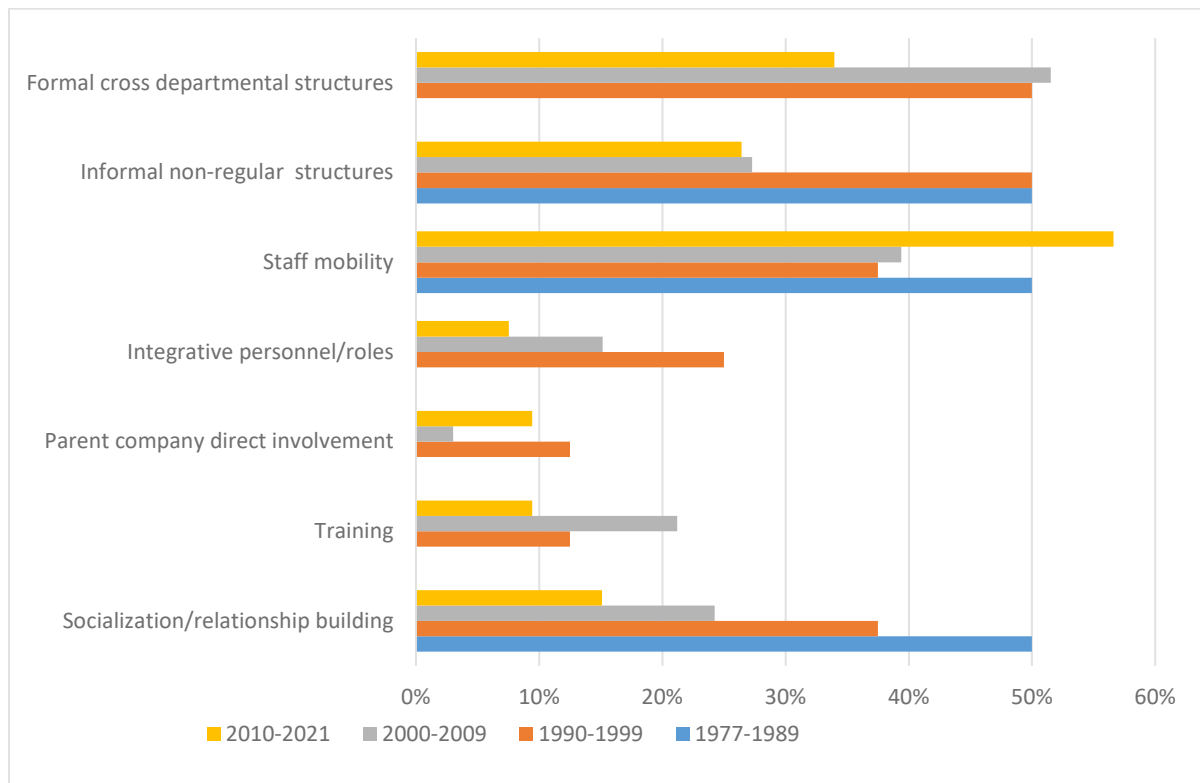


Figure 6. Step 5a: Categories of organizational mechanisms enabling social interaction, with focus on social capital and socialization (percentage of articles per decade)

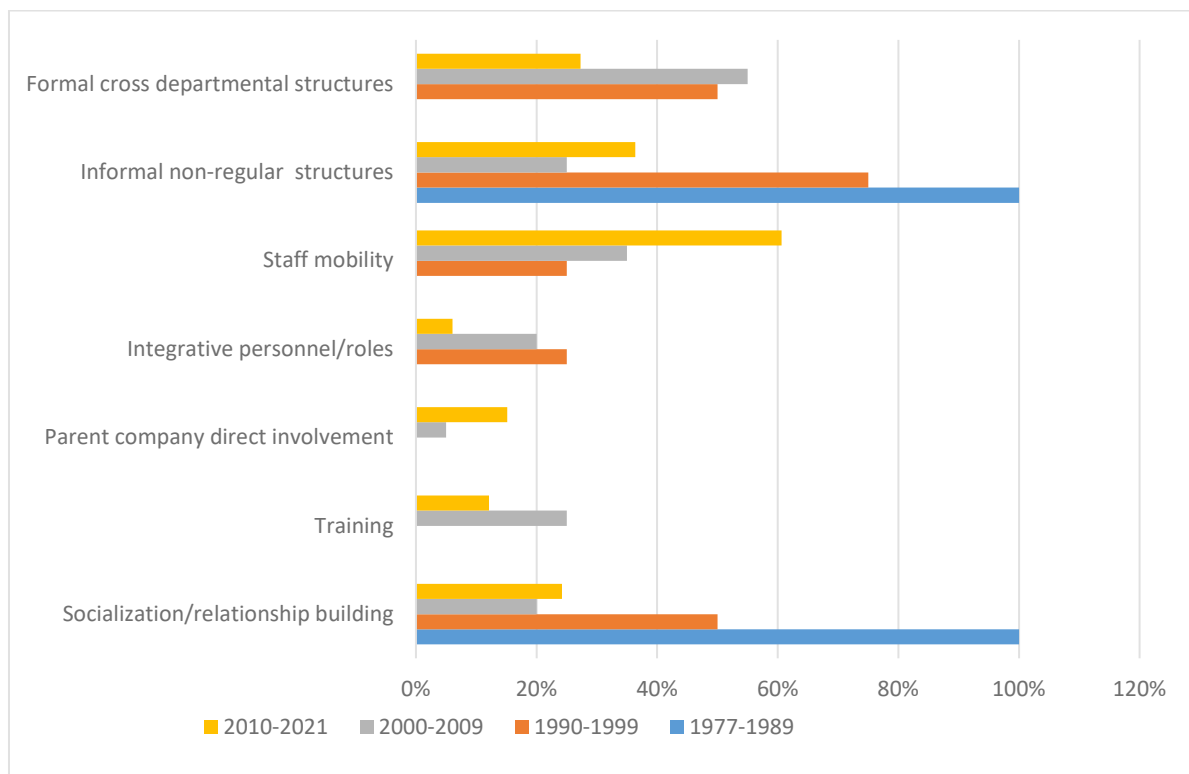


Figure 7. Step 5b: Categories of organizational mechanisms enabling social interaction, explicit focus on social capital and socialization (percentage of articles represented in each category)

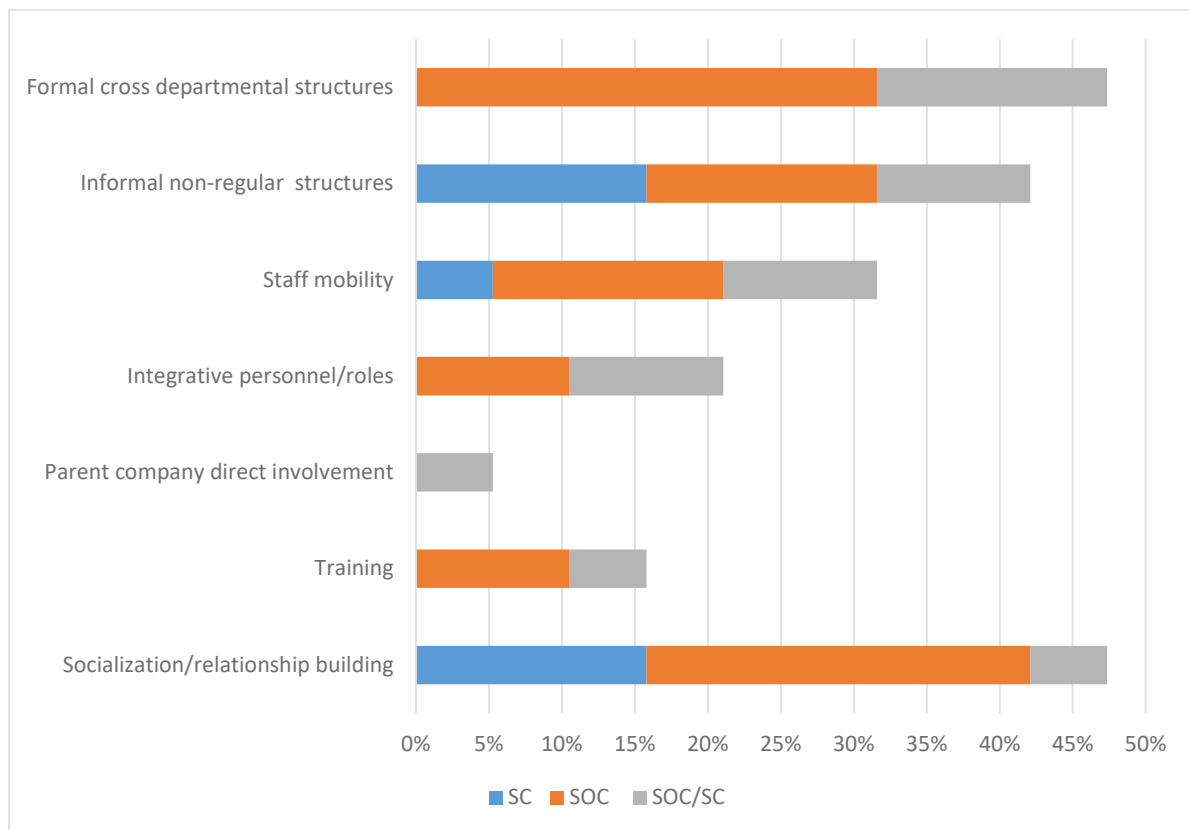
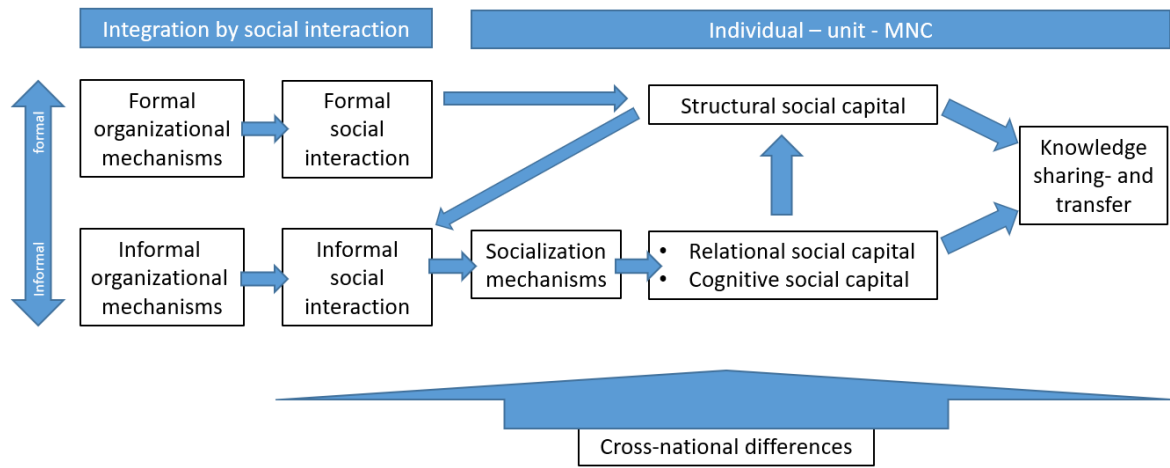


Table 6: Articles Explicitly Including Socialization and Social Capital

Note. SOC= socialization, SC= social capital, SSC=structural social capital, RSC= relational social capital, CSC= cognitive social capital, GSC= general social capital

References	SOC/SC	Formal organizational mechanism	Informal organizational mechanisms	Communication as a facilitator (frequency)	Dimensions of SC			
					SSC	RSC	CSC	GSC
Ahlvik & Björkman (2015)	SC			X	X	X		
Björkman et al. (2004)	SOC	X	X					
Björkman & Lervik (2007)	SC				X	X	X	
Espedal et al. (2013)	SC	X						X
Ghoshal & Bartlett (1988)	SOC	X	X	X				
Gooderham et al. (2011)	SC							X
Gupta & Govindarajan (1991)	SOC	X	X	X				
Gupta & Govindarajan (2000)	SOC	X	X					
Harzing & Noorderhaven (2006)	SOC	X	X					
Lagerström & Andersson (2003)	SOC	X	X	X				
López-Sáez et al. (2021)	SOC/SC	X	X		X	X	X	
Minbaeva et al. (2012)	SOC	X	X					
Oddou et al. (2009)	SOC (SC)		X					
Peltokorpi & Yamao (2017)	SC			X			X	
Persson (2006)	SOC/SC	X	X			X	X	
Reiche (2012)	SC		X		X	X		
Tsai & Ghoshal (1998)	SC				X	X	X	
Williams & Lee (2016)	SOC (SC)	X	X	X				
Zeng et. al (2018)	SOC		X					

Figure 8. Revised model



Appendix A: Overview articles

Author	Year	Journal	Organizational mechanisms *1	Step 5a	Step 5b	Knowledge processes *3	Methodology *4	Quantitative	Qualitative	Multiple methods	Knowledge application explicit	Virtual/digital platforms	Microfoundations
Adenfelt & Lagerström	2006	International Business Review	2; 3	1		1; 5	E		1		Yes	No	No
Adenfelt & Lagerström	2008	Management International Review	2; 3			4; 5	C				No	No	No
Ahlvik & Björkman	2015	International Business Review	10; 11; 13	1	1	1	E	1			No	No	No
Ambos & Ambos	2009	Journal of International Management	2; 5; 20	1		1	E	1			Yes	Yes *5	No
Ambos, Ambos, Eich & Puck	2016	Journal of international management	2	1		4	E	1			No	Yes *5	No
Andersson, Buckley & Dellestrand	2015	Global Strategy Journal	5; 12; 17; 29	1		1	E	1			Yes	No	No *6
Barry Hocking, Brown & Harzing	2004	International Journal of Human Resource Management	17	1		2	E			1	No	No	No
Bartel-Radic	2006	Management International Review	2			6	E			1	No	No	No
Björkman & Lervik	2007	Human Resource Management Journal	35	1	1	1	C				No	No	No
Björkman, Barner-Rasmussen & Li	2004	Journal of International Business Studies	2; 4; 5; 16; 17; 27	1	1	1	E	1			Yes	No	No
Bonache & Zárraga-Oberty	2008	International Journal of Human Resource Management	15			1	C				Yes	No	Yes
Boyle, Nicholas & Mitchell	2016	Management International Review	8; 15			1	E			1	No	Yes *5	No

Bresman, Birkinshaw & Nobel	1999 (2010)	Journal of International Business Studies	16	1		1	E*	1			No	No	No
Bucher, Burmeister, Osland & Deller	2020	International Journal of Human Resource Management	17; 31	1		1	E	1			No	No	No
Burmeister, Lazarova & Deller	2018	Journal of World Business	17	1		8	E	1			No	No	No
Chang & Smale	2013	International Journal of Human Resource Management	17			1	E		1		No	No	Yes
Chang, Gong & Peng	2012	Academy of Management Journal	17			1	E			1	No	No	No
Chen, Park & Newbury	2009	Strategic Management Journal	5; 27; 33			1	E	1			No	No	No
Cheong, Sandhu, Edwards & Poon	2019	International Business Review	17			1	E			1	No	No	No
Choi & Johanson	2012	International Business Review	17	1		1	E	1			Yes	No	No
Choudhury	2017	Organization Science	15; 16			4	E			1	No	No	No
Chung	2014	Management International Review	13; 31	1		8	E	1			No	No	No
Ciabuschi, Dellestrand & Kappen	2011	Management International Review	1	1		1; 7	E	1			Yes	Yes *5	No
Dinur, Hamilton III & Inkpen	2009	Journal of International Management	11; 12; 13; 16; 17; 27			1	E		1		Yes	Yes *5	No *6
Duvivier, Peeters & Harzing	2019	Journal of World Business	17	1		1	E*		1		No	No	No
Edström & Galbraith	1977	Administrative Science Quarterly	17			1	E		1		No	No	No
Eisenberg & Mattarelli	2017	Journal of International management	2			4	C				No	Yes	Yes
Engelhard & Nägele	2003	Journal of World Business	17	1		4	E		1		No	No	No
Espedal, Gooderham & Sensaker	2013	Human Resource Management	34	1	1	4	E			1	No	No	No
Fang, Jiang, Makino & Beamish	2010	Journal of Management Studies	17			1	E*	1			No	No	No

Froese, Stoermer, Reiche & Klar	2021	Journal of International Business Studies	17			8	E*		1		Yes	No	No
Frost & Zhou	2005	Journal of International Business Studies	7	1		8	E*	1			Yes	No	No
Ghoshal & Bartlett	1988	Journal of International Business Studies	14; 35	1	1	5; 7	E			1	No	No	No
Ghoshal, Korine & Szulanski	1994	Management Science	2; 5; 9; 13; 14	1		4	E	1			No	No	No
Gibson, Dunlop & Cordery	2019	Journal of International Business Studies	2			4	E*			1	Yes	Yes	No
Gibson, Waller, Carpenter & Conte	2007	Journal of Organizational Behavior	2	1		1; 5	C				No	No	No
Gooderham, Minbaeva & Pedersen	2011	Journal of Management Studies	Socialization *2	1	1	1	E	1			Yes	No	Yes
Gupta & Govindarajan	1991	Academy of Management Review	4; 20; 22; 33	1	1	9	C				No	No	No
Gupta & Govindarajan	1994	International Business Review	2; 5; 13; 20; 33			1	E	1			No	No	No
Gupta & Govindarajan	2000	Strategic Management Journal	4; 5; 15; 20; 33	1	1	9	E	1			No	No	No
Haas	2006	Organization Science	2			2; 7	E			1	No	Yes *5	No
Haas & Cummings	2015	Journal of International Business Studies	2			3	E	1			No	No	Yes
Hansen & Løvås	2004	Strategic Management Journal	30	1		1; 4	E			1	No	No	No
Harzing & Noorderhaven	2006	International Business Review	5; 13; 27; 33	1	1	9	E	1			No	No	No
Harzing, Pudelko & Reiche	2016	Human Resource Management	17	1		1	E	1			No	No	No
Hong & Nguyen	2009	Journal of World Business	13; 19; 23; 27; 28	1		1; 4	E		1		No	No	No
Hong, Easterby-Smith & Snell	2006	Journal of Management Studies	35			1	E		1		No	No	No

Hsu, Chen, Chiang & Shaffer	2021	Human Resource Management	17	1		1; 2	E	1			No	No	No
Hwang, Argote & Singh	2015	Organization Science	6			4	E*	1			No	Yes	No
Jonsson & Foss	2011	Journal of International Business Studies	17; 21	1		1	E		1		No	No	No
Klitmøller & Luring	2013	Journal of World Business	2			4	E		1		No	Yes	No
Kostova	1999	Academy of Management Review	13; 29	1		1	C				No	No	No
Lagersröm & Andersson	2003	Journal of World Business	2	1	1	4; 5	E		1		No	No	No
Lee, Taras, Jiménez, Choi & Pattnaik	2020	Management International Review	2			4	E	1			No	Yes *5	No
Liu & Meyer	2020	Journal of World Business	23			8	E		1		No	No	Yes
López-Sáez, Cruz-González, Navas-López & Perona-Alfageme	2021	Journal of International Management	2, 4; 5; 9; 14; 17; 19; 20; 26; 27; 32; 33; 34	1	1	1	E	1			Yes	No	No
Lyles & Salk	1996	Journal of International Business Studies	17; 25; 27			2	E	1			No	No	No
Massingham	2010	International Journal of Human Resource Management	17	1		1	E		1		No	No	No
McDonnell, Gunnigle & Lavelle	2010	Human Resource Management Journal	1, 4; 5; 8; 17			6	E	1			No	No	No
Mendez	2003	Journal of World Business	2	1		4; 5; 6	E		1		No	Yes *5	No
Michailova & Mustaffa	2012	Journal of World Business	27	1		9	R				No	No	Yes
Minbaeva & Santangelo	2018	Global Strategy Journal	23			4	E	1			Yes	No	Yes
Minbaeva, Mäkelä & Rabbiosi	2012	Human Resource Management	1; 4; 5; 9	1	1	4	E	1			No	No	Yes
Minbaeva, Park, Vertinsky & Cho	2018	Journal of World Business	12; 16	1		1; 2	E	1			Yes	Yes *5	No

Monteiro, Arvidsson & Birkinshaw	2008	Organization Science	14	1		9	E	1			No	No	No
Noorderhaven & Harzing	2009	Journal of International Business Studies	5; 14; 27	1		4	E	1			No	No	No
Oddou, Osland & Blakeney	2009	Journal of International Business Studies	17	1	1	1	C				No	No	no
Park	2012	International Business Review	14; 17	1		2	E	1			Yes	No	No
Park	2011	International Business Review	13; 17; 26; 27	1		1	E	1			Yes	No	No
Park & Choi	2014	International Business Review	17; 18; 26; 27	1		2	E	1			No	No	No
Peltokorpi & Yamao	2017	Journal of World Business	14	1	1	8	E	1			No	No	No
Persson	2006	International Business Review	2; 5; 20	1	1	1	E	1			Yes	No	No
Raab, Ambos & Tallman	2014	Journal of World Business	2; 26	1		4	E	1			No	Yes *5	No *6
Rabbiosi	2011	Journal of International Management	2; 11; 12; 16; 18	1		8	E	1			Yes	No	No
Reger	2004	Journal of international management	2; 3; 4; 5; 12; 13; 14; 16; 19; 20; 32; 35			1; 4; 5	E		1		No	No	No
Reiche	2011	Human Resource Management	17	1		1	E	1			No	No	No
Reiche	2012	Journal of Management Studies	17	1	1	1	E*	1			No	No	No *6
Reiche, Harzing & Kraimer	2009	Journal of International Business Studies	17			5	C				No	No	No *6
Sanchez-Vidal, Sanz-Valle, Barba-Aragon	2018	International Journal of Human Resource Management	17	1		8	E	1			Yes	No	No
Simonin & Özsomer	2009	Human Resource Management	17; 27; 28	1		1	E	1			No	No	No
Stoermer, Davies & Froese	2021	Journal of International Business Studies	17			1; 4	E	1			No	No	No
Subramaniam, Rosenthal & Hatten	1998	Journal of Management Studies	2			1; 4; 5	E		1		No	No	No

Tenzer, Pudelko & Zellmer-Bruhn	2021	Journal of World Business	2			1; 9	E		1		No	No	Yes
Tregaskis, Edwards, Edwards, Ferner & Marginson	2010	Human Relations	4; 5; 8; 17			6	E	1			No	No	No
Tsai & Ghoshal	1998	Academy of Management Journal	8	1	1	4; 5	E	1			No	No	No
Tsang	1999	International Business Review	17			1	E		1		No	No	No
Tseng, Yu & Seeto	2002	International Business Review	13; 14; 35			1	E	1			No	No	No
Wang, Tong, Chen & Kim	2009	Journal of Management	17			1	E			1	No	No	No
Welch & Welch	2008	Management International Review	2; 8; 12; 15			1; 4	C				No	No	No
Williams & Lee	2016	International Business Review	10; 11	1	1	9	E	1			No	No	No
Yahaiaoui, Chebbi & Weber	2016	International Journal of Human Resource Management	5; 13; 14; 17; 35	1		1	E		1		No	No	No
Yakob	2018	Journal of International management	22; 24	1		1	E*		1		No	Yes *5	Yes
Zeng, Grøgaard & Steel	2018	Journal of World Business	Socialization *2	1	1	1	E	1			No	No	No
Zhao & Anand	2009	Strategic Management Journal	27			1	E			1	No	No	No
Zhou, Fey & Yildiz	2020	Journal of World Business	27			1	E	1			Yes	No	No
Zou & Ghauri	2008	Management International Review	13; 22; 24	1		1	E		1		No	No	No

*1 - See table 3 for number identification

*2 - No specific intervention or organizational mechanisms - focus on socialization/relationship building in general

*3 – Knowledge processes: 1= knowledge transfer; 2=knowledge acquisition; 3=knowledge seeking; 4= knowledge sharing; 5=knowledge development/creation; 6=knowledge diffusion/adoption/dissemination; 7=knowledge application; 8=reverse knowledge transfer; 9=knowledge flows

4 -Methodology: E=empirical (E=longitudinal); C=conceptual; R=review

*5 - Only mentioning digital or virtual communication briefly, most in the section for discussion, implications, or future research. A few including variables comprising virtual communication platforms, but virtual/digital platforms are not the focus.

*6 - Microfoundations only mentioned and/or addressed in implications and future research

Appendix B: Coding manual

Parent category	Sub-categories	Explanation
ID	Unique ID number	Generate unique ID number
Title	Title text	
Author(s)	Author name	
Publication year	Year	
Journal	Journal name	
Topic area	E.g. HRM Corporate control and coordination Knowledge management Social capital	Map subtopic area to international management. The topic has to be explicitly mentioned in the article.
Focus/research method	Conceptual/empirical/literature review	
Main intervention for social interaction/mechanisms	E.g., Socialization, teams, expats etc.	Describe the organizational mechanisms used for social interaction
Type of social mechanisms	E.g., social capital, socialization, normative, communication	Describes the underlying social mechanisms in focus.
Main findings	Text	Summarize main findings
Theory(ies) employed	Theory name	The main theoretical areas addressed in the article.
Definition of social capital/socialization	Yes/No	Maps if this is explicitly defined in the article.
Outcomes	E.g., socialization, knowledge processes, performance, social capital	Describes the main outcome
Main knowledge process	E.g. Knowledge – Acquisition Transfer Sharing Application Storage Creation Innovation Learning	Describes the main knowledge process in focus.
Research design	Inductive Deductive	Inductive - Building generalizable statements from theories and extant literature Deductive - Building generalizable statements from data and observations
Context of study	"The circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood."	Describes the context of the study if article is empirical.
Data collection strategy	Survey Interviews Structured interviews Semi-structured interviews	

Respondents		Number of respondents and type of respondents. Type of respondents e.g. HR manager, managers, employees, team leaders etc..
Response rate		Response rate if available.
Methodology	Qualitative Quantitative Mixed method Triangulation	Qualitative - Interpretative inquiry, e.g., grounded theory approach, case study approach, discourse analysis, descriptive studies Quantitative - Post-positivist inquiry using statistical techniques
Type of analysis/interpretation	e.g. multiple regression, text analysis, SEM	Describes the type of analysis used.
Type of data	E.g. Likert scale, text from transcribed interviews, secondary sources (e.g. annual reports)	Describes what kind of data used in the analysis.
Longitudinal	Yes/no/NA	Longitudinal/cross-sectional
Control/coordination mechanism	Yes/no	Explicitly addresses control and coordination mechanisms.
Socialization mechanism	Yes/no	Does the article explicitly refer to a type of socialization mechanism?
Formal mechanism	Yes/no	Is the socialization mechanism formal/informal mechanism
Social capital	Yes/no	Does the article explicitly address social capital?
Type of social capital	Structural Relational Cognitive or Goodwill or Other	In the relevant literature there are mainly two
MNC perspective	Yes/no	Confirms MNC perspective (mandatory to be included)
MNC distinction	Distance: a) Culture/institutional b) Language c) Geography ND=not defined, NA=not applicable	Refers to type of MNC distinction applied if valid.
Ownership structure	1) Wholly owned 2) Joint venture ND=not defined NA=not applicable	
Acquisition	Yes/No ND=not defined, NA=not applicable	Does the article apply to acquisitions?

Size	1) small 2) Medium 3) Large ND=not defined, NA=not applicable	Company size in number of employees Small <1000 Medium >1000 and <5000 Large >5000
Number of countries	Number	How many countries does the study involve?
Number of units	Number	How many units are involved. This might be within the company of interest, or number of units in the study (e.g. number of respondents/subsidiaries). This is not the initial sample, but the final valid number of units/respondents.
Number of companies	Number	Number of different individual companies involved in the study.
MNC nationalities	Number ND=not defined NA=not applicable	Number of nationalities of MNC units.
Industry/sector	Name of industry sector (e.g. manufacturing, services, automotive) ND=not defined NA=not applicable	Type of industry or sector.
Level of analysis	Individual Group Unit/subsidiary Company Institutional/cultural	
Type of knowledge	Type of knowledge defined (e.g. procedural, tacit, explicit, local, expert, know-how) ND=not defined NA=not applicable	Does the article define type of knowledge in question?
Direction knowledge flow	Vertical: HQ-sub Sub – HQ/reverse knowledge flow Horizontal: Sub – sub Individual to individual	
If knowledge transfer variable, definition include application?	Yes/no ND=not defined NA=not applicable	If knowledge transfer variable, does it explicitly define/include the action of knowledge application?
Cultural variables/focus	Yes/no ND=not defined NA=not applicable	Does the article apply cultural focus or variables explicitly?

Institutional variables/focus	Yes/no ND=not defined NA=not applicable	Does the article apply institutional focus or variables explicitly?
Digital/virtual platforms?	Yes/no ND=not defined NA=not applicable	Does the article include or refer explicitly to digital platforms, e.g. virtual communication?
Microfoundations	Yes/No	Does the article explicitly address or comprise microfoundations?
Dependent variable (s)	Lists dependent variable(s)	
Moderating/mediating variable(s)	Lists moderating/mediating variable(s)	
Control variable(s)	Lists control variable(s)	
Illustrations	Picture	Includes a picture of illustrations, e.g., models.
Short summary	Text	If available(abstract)
Comments	Text	Other comments/notes

Based on input from Guar & Kumar (2018), Aykol, Palihawadana, & Leonidou (2012), Welch & Björkman (2014)

Appendix C

Detailed overview of identified organizational mechanisms with references

No.	Organizational mechanism	Number of articles	References
1. Formal cross-departmental structures (59)			
1	Knowledge sharing projects	3	Ciabushi et al. (2011); Minbaeva et al. (2012); McDonnell et al. (2010);
2	Global -/transnational teams	25	Bartel-Radic (2006); Adenfelt & Lagerström (2008); Welch & Welch (2008); Raab et al. (2014); Rabbiosi (2011); Ambos & Ambos (2009); Adenfelt & Lagerström (2006); Björkman et al. (2004); Persson (2006); Gibson et al. (2007); Lagerström & Andersson (2003); Mendez (2003); Haas & Cummings (2015); Gibson et al. (2019); Gupta & Govindarajan (1994); Reger (2004); Ambos et al. (2016); Haas (2006); Subramaniam et al. (1998); Ghoshal et al. (1994); Eisenberg & Mattarelli (2017); Klitmøller & Luring (2013); López-Sáez et al. (2021); Tenzer et al. (2021); Lee et al. (2020)
3	Centre of excellence	3	Adenfelt & Lagerström (2008); Adenfelt & Lagerström (2006); Reger (2004)
4	International committees	9	Björkman et al. (2004); Reger (2004); Tregaskis et al. (2010); Gupta & Govindarajan (1991); Williams & Lee (2016); Minbaeva et al. (2012); McDonnell et al. (2010); Gupta & Govindarajan (2000); López-Sáez et al. (2021)
5	Temporary task forces/ workshops/groups	17	Ambos & Ambos (2009); Björkman et al. (2004); Persson (2006); Noorderhaven & Harzing (2009); Andersson et al. (2015); Gupta & Govindarajan (1994); Reger (2004); Chen et al. (2009); Ghoshal et al. (1994); Tregaskis et al. (2010); Harzing & Noorderhaven (2006); Williams & Lee (2016); Yahiaoui et al. (2016); Minbaeva et al. (2012); McDonnell et al. (2010); Gupta & Govindarajan (2000); López-Sáez et al. (2021)
6	Formal networks	1	Hwang et al. (2015)
7	Co-practice (eg. R&D)	1	Frost & Zhou (2005)
2. Informal non-regular structures (43)			
8	Informal networks	5	Welch & Welch (2008); Boyle et al. (2016); Tsai & Ghoshal (1998); Tregaskis et al. (2010); McDonnell et al. (2010).
9	Meetings	3	Ghoshal et al. (1994); Minbaeva et al. (2012); López-Sáez et al. (2021)
10	Virtual meetings/communication	2	Ahlvik & Björkman (2015); Williams & Lee (2016)
11	Digital communication (excl. Virtual meetings/communication)	4	Ahlvik & Björkman (2015); Rabbiosi (2011); Dinur et al. (2009); Williams & Lee (2016)
12	Face-to-face communication	6	Welch & Welch (2008); Rabbiosi (2011); Dinur et al. (2009); Andersson et al. (2015); Minbaeva et al. (2018); Reger (2004)

13	Personal contact/interaction/direct communication	13	Chung (2014); Zou & Ghauri (2008); Ahlvik & Björkman (2015); Dinur et al. (2009); Hong & Nguyen (2009); Park (2011); Gupta & Govindarajan (1994); Reger (2004); Ghoshal et al. (1994); Harzing & Noorderhaven (2006); Tseng et al. (2002); Yahiaoui et al. (2016); Kostova (1999)
14	Interunit communication	10	Ghoshal & Bartlett (1988); Noorderhaven & Harzing (2009); Peltokorpi & Yamao (2017); Park (2012); Reger (2004); Ghoshal et al. (1994); Monteiro et al. (2008); Tseng et al. (2002); Yahiaoui et al. (2016); López-Sáez et al. (2021)
3. Staff mobility (54)			
15	Staff movements/international assignments (duration not specified)	5	Welch & Welch (2008); Boyle et al. (2016); Choudhury (2017); Bonache & Zárraga-Oberty (2008); Gupta & Govindarajan (2000)
16	Short-term mobility (including interunit trips and visits)	7	Rabbiosi (2011); Dinur et al. (2009); Björkman et al. (2004); Bresman et al. (1999); Minbaeva et al. (2018); Reger (2004); Choudhury (2017)
17	Long-term mobility – expatriation	37	Lyles & Salk (1996); Dinur et al. (2009); Björkman et al. (2004); Oddou et al. (2009); Reiche et al. (2009); Andersson et al. (2015); Jonsson & Foss (2011); Duvivier et al. (2019); Engelhard & Nägele (2003); Park (2011); Choi & Johanson (2012); Cheong et al. (2019); Tsang (1999); Park (2012); Wang et al. (2009); Chang et al. (2012); Reiche (2012); Fang et al. (2010); Tregaskis et al. (2010); Gupta & Govindarajan (1991); Eidström & Gailbraith (1977); Park & Choi (2014); Burmeister et al. (2018); Barry Hocking et al. (2004); Chang & Smale (2013); Yahiaoui et al. (2016); Massingham (2010); Sanchez-vidal et al. (2018); Simonin & Özsomer (2009); Reiche (2011); Harzing et al. (2016); McDonnell et al. (2010); López-Sáez et al. (2021); Froese et al. (2021); Stoemer et al. (2021); Bucher et al. (2020); Hsu et al. (2021)
18	Managerial transfer top management positions	2	Park & Choi (2014); Rabbiosi (2011)
19	Job rotation	3	Hong & Nguyen (2009); Reger (2004); López-Sáez et al. (2021)
4. Integrative personnel/roles (12)			
20	Liaison personnel	7	Ambos & Ambos (2009); Persson (2006); Gupta & Govindarajan (1994); Reger (2004); Gupta & Govindarajan (1991); Gupta & Govindarajan (2000); López-Sáez et al. (2021)
21	Local buddies	1	Jonsson & Foss (2011)
22	Integrator roles	1	Gupta & Govindarajan (1991)
23	Boundary spanners	3	Hong & Nguyen (2009); Minbaeva & Santangelo (2018); Liu & Meyer (2020)
5. Parent company involvement (7)			
24	Dual management structure	2	Yakob (2018); Zou & Ghauri (2008)

25	Active involvement of parent company/managers	1	Lyles & Salk (1996);
26	Managerial involvement	4	Park & Choi (2014); Park (2011); Raab et al. (2014) ; López-Sáez et al. (2021)
6. Training (16)			
27	Training in general (incl. subsidiary employees, formal programs, multiple units etc.)	14	Lyles & Salk (1996); Dinur et al. (2009); Björkman et al. (2004); Noorderhaven & Harzing (2009); Hong & Nguyen (2009); Park (2011); Zhao & Anand (2009); Chen et al. (2009); Park & Choi (2014); Zhou et al. (2020); Harzing & Noorderhaven (2006); Michailova & Mustaffa (2012); Simonin & Özsomer (2009); López-Sáez et al. (2021)
28	Observation and on-site demonstration	2	Hong & Nguyen (2009); Simonin & Özsomer (2009)
7. Socialization/relationship building activities (21)			
29	Relationship building	2	Andersson et al. (2015); Kostova (1999)
30	Established informal relations	1	Hansen & Løvås (2004)
31	Active trust building	2	Chung (2014); Bucher et al. (2020)
32	Corporate socialization of employees	2	Reger (2004); López-Sáez et al. (2021)
33	Corporate socialization of managers	6	Gupta & Govindarajan (1994); Chen et al. (2009); Gupta & Govindarajan (1991); Harzing & Noorderhaven (2006); Gupta & Govindarajan (2000); López-Sáez et al. (2021)
34	Management development programs	2	Espedal et al. (2013); Gupta & Govindarajan (2000)
35	Normative integration	6	Goshal & Bartlett (1988); Reger (2004); Hong et al. (2006); Tseng et al. (2002); Yahiaoui et al. (2016); Björkman & Lervik (2007)

Appendix D
Details on articles explicitly addressing social capital or socialization

<p style="text-align: center;">Ahlvik & Björkman (2015)</p>	<p style="text-align: center;">SC</p> <p style="text-align: center;">Transfer of HRM practices – social interaction by face- to-face meetings, virtual meetings and email contact.</p>	<p>Relevant definitions: Nahapiet and Ghoshal (1998: 243) define social capital as “the sum of the actual and potential resources embedded within, available through and derived from the network of relationships possessed by and individual or social unit”.</p> <p>Refer to structural social capital (p. 499) “as the interaction ties between key actors responsible for HRM at the headquarters and the subsidiary.” Examples of such ties are visits, personnel rotation, joint training activities, and teams and committees from both units.</p> <p>The relational dimension of social capital focuses on the personal relationships, friendships, and relations of mutual respect individuals have developed through a history of interactions. It thus includes such concepts as trust and trustworthiness, norms and sanctions, obligations and expectations, and identity and identification (p. 499). Trust is highlighted as particularly important in MNCs.</p> <p>Operationalization/organizational mechanisms: Structural social capital – interaction ties : (i) Managers from our unit and corporate HR have frequent face-to-face meetings together, (ii) managers from our unit and corporate HR have frequent email contact with each other, and (iii) managers from our unit and corporate HR have frequent telephone/video-conference contact with each other. Alpha: 0.83</p> <p>Relational social capital was measured as trust with the following items: (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 subsidiary 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 subsidiary and corporate HR will always keep the promises they make to each other. Alpha: 0.80</p> <p>Both measures was conducted by 1– 7 Likert scale, 1 representing “not at all” and 7 “to a great extent”.</p> <p>Findings/comments: Conceptualize the transfer of organizational practices from headquarters to subsidiaries of multinational corporations as encompassing three dimensions: implementation, integration and internalization. Examine how different organizational factors relate to each of the dimensions.</p> <p>Results are showing that formal control, inter-unit social capital, and subsidiary capabilities differ in how they are associated with subsidiary implementation, integration and internalization of HRM practices from headquarters. Structural social capital yielded no significant results, while relational social capital seems to be relevant for the three phases of transfer of practices, although some of the results were marginal.</p>
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Björkman et al. (2004)	<p style="text-align: center;">SOC</p> <p>Interunit trips and visits, international committees, teams and task forces, training involving participants from multiple units (expats)</p>	<p>Relevant definitions: (p. 447): "The aim of corporate socialization is to establish a shared set of values, objectives and beliefs across MNC units (Nohria and Ghoshal, 1994), providing them with a strong sense of a shared mission and a unitary corporate culture (Hedlund and Kogut, 1993)".</p> <p>Operationalization/organizational mechanisms: Number of managers at focal subsidiary interacting with other units in (a) interunit trips and visits; (b) international committees, teams, and task forces; and (c) training involving participants from multiple units. Final measure was calculated by total number of managers involved in these type of interactions divided by total number of subsidiary employees - providing an objective estimate of the number of people involved in corporate socialization mechanisms. Cronbach's alpha: 0.76</p> <p>Findings/comments: MNCs can influence inter-unit knowledge transfer by specifying the objectives of the subsidiary and by utilizing corporate socialization mechanisms. Finds no influence of management compensation systems for top management and the use of expatriate managers on the extent of knowledge transfer from foreign subsidiaries to other parts of the MNC. Expatriation is seen as a principal-agent-based mechanism and not as a socialization mechanism.</p>
Björkman & Lervik (2007)	<p style="text-align: center;">SC</p> <p>Refers to Jarillo & Martinez (1989) informal mechanisms for coordination/organizational mechanisms enabling social interaction</p>	<p>Relevant definitions: Nahapiet and Ghoshal (1998: 243) define social capital as 'the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit'. They distinguish between three interrelated dimensions of social capital: structural, relational and cognitive.</p> <p>Operationalization/organizational mechanisms: NA – conceptual, but hypothesis suggest following:</p> <p>Structural social capital – <i>the intensity of the interaction ties between the focal subsidiary and MNC headquarters.</i></p> <p>Relational social capital – <i>subsidiary management trust in MNC headquarters</i></p> <p>Cognitive social capital – <i>level of shared cognition between the focal subsidiary and MNC headquarters.</i></p> <p>Findings/comments: Argue that transfer of HR practices is a social process where the governance mechanisms used by the MNC, characteristics of the subsidiary HR systems, the social relationship between the subsidiary and MNC headquarters, and the transfer approach taken by headquarters management will influence the outcome of the process.</p>

Espedal et al. (2013)	<p style="text-align: center;">SC</p> <p style="text-align: center;">Global leadership Development (GLD) Programs</p>	<p>Relevant definitions: Adler and Kwon (2002, p. 17) define social capital as “the goodwill that is engendered by the fabric of social relations that can be mobilized to facilitate (knowledge-sharing).” Nahapiet and Ghoshal (1998, p. 243) employ a somewhat broader definition defining social capital as “the sum of the actual and potential resources embedded within, available through and derived from the network of relationships possessed by an individual or social unit.”</p> <p>Operationalization/organizational mechanisms: Not defined</p> <p>Findings/comments: Findings indicate that MNEs aiming to use Global Leadership Development programs for developing social capital across their operations must be highly sensitive to the issue of congruence with the established corporate culture in order to facilitate the development of social capital and knowledge transfer within the MNC.</p> <p>Do refer to socialization once in a quotation from one of the respondents, referring to the management program being a process of individualization rather a process of socialization. However, socialization is not defined or explicitly linked to social capital.</p>
Ghoshal & Bartlett (1988)	<p style="text-align: center;">SOC</p> <p style="text-align: center;">Travel/transfer of managers between HQ-sub, teams, task forces and committees. Communication frequency</p>	<p>Relevant definitions: No explicit definition - normative integration through parent company, sharing overall strategy, goals and values.</p> <p>Operationalization/organizational mechanisms: 1) Executive transfers as a key mechanism for promoting shared goals and values in MNCs (Edström and Galbraith 1977) – first indicator the amount of time the subsidiary manager had actually worked at the corporate headquarters of the company. Separating between more than a year and less than a year. 2) Existence of mentor at headquarters, dummy 3) Number of trips manager made to HQ per year, dummy (at least one per year)</p> <p>These three scores were aggregated to yield a single composite measure of the level of normative integration for each respondent; the scores of all respondents from the subsidiary were then aggregated to provide a subsidiary level-measure for the variable. Refers to Schein, 1968; Van Mannen and Schein, 1979</p> <p>Findings/comments: Finds positive impact of normative integration through organizational socialization and dense intra- and inter unit communication in order to facilitate creation, adoption and diffusion of innovations by subsidiaries in MNCs.</p> <p>Separates between the normative integration and intra-and inter-unit communication. Formal and informal mechanisms such as cross-functional teams, ad hoc as well as more durable committees at multiple levels of management and multidisciplinary task forces to facilitate and enhance internal communication. Communication frequency between managers at HQ and local sub managers.</p>

<p>Gooderham et al. (2011)</p>	<p>SC</p> <p>Social governance mechanism, not specific organizational mechanism</p>	<p>Relevant definitions: Definition of social capital is based on Adler and Kwon (2002, p. 23) “Social capital is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor’s social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor.”</p> <p>Further referring to Nahapiet and Ghoshal (1998, p. 243) defining social capital as ‘the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit’ and their view of social capital as comprising three interrelated dimensions: the relational, the cognitive, and the structural.</p> <p>Operationalization/organizational mechanisms: Social capital based on Adler and Kwon (2002) and what I refer to as general social capital: five-point Likert-type scale ranging from ‘1 – strongly disagree’ to ‘5 – strongly agree’.</p> <ol style="list-style-type: none"> 1) Knowledge sharing is valued in my company 2) In my company, people cooperate across departments 3) In my company, acquiring and leveraging new knowledge is highly valued 4) Sharing knowledge with people from different hierarchical levels is appreciated <p>SC is explicitly linked to knowledge sharing and transfer.</p> <p>Findings/comments: Findings indicate that although the use of social governance mechanisms promotes positive assessment of social capital, hierarchical governance mechanisms constrain its development. The application of market-based governance mechanisms has no significant effect. In addition, the findings provide evidence that social capital has a positive impact on knowledge transfer.</p>
<p>Gupta & Govindarajan (1991)</p>	<p>SOC</p> <p>formal integrative mechanisms (international committees), liason personnel, integrator roles, expats and corporate socialization of subsidiary managers, intensity of communication</p>	<p>Relevant definitions: Refers to Van Maanen and Schein (1979:21) defining organizational socialization as the process which "an individual is taught what behaviors and perspectives are customary and desirable within the work setting." Corporate socialization of subsidiary managers can be defined as the process through which subsidiary managers' values and norms become closely aligned with those of the parent corporation.</p> <p>Operationalization/organizational mechanisms: NA - conceptual</p> <p>Findings/comments: Focus on potential differences in the strategic roles of various subsidiaries within the same MNC (global innovator, local innovator, implementor, intergrated player) and examined the implications of these differences for the formal and informal control mechanisms that corporate headquarter utilize to ensure the effective execution of these strategic roles. Within the same corporation, examines how the nature of corporate control might also vary systematically across subsidiaries. Differences in subsidiary contexts are analyzed along two dimensions: (a) the extent to which the subsidiary is a user of knowledge from the rest of the corporation and (b) the extent to which the subsidiary is a provider of such knowledge to the rest of the corporation.</p>

<p>Gupta & Govindarajan (2000)</p>	<p style="text-align: center;">SOC</p> <p>Transmission channels: 1) Formal integrative mechanisms 2) Informal corporate socialization mechanisms</p> <p>Liaison personnel, temporary task forces, permanent teams, leadership development programs, expatriation/inpatriation</p>	<p>Relevant definitions: (p. 479) “Corporate socialization mechanisms refer to those organizational mechanisms which build inter-personal familiarity, personal affinity and convergence in cognitive maps among personnel from different subsidiaries” Refers to Edström and Galbraith (1977) and Van Maanen and Schein (1979)</p>
		<p>Operationalization/organizational mechanisms: Formal transmission channels: 7-point likert scale 1="used rarely"; 7="used very frequently"</p> <p>Asked respondent to indicate the extent to which their subsidiary used: 1) liaison personnel 2) temporary task forces 3) Permanent teams to coordinate decisions and actions with sister subsidiaries.</p> <p>Informal transmission channels: Lateral socialization mechanisms (YES/NO): 1)"Have you worked for one or more years in other subsidiaries of this corporation?" 2) "Have you participated in executive development programs involving participants from several subsidiaries?" Ghoshal and Barlett (1988)</p> <p>Vertical socialization mechanisms 1) "Have you worked for one or more years at corporate headquarters in this corporation?" 2)"Do you have a mentor at corporate headquarters?"</p> <p>Findings/comments: <i>Knowledge outflows:</i> To peer subsidiaries - both formal integrative mechanisms and lateral socializations mechanisms are positively related. To parent corporation - only formal integrative mechanisms showed a positive relation, vertical socialization mechanisms involving the head of subsidiary showed no significant effect.</p> <p><i>Knowledge inflows:</i> From peer subsidiaries - both formal integrative mechanisms and lateral socialization mechanisms are positively related. From parent corporation - both formal integrative mechanisms and vertical socialization mechanisms are positively related.</p>

<p>Harzing & Noorderhaven (2006)</p>	<p>SOC</p> <p>International task forces- and training programs, informal communication across units.</p>	<p>Relevant definitions: (p. 200) "Control by socialization and networks includes mechanisms such as participation of subsidiary managers in international task forces and international training programs, informal communication with other organizational sub-units and socialization of subsidiary managers." Refers to Martinez & Jarillo (1989, 1991); Gupta & Govindarajan (1994); Birkinshaw & Morrison (1995)</p> <p>Operationalization/organizational mechanisms: Control by socialization and networks was measured using a four-item scale measuring: 1) the participation of subsidiary managers in international task forces and international training; 2) the extent of informal communication with HQ and other subsidiaries; 3) the level of shared values with HQ (Harzing, 1999).</p> <p>Findings/comments: Results confirm the typology and show that different subsidiary roles are associated with different control mechanisms. Integrated players have the highest level of control by socialization and networks. Subsidiaries with the role of local innovators have the lowest level. Global innovators and Implementators fall in between of these two extremes. Socialization is defined as a control mechanism.</p>
<p>Lagerström & Andersson (2003)</p>	<p>SOC</p> <p>Transnational teams, meetings</p>	<p>Relevant definitions: Socialization is not clearly defined, but referred to as very important in terms of knowledge transfer. The authors refer to the fact that team members point out that the socialization part is extremely important and further refers to (p. 92) "They mean that one really needs to know the other team members in a personal way to cooperate well".</p> <p>Operationalization/organizational mechanisms: Case study – investigates transnational teams in one MNC - development of common business system for multiple units within one business area</p> <p>Findings/comments: Identifies socialization of team members as primary for efficient creation and sharing of knowledge, and information technology as secondary. The creation and sharing of knowledge within a transnational team rest upon efficient communication (and interaction (frequency), which is critically enhanced by mingling social interaction with work interaction, which in turn is facilitated by regular meetings and by proficiency in a common business language.</p>

<p>López-Sáez et al. (2021)</p>	<p>SOC/SC</p> <p>Splits between formal inter-unit communication and informal connectedness and shared values</p> <p>Teams, committees, meetings, training programs, visits, informal communication, expatriation</p>	<p>Relevant definitions: Socialization through informal connectedness and shared values enables to build interpersonal familiarity and personal affinity, as well as convergence in cognitive maps among personnel from different units (Zeng et al., 2018: 418).</p> <p>Formal integration mechanisms are linked to the structural dimension of social capital, as it provides structured communication channels that support learning and knowledge transfer (Ado et al., 2017).</p> <p>Informal integration mechanisms are linked to the relational dimension of social capital, i.e., personal relationships and friendships developed through a history of interactions, and the cognitive social capital dimension, i.e., shared codes, representations, and languages (Nahapiet and Ghoshal, 1998).</p> <p>Operationalization/organizational mechanisms:</p> <p>Formal inter-unit communication (Cronbach's alpha: 0.876):</p> <ul style="list-style-type: none"> (i) Our unit takes part in committees and interdisciplinary teams to coordinate decisions and actions with other units (ii) Our company organizes meeting sessions and events aimed at enhancing the affinity between employees from different units (iii) Employees of our unit usually participate in training programs with staff from other units (seminars, courses, workshops) (iv) Employees of our unit usually meet with staff from other units for addressing technical issues (v) The objectives and values of the executives of our unit are consistent with those of the company's top management <p>Informal connectedness and shared values (Cronbach's alpha: 0.813):</p> <ul style="list-style-type: none"> (i) Despite our differences, the distinct units of our company can always learn from each other (ii) In our company it is easy to justify the time and money invested in visiting other units (iii) For improved performance, our company considers equally legitimate adopting knowledge from other units than our own creativity (iv) Our unit maintains a fluid informal communication with the rest of the units (through contacts and personal relationships) (v) The expatriation of managers among units is a common practice in our company <p>5-points Likert-type scale (1 = completely disagree; 5 = completely agree) was used for both variables.</p> <p>Findings/comments:</p> <p>Findings support that both mechanisms are positively associated with knowledge transfer effectiveness, the effect of formal inter-unit communication is comparatively higher. The formal integration mechanism seems to work independently of the type of distance that separates the units involved in the transfer. By contrast, the effectiveness of informal integration mechanisms is influenced by economic, geographic and administrative dimensions of distance (The following types of distance are included: cultural, economic, geographic, administrative, knowledge, global connectedness).</p>
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<p>Minbaeva et al. (2012)</p>	<p>SOC</p> <p>Meetings, cross-functional project groups, conferences, seminars, workshops</p>	<p>Relevant definitions: Do not explicitly define socialization but links socialization to social interaction for the purpose of knowledge sharing (p. 392) "On the firm level, socialization mechanisms that develop trust and cooperation among individuals and facilitate formal and informal face-to-face relationships have been found to positively affect knowledge transfer".</p> <p>Refers to Björkman et al. (2004), Gupta & Govindarajan (2000), Schulz (2001)</p> <p>Operationalization/organizational mechanisms: Operationalization of "Engagement in social interaction", scale 1 = "Never" to 5 "Very often": (1) "To what extent do you use meetings when you transfer knowledge to other people in your company?" (2) "To what extent do you use conferences, seminars, and workshops when you transfer knowledge to other people in your company?" (3) "To what extent do you use cross functional project groups when you transfer knowledge to other people in your company?" (4) "To what extent do you use meetings when you search for knowledge?" (5) "To what extent do you use conferences, seminars, and workshops when you search for knowledge?" (6) "To what extent do you use cross-functional project groups when you search for knowledge?" Construct reliability: 0.87</p> <p>"Perceived organizational commitment" – shared view in the company that knowledge sharing is valued: (1) "Knowledge sharing is valued in my company" (2) "Uncovering and leveraging existing knowledge is highly valued in my company" (3) "Acquiring and leveraging new knowledge is highly valued in my company" Construct reliability: 0.80</p> <p>Findings/comments: Findings suggest that individual-level perceptions of organizational commitment to knowledge sharing, and extrinsic motivation, directly influence the extent to which employees engage in firm-internal knowledge exchange. We also find that intrinsic motivation and engagement in social interaction significantly mediate the relationship between perceived organizational commitment and knowledge exchange.</p> <p>Doesn't directly address socialization or social capital but investigates the individual intrinsic motivation to share knowledge and individual engagement in social interaction for the purpose of knowledge sharing. Both positively mediating the knowledge sharing. Do briefly mention social capital – connecting intrinsic motivation to the effort put into the task and the enhancement of trust and social capital influencing knowledge sharing positively (p. 382).</p>
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Oddou et al. (2009)	<p>SOC (SC)</p> <p>Repatriation</p>	<p>Relevant definitions: Socialization process (p. 186): "involves learning the ropes, adapting or readapting to work unit norms, and trying to fit in. Organizational socialization refers to the process by which a newcomer understands and acquires the attitudes and behaviors of the existing members of the work group (Van Maanen & Schein, 1979), which is critical to becoming a contributing member to the work unit (Morrison, 2002). The process combines the organization's formal and informal attempts to mold the employee as well as the employee's efforts to fit in, and define a clear role in the group (Fisher, 1986).</p> <p>Operationalization/organizational mechanisms: NA – conceptual</p> <p>Findings/comments: Identify the key factors and the role they play in the process of repatriate knowledge transfer to the domestic work unit. Socialization period in domestic unit after foreign assignment is important.</p> <p>Do briefly mention social capital but is not defined. Refers to research on networks as manifestations of social capital, where networks aid in acquiring and imparting knowledge (p. 188).</p>
Peltokorpi & Yamao (2017)	<p>SC</p> <p>Communication frequency</p>	<p>Relevant definitions: Cognitive social capital/shared vision: (p.407) A shared vision is defined to embody "the collective goals and aspirations of the members of an organization".</p> <p>Shared vision increases trust and works as a bonding mechanism, facilitating knowledge transfer in intra-corporate networks. Calibrate expectations of different units/members. Refers to Tsai & Ghoshal (1998: 467); Inkpen & Tsang (2005)</p> <p>Operationalization/organizational mechanisms: Shared vision based on Morris & Snell (2011)/Tsai & Ghoshal (1998) (Cronbachs alpha: 0.90): 7 - point likert scale (1= strongly disagree, 7=strongly agree) 1) In my department, Japanese employees share the same goals and vision with the headquarters 2) In my department, Japanese employees strive for the same outcome in their practices as expected in headquarters 3) In my department, Japanese employees agree with the headquarters' direction</p> <p>Communication frequency based on Ghoshal et al. (1994) (Cronbachs alpha: 0.84): Managers answer on average frequency of communication with HQ in their departments, 7-point likert scale (0=never, 6 = daily) 1) Please indicate the typical frequency of communication with overseas corporate headquarters in your department 2) Please indicate the typical frequency of communication with overseas head office 3) Please indicate the typical frequency of communication with overseas regional headquarters in your department</p>

Peltokorpi & Yamao (2017)		<p>Findings/comments: Findings indicate that shared vision has a mediating role on corporate language proficiency's influence on reverse knowledge transfer, and that common corporate language is positively related to shared vision. Communication frequency has a positive moderating effect on both shared vision and reverse knowledge transfer.</p> <p>Links shared vision to social identity theory – where individuals classify themselves and others based on various social categories (e.g. Age and gender) and derive their sense-of-self through membership in social groups, where group members perceive in-group members more positively (e.g. more cooperative and valuable) than out-group members)</p>
Persson (2006)	<p>SOC/SC</p> <p>Integrative mechanisms: Liaison roles, temporary teams and permanent teams. Socialization: personnel exchange, meetings</p>	<p>Relevant definitions: Socialization facilitates identification with corporate goals and values. Interaction leads to "common knowledge, shared technical language, semantics and ways to communicate – facilitating knowledge exchange and transfer." Based on Grant (1996); Tushman & Scanlan (1981)</p> <p>Mentions social capital in its dimensions of social interaction, trust and shared vision and refers to Tsai & Ghoshal (1998). Relational and cognitive social capital is connected to the use of integrative mechanisms.</p> <p>Operationalization/organizational mechanisms: <i>Integrative mechanisms:</i> Frequency of: Liaison mechanisms; Permanent team structures; Temporary team structures. <i>Socialization:</i> Frequency of: (1) personnel exchange among subsidiaries in the division; (2) subsidiary participation in meetings at the divisional level. Scale 1= seldom, 7=frequent Cronbach's alpha was very low (0.3593) for socialization items where the author argues that this is not surprising given that the construct is intended to reflect both lateral and vertical socialization.</p> <p>Findings/comments: Outbound knowledge transfer from subsidiary is positively associated with subsidiary socialization, temporary team structures and liaison mechanisms. Permanent teams negatively influence on knowledge transfer.</p> <p>Socialization is here defined as a control mechanism and not an integrative mechanism. Referring to "soft" control mechanisms such as socialization and shared values (Martinez & Jarillo, 1989; Nohria & Ghoshal, 1994). Even though social capital is mentioned socialization is the main focus in the article.</p>

Reiche (2012)	<p style="text-align: center;">SC</p> <p style="text-align: center;">Inpatriation HQ and repatriation</p>	<p>Relevant definitions: Defines structural social capital as (p. 1053) “the assignees’ host-unit social capital as the range and strength of their network ties with host-unit staff (HQ)”- based on Kostova & Roth (2003).</p> <p>Social relationships are resources that provide access to information and influence – referring to Burt (1992), Lin et al (1981).</p> <p>Refers to Adler and Kwon (2002): Common to distinguish between social capital as a private good that benefits the individual actor, and social capital as a public good that benefits the wider organization</p> <p>Main element of relational social capital is trust because it strengthens the relationship between the individual and his/her contact ties, define relational social capital “as the proportion of trusted ties in inpatriates’ network of host-unit colleagues” (HQ) (p. 1055) The definition is based on Nahapiet and Ghoshal (1998)</p> <p>Operationalization/organizational mechanisms: Structural social capital is measured by number of contact ties to other work groups at HQ and relational social capital (number of social ties)</p> <p>‘With how many work groups (departments, work units, committees, taskforces, etc.) at HQ do you have regular contact?’</p> <p>Respondent asked to consider up to 10 people with whom they interacted on a everyday basis and answer a set of question for every person identified. Measured the proportion of trusted ties in network with a three item measure: E.g.: “To what extent can you rely on this person without any fear that s/he will take advantage of you?” Average alpha: 0.76</p> <p>Social capital was measured for each respondent by calculation of total number of contacts with an average score of trust.</p> <p>Findings/comments: Results suggest that inpatriates' structural host-unit social capital relates to repatriate access to host-unit knowledge whereas inpatriates’ relational host-unit social capital relates to both their access to and transfer of host-unit knowledge upon return.</p>
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Tsai & Ghoshal (1998)	<p style="text-align: center;">SC</p> <p style="text-align: center;">Do not address organizational mechanism enabling social interaction</p>	<p>Relevant definitions: Social capital encompasses many aspects of a social context, such as social ties, trusting relations, and value systems that facilitate actions of individuals located within that context. Nahapiet & Ghoshal (1998). Structural social capital – social interaction and ties; Relational social capital – trust and trustworthiness Cognitive social capital – shared vision</p> <p>Operationalization/organizational mechanisms: Structural social capital – measured by social interaction and strength of social ties. Cognitive social capital – measured by common shared vision and goals between units Relational social capital – measured by trust and trustworthiness between units.</p> <p>Findings/comments: Social interaction, a manifestation of the structural dimension of social capital, and trust, a manifestation of its relational dimension, were significantly associated to the extent of interunit resource exchange, which in turn had a significant effect on product innovation. The cognitive dimension, representing shared vision had an indirect effect through relational social capital.</p>
Williams & Lee (2016)	<p style="text-align: center;">SOC (SC)</p> <p style="text-align: center;">email communication, workshops, conference calls, corporation wide committees</p>	<p>Relevant definitions: (p. 235) The relationship between social capital within the MNC and internal knowledge flows hinges on the effects of socialization between individuals. Socialization mechanisms build interpersonal familiarity, personal affinity, and convergence in cognitive maps among personnel from different subsidiaries. Socialization within the MNC supports goal sharing and willingness to share knowledge. Defines social capital in an international context as: “the intangible resource of structural connections, interpersonal interactions and cognitive understanding that enables a firm to (a) capitalize on diversity and (b) reconcile differences”. Social interaction and trust have a positive effect on resource exchanges across units of international firms. Gupta & Govindarajan, (2000: 479); Gupta, Govindarajan, & Malhotra, (1999); Björkman et al., (2004); Lengnick-Hall & Lengnick-Hall (2006:477); Tsai & Ghoshal (1998); Kostova & Roth (2002)</p> <p>Operationalization/organizational mechanisms: <i>Subsidiary socialization</i> Employees in this subsidiary frequently: 1. use email to communicate with other unit members; 2. join workshops with other unit members; 3. use conference calls with other unit members; 4. join corporation-wide committees Anchors 1= strongly disagree, 5=strongly agree; Cronbachs alpha = 0.71</p> <p>Findings/comments: HRM practices based on formalized procedures weaken the effect of socialization, but strengthen that of human capital, while empowering practices within the subsidiary weaken the effect of human capital, but strengthen the effect of socialization. Combines and links socialization and social capital with human capital, but do not measure social capital directly – only argues that socialization leads to social capital.</p>

Zeng et. al (2018)	SOC Not applicable/metastudy	<p>Relevant definitions: (p.416) Socialization refers to organizational mechanisms that build interpersonal relationships and shared goals and values among personnel across different units in the MNE network" "Socialization mechanisms are typically regarded as informal normative mechanisms". Build interpersonal familiarity, personal affinity, and convergence in cognitive maps. Develops trust and cooperation. Strengthens interpersonal networks and communication channels. Social integration mechanisms create incentives that facilitate knowledge sharing, diffusion and creation across different units in the MNC. Refers to Gupta & Govindarajan (2000: 479); Björkman et al., (2004); Grøgaard & Colman (2016)</p>
		<p>Operationalization/organizational mechanisms: Not applicable - meta study. Do not specifically refer to specific organizational mechanisms facilitating socialization, but socialization as an integration mechanism itself compared to centralization and formalization. Social capital is seen as equal to socialization. Socialization is seen as an informal mechanisms facilitating informal interaction and communication.</p>
		<p>Findings/comments: Evaluate the impact of centralization (of decision-making), formalization (formalization and standardization of organizational processes) and socialization (shared values and common organizational cultures) on knowledge transfer in MNCs. Findings indicate that socialization facilitates knowledge transfer more strongly than centralization and formalization. Socialization substitutes for formalization's positive impact, and mitigates centralization's negative impact on knowledge transfer</p>

Paper 2

Transnational Social Learning Structures in Multinational Companies: The Role of Strategic Characteristics, Human Resource Structures, and Institutional Context

Transnational Social Learning Structures in Multinational Companies: The Role of Strategic Characteristics, Human Resource Structures, and Institutional Context

Christina Roe Steen
Norwegian School of Economics, NHH

Olga Tregaskis
Norwich Business School/University of East Anglia,

and

Anthony McDonnell
University College Cork

Abstract

This paper analyzes the use of intra-organizational structures that facilitate socialization among managers across borders, enabling the development of social capital and sharing of knowledge within multinational companies (MNC). Further, we examine the extent of their association of such structures with strategic and human resource management (HRM) structures and the institutional context of operation. Drawing on survey results from over 600 foreign subsidiaries in four European countries, we find a relationship between the use of transnational social learning structures (TSLs) and research and development (R&D) capabilities and human resource (HR) policies and programs. When exploring the influence of the institutional context of operation, we find a significant country of operation effect whereby foreign subsidiaries operating in coordinated market economies (CMEs) make lower use of TSLs than foreign subsidiaries in liberal market economies (LMEs). Our findings contribute to understanding the role of strategic- and HR structures in how MNCs utilize organizational mechanisms enabling social interaction and support the assumption of boundaries when transferring knowledge to a foreign institutional context defined as a CME.

Transnational Social Learning Structures in Multinational Companies: The Role of Strategic Characteristics, Human Resource Structures, and Institutional Context

The resource-based view holds that knowledge within firms is a critical resource that might serve as a source of sustainable differentiation and, hence, competitive advantage (Grant, 1996; Gupta & Govindarajan, 2000; Inkpen & Tsang, 2005; Kogut & Zander, 1993). To transfer knowledge successfully, MNCs are dependent on efficient sharing of knowledge and the ability to exploit such knowledge across different cultures and institutional settings within the firm boundaries (Gupta & Govindarajan, 2000; Gaur et al., 2019; Martin & Salomon, 2003; Minbaeva et al. 2003). By implementing mechanisms to secure knowledge sharing and the transfer of critical knowledge, the MNC can create firm-specific advantages that can be the source of sustainable competitive advantage.

Despite an immense rise in interest in knowledge transfer in MNCs, the focus has been on determinants of and obstacles to knowledge transfer rather than the organizational mechanisms or capabilities used by MNCs to transfer knowledge (Ambos & Ambos, 2009). One area of attention is the creation of social capital within the MNC's global internal network (Gooderham, 2007; Taylor, 2006), with studies suggesting a close link between the facilitation of such capital and mechanisms for socialization and organizational learning (Gooderham, 2007; Hislop, 2009). However, there is a lack of empirical investigation of how MNCs internationally use organizational learning practices by leveraging social interaction to facilitate learning and knowledge transfer between units (McDonnell et al., 2010; Tregaskis et al., 2010). Kostova et al. (2016) highlight organizational knowledge and learning issues as among the most critical mechanisms explaining the growing role of subsidiaries in MNCs in the last couple of decades.

Transnational social learning structures (TSLs) enable social interaction between managers in MNCs with the intention to facilitate knowledge sharing and organizational learning. The link between socialization and knowledge sharing and transfer is well established (Zeng et al., 2018); therefore, this paper aims to examine certain factors influencing the use of TSLs in MNCs.

According to Gooderham et al. (2019), it is essential to pay attention to the external context if reality is to be reflected; however, awareness of the institutional context has been lacking

in the most influential areas of human resource management (HRM). Almond (2011) highlights that international HRM has failed to adequately examine the relations between MNCs and the geographies in which they operate at sub-national levels. Further, Gooderham and Nordhaug (2010) argue that it is necessary to take a dual framework approach to international HRM and claim that HRM policies cannot be divorced from their institutional context. At the same time, they emphasize the importance of taking firm-level activities into consideration, forming a multi-level view of the actors in the system. Their main argument is that HRM policies and practices need to be understood as products of the institutional context as well as strategy and HRM structures at the firm level. Overall, the recent literature calls for research designs that take both comparative and strategic factors into account when examining the relationship between HRM practice and knowledge transfer (e.g., Caligiuri, 2014; Minbaeva et al., 2014). Hence, techniques are needed which distinguish firm-level from country-level effects. This study provides insight to important antecedents for TSLs on the firm level, and the subsidiaries institutional context of operation. Most previous research on overseas subsidiaries' management practices has focused on differences due to standardization towards headquarters (HQ) practices (country-of-origin effects) versus the influence of local institutional forces (adoption of management practices commonly employed by domestic companies in the host country). Considerably less attention has been paid to how MNCs, in general, respond across different institutional.

This paper is structured in two parts, each of which addresses one of the main aims. First, the paper addresses the extent to which organizational factors are associated with differences in the use of TSLs for managers in MNCs. The organizational factors are split between strategic factors (standardization, internal resource dependencies, and research and development (R&D) capabilities) and Human Resource (HR) structures (international HR networking structures, policy on organizational learning, and the presence of management development programs). Second, the paper explores whether the institutional context of operation is associated with differences in the utilization of TSLs, thus distinguishing firm-level from country-level effects. The vast majority of studies on MNCs differentiate between parent companies and subsidiaries due to the nature of coordination and control (Kostova et al., 2016). Our focus is on the subsidiaries.

The following section defines TSLS and how such mechanisms facilitate knowledge transfer and sharing. Thereafter, we discuss the nature of the relationship between parent companies and subsidiaries and the main traits that distinguish them. The next two sections outline the model and proposed hypothesis for organizational factors represented by strategic factors and HRM structures, followed by a section on the influence of institutional context. The research method and findings are then elaborated on before the paper ends with a discussion of and conclusion on the findings, after which managerial implications, limitations, and suggestions for further research are outlined.

Transnational Social Learning Structures

Previous research has shown that social interaction is an essential factor in stimulating knowledge sharing within MNCs and is described as a conduit of knowledge-sharing behavior (Wood et al., 2012). Therefore, mechanisms facilitating organizational learning through social interaction and socialization form the basis for knowledge sharing within organizations (Tregaskis et al., 2010). Consequently, the implementation of TSLS, organizational mechanisms enabling social interaction such as expat assignments, task forces, and informal networks, works as governance mechanisms to facilitate social capital and knowledge sharing and creation, which are followed by organizational learning within the MNC. Through these mechanisms, MNCs can facilitate the formation of both formal and informal global teams, which can be an effective tool for the coordination, control, and management of foreign subsidiaries (Ambos & Schlegelmilch, 2004; Lagerström & Andersson, 2003; Mendez, 2003; Schweiger, Atamer, & Calori, 2003). Tregaskis et al. (2010, p. 473) define TSLS as “a set of cross-national intra-organizational structures based on social interaction that supports learning across the units in the MNC.” These structures consist of people-based integration to coordinate and control knowledge sharing and learning across borders. Social interaction facilitates both explicit and tacit knowledge sharing (Nonaka, 1994) and enables socialization and the development of social capital, which is essential to the transfer of tacit knowledge (Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). Socialization structures which facilitate learning and knowledge sharing typically involve the transfer of managers, international meetings and committees, task teams, training programs, and cross-unit meetings (Björkman & Lervik, 2007; Martinez & Jarillo, 1989; Tregaskis, 2003). Social capital provides organizations with a supportive environment conducive to learning through social exchange and relational

networks, providing the organization with unique capabilities for knowledge sharing (Nahapiet & Ghoshal, 1998). Nahapiet and Ghoshal (1998, p. 243) defined social capital as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit.”. The development of social capital is significantly affected by those factors shaping the evolution of social relationships: time, interaction, interdependence and closure. However, even though these resources are embedded in the network and relationships among organizational members, the value of social capital can grow over time. Continued investment in further relationship building will be needed to sustain social capital over time. Since it takes time to build trust, relationship stability and durability are key network features associated with high levels of trust and norms of cooperation.

The social processes facilitated by the use of TSLs lay the foundation for continuously dynamic creation of social capital, building mutual obligations based on relationships on both individual and organizational levels, being continuously reinforced by existing and new social connections (Bondeli et al., 2018). Through the use of informal integration mechanisms between MNC units, individuals are likely to develop interpersonal networks as well as open and positive attitudes towards other nationalities and cultures (Björkman & Lervik, 2007). Personal relations and communication skills contribute significantly to the establishment and effectiveness of such networks, particularly in cross-cultural settings (Gooderham, 2007). In this way social networks and its associated social capital is especially relevant for the success of the MNCs, since it is closely linked to the facilitation of knowledge processes and at the same time support the coordination and cooperation across the dispersed units located in different national contexts (Taylor, 2007; Gooderham, 2007).

According to Lam (2003), MNCs are unique as knowledge-creating organizations since they have the ability to create “transnational social spaces” for learning by linking their internal networks with their external and locally-embedded knowledge networks across diverse organizational and institutional contexts. Minbaeva, Foss, and Snell (2009) argue that HRM practices may be an important part of the organizational antecedents of knowledge processes. Findings from Yamao, Cieri, and Hutchings (2009) indicate that HR practices based on the collaboration configuration (Youndt & Snell, 2004), promoting teams and networking, are effective tools for MNCs seeking to facilitate the development of social capital in their

subsidiaries. Implementing mechanisms such as TSLs, which facilitate the creation of such “transnational social spaces,” enables the transfer, creation, and dissemination of knowledge in the MNC.

Subsidiary Perspective

One of the functions of the parent company is to create value through the structuring and coordination of sub-units in order to achieve efficiencies and synergies (Andersson & Holm, 2010; Collis et al., 2007; Foss, 1997). One way to create value is by the facilitation of the sharing and transfer of core competencies and knowledge across sub-units. (Andersson & Holm, 2010; Collis et al., 2007; Foss, 1997). In this way the company can exploit existing resources and core competencies, and further create and accumulate new competences and strategic assets, facilitating the development of competitive advantage (Markides & Williamson, 1994).

Sharing core competencies between sub-units expands the pool of such competencies, creating new competencies and improving existing ones, thus maintaining and facilitating the development of competitive advantage. From this perspective, HQ is a coordinator of complementary capabilities and a facilitator of knowledge sharing between corporate units (Andersson & Holm, 2010).

The contemporary MNC perspective emphasizes the increasingly complex structure of and context surrounding the MNC (Andersson & Holm, 2010). Kostova et al. (2016) highlight organizational knowledge and learning issues as among the most critical mechanisms explaining the growing role of subsidiaries in MNCs, moving away from the traditional view of subsidiaries as the extended arms of the parent company (Ciabuschi et al., 2012). New perspectives have evolved, such as the “embedded multinational,” emphasizing the importance of a subsidiary’s embeddedness in its external environment for the development of new competencies and how such development is essential for the strategic value of the subsidiary and the creation of MNC competitive advantage. Under this view the subsidiary is the creator of knowledge and competence, not the recipient (Andersson & Holm, 2010; Tregaskis, 2003). This is also evident in the change of focus in the literature from HQ-driven design and control systems with a hierarchical conceptualization of the MNC to a view of the MNC as a network structure in which local/regional subsidiaries are recognized as units with

important roles (Kostova et al., 2016). Subsidiaries differ in terms of their functional focus and objectives as well as the scope of their responsibilities and mandates (Birkinshaw & Hood, 1998). The relationship between the HQ and a focal subsidiary is relevant not only to the role of that subsidiary but to the relationship between the HQ and other subsidiaries in the MNC. The subsidiaries compete with each other to obtain, retain, and enhance their roles within the MNC (Birkinshaw, 1996).

In order to structure and coordinate the subsidiaries within an MNC, the parent company can implement different coordination and control mechanisms. Coordination mechanisms can be defined as “any administrative tool for achieving integration among different units within an organization” (Martinez & Jarillo, 1989, p. 490). An increased focus has been given to the observed pressures within MNCs to coordinate and control in a way that leverages learning across borders (Taylor, 2006). Several studies carried out in recent decades have emphasized the use of socialization mechanisms to facilitate learning and knowledge sharing across borders (Noorderhaven & Harzing, 2009). Additionally, findings from O’Donnell (2000) indicate that social control mechanisms are efficient in network MNCs, where there are relatively high interdependencies between units or between units and the parent company, facilitating cooperative behavior among units.

Model and Hypotheses

The next section taps into the strategic factors investigated, and the subsequent section investigates how relevant HRM structures support the implementation and use of TSLS.

Organizational Factors

Strategic Factors

The assumption is that the subsidiaries’ role within MNCs varies due to different strategic factors and that this influences the need to integrate and control the subsidiaries through TSLS. This variation may apply to knowledge-related assets, for example R&D capabilities, the need to maintain the same product standard, mutual dependencies on deliveries of supplies, and so forth. One way to define the strategic role of the subsidiary is by evaluating the unit’s degree of autonomy and interdependence in relation to the other units in the MNC (Fenton-O’Creevy et al., 2008). Autonomy can be defined as “the degree to which the foreign subsidiary of the MNC has strategic and operational decision-making authority” (O’Donnell,

2000, p. 528); in other words, autonomy reflects the subsidiary's influence over decisions in its operation (Chung, 2014). Strategic autonomy refers to the subsidiary's ability to set its own agenda, whereas operational autonomy refers to the ability to deal with designated day-to-day issues autonomously (Keupp et al., 2011). According to Björkman & Lervik (2007), subsidiaries with considerable autonomy in decision-making are less likely to enact corporate initiatives, whereas subsidiaries with less autonomy are more likely to adopt practices through parent company pressure. The degree of autonomy might result from the subsidiary's strategic role in the MNC as a whole. Subsidiaries with high strategic importance are more likely to have less autonomy than subsidiaries with low strategic importance. Foss and Pedersen (2002) emphasize that autonomy is important because less hierarchical management of subsidiaries may positively influence the subsidiary's competitiveness and local knowledge base. At the same time, this outcome can negatively influence knowledge sharing with other parts of the MNC (Wood et al., 2012).

The greater a subsidiary manager's autonomy, the greater discretion they can exercise in dealing with the demands of the local market and task environment. Autonomy might be given because the foreign subsidiary is in a better position than the parent company to evaluate the needs and demands of the local market (O'Donnell, 2000). Noorderhaven and Harzing (2009, p. 727) define subsidiary autonomy as "the influence that a focal subsidiary has on decisions regarding the development or customization of products, selection of and price negotiations with suppliers, and advertising and pricing policy in the local market." Where products are locally adapted, it is natural to assume that MNC subsidiaries have more autonomy than where they must meet a global standard. In the latter case, the assumption is that subsidiaries have a lower degree of autonomy, and it is therefore more likely that communication, learning, and knowledge transfer between MNC units is required; hence, a higher use of learning mechanisms is expected. Therefore, we assume that MNCs with highly standardized products will utilize TSLS to a higher degree than MNCs with subsidiaries with locally adapted products.

Hypothesis 1a:

A high degree of standardization of products within the MNC is associated with a high presence of TSLS.

The operational structure of relationships between the units in the MNC is constituted by the actual physical and transactional flows between units and is not necessarily represented by the organization's formal structure. One of the most important indicators used to describe the MNC's integration is the flow of products, parts, and components between the different elements which compose the organization. Physical and transactional flows, by their nature, require coordination and communication across units (Persson, 2006). Thus, the knowledge shared between units within the MNC is relevant to the operational processes of these units, and because of this, the workflow integration might influence the use of TSLs (Wood et al., 2012). Hence, interdependence is high where the parent company or subsidiaries depend on other units in the MNC for supplies. The findings of Ambos and Schlegelmilch (2007) indicate that interdependence has a positive association with socialization. Thus, with high levels of interdependency between units, one would expect MNCs to display relatively high utilization of TSLs.

Hypothesis 1b:

A high degree of interdependency with other units in the MNC is associated with a high presence of TSLs.

A subsidiary's knowledge stocks may be used as a valuable asset by an MNC's HQ if such stocks are unique to the subsidiary and cannot be obtained from within HQ or other subsidiaries of the MNC (Rugman & Verbeke, 2001). Knowledge sources can also be sources of power, and the extent to which a subsidiary mobilizes intra-organizational learning to acquire or transfer knowledge resources depends on the strategic role it performs (Tregaskis, 2003). According to Foss and Pedersen (2004), the knowledge stocks of subsidiaries are essential because they relate to subsidiary capabilities, which can be central in explaining knowledge flows between units. Subsidiaries in possession of critical knowledge might play an important role in such flows since they will reinforce their strategic role in the MNC by ensuring that other units in the MNC are dependent on their knowledge. Subsidiaries can also play an important role in creating and disseminating strategically important knowledge, for example as centers of excellence (Adenfelt & Lagerström, 2008). The findings of Mudambi, Pedersen, and Andersson (2014) indicate that where the MNC is dependent on subsidiary competencies, the subsidiary will have increased power in terms of influence over MNC decisions, structures, and

outcomes. Najafi-Tavani, Giroud, and Andersson (2014) suggest that this influence is even stronger when reverse knowledge transfer is present. This suggests that when the MNC depends on subsidiary capabilities and knowledge, it will emphasize the use of TSLS to govern learning and knowledge sharing among units.

R&D knowledge, in particular, is seen as a strategic resource that the parent company aspires to control and utilize globally. The knowledge base can be managed by implementing governance structures that maintain critical knowledge transfer, creation, and diffusion (Tregaskis et al., 2010). According to Tortoriello (2015), units that focus on R&D have more absorptive capacity and are more capable of using external knowledge to generate innovation through internal networks than units whose focus lies elsewhere. The assumed explanation is that employees of R&D-focused units have a central role in internal knowledge-sharing networks across structural holes in the company. The absorptive capacity of an organization is not resident in any single individual but depends on the links across a mosaic of individual capabilities (Cohen & Levinthal, 1990).

In cases where subsidiaries are important sites of R&D, the use of learning structures is driven by both the parent company's desire for control and the subsidiary's interest in retaining its strategic position (Tregaskis et al., 2010). This explanation suggests that MNCs whose subsidiaries have a central role in R&D are more likely to utilize TSLS than MNCs whose subsidiaries have less critical knowledge sources. Hence, it can be assumed that foreign subsidiaries possessing R&D capabilities will utilize TSLS to a high degree.

Hypothesis 1c:

A high degree of MNC specific R&D capabilities generated by the subsidiary is associated with a high presence of TSLS.

HR Structures

The way the HRM function is structured and integrated internationally in the MNC might influence and support the use of organizational learning policies and practices. Novicevic and Harvey (2001) point out that the ultimate goal of corporate HR is to complement the top corporate management team's efforts to ensure the homogenization of best practices in the global organization while preserving the specific capabilities and responsiveness of individual

subsidiaries. Corporate HR may contribute to the successful institutionalization of a corporate culture of shared values across subsidiaries.

Björkman and Lervik (2007) suggest that subsidiaries with high-level HR capabilities are more likely to both effectively acquire and assimilate practices in their own organization and exploit them in their unit. Furthermore, influenced by the strategic role of the HR function in the focal unit, the assumption being that if the HR function plays a strategic role, HR practices will be more extensively used (Björkman & Lervik, 2007). Involvement in developing policies (due process) has been stressed in the literature as essential for transferring practices to foreign subsidiaries. Foreign subsidiary managers are more likely to implement decisions on HR practices within their units if they have been involved in the process of making decisions and designing HR practices and policies to be used in different parts of the MNC (Björkman & Lervik, 2007). Interaction between HR people at HQ and the subsidiary provides the subsidiary with essential knowledge, insights, and best-practice models, linking HRM with the overall business strategy (Sumelius et al., 2008). The findings of Mäkelä, Sumelius, Höglund, and Ahlvik (2012) indicate that social capital, with an emphasis on relational capital, between the HR manager in the subsidiary and the HR department at HQ has a positive influence on subsidiary strategic HR capabilities. Ahlvik and Björkman (2015) found that relational capital between HQ and subsidiaries had a positive association with the degree of internalization of HR practices in subsidiaries. Therefore, the assumption is that a highly integrated international HR network positively influences the use of organizational learning policies and practices, facilitating cross-border dialogue through people-based channels to transfer knowledge and best practices.

Brewster, Sparrow, and Harris (2005) point out that the difference between international and global HRM is that global HRM includes managing HRM activities through the application of global rule sets. One way of increasing the knowledge exchange between HR managers in the MNC is regular meetings. Moreover, this practice will most likely facilitate social relations and shared understandings of how to implement and use HR policies and practices which extend beyond the HR function into other areas in the MNC. Sumelius (2009) researched Chinese MNC subsidiaries and found that participation in internal social HR networks increased subsidiary HRM capabilities. Therefore, the assumption is that the higher the frequency of HR

networking between HR managers within the MNC internationally, the more extensive the utilization of TSLS within the MNC.

Hypothesis 2a:

The more integrated the global HR network in the MNC, the more extensive the presence of TSLS.

International formal committees that develop HR policies and practices to be used across the MNC will most likely support and secure the consistency of the work performed by the HR function. As argued in the previous section in regard to HR networking, we assume that the existence of such committees facilitates the use of TSLS.

Hypothesis 2b:

MNCs with a formal international committee which develops HR policies that apply across countries are associated with a high presence of TSLS.

The existence of a formal policy on organizational learning in the company will most likely increase awareness of and focus on how to utilize knowledge best and facilitate organizational learning within the company. HRM policies signalize what the company sees as legitimate (Tregaskis, 2003; Tregaskis & Brewster, 2006). A formal policy on organizational learning emphasizes the importance of organizational learning in the company and is most likely supported by a strong HR role within the MNC that facilitates and supports the use of TSLS.

Hypothesis 2c:

Subsidiaries with a formal policy on organizational learning are associated with a high presence of TSLS.

Talent management comprises attracting, retaining, and developing talent in the organization and is highly relevant for MNCs in terms of globalization challenges (Tarique & Schuler, 2010). Using cross-border learning mechanisms for socialization will increase the cultural competence of managers, as well as support the retention of managers identified with talent by giving them new career opportunities, which further leads to increased engagement (Tarique & Schuler, 2010). The assumption is that companies with a management development program have a relatively high focus on facilitating further learning and

socialization for their managers (Morrison, 2000). Subsequently, the expectation is a positive association between the existence of a formal management development program in the subsidiary and the utilization of TSLS.

Hypothesis 2d:

Subsidiaries with a formal management development program are associated with a high presence of TSLS.

Institutional Context

Varieties of capitalism (VOC) is used as a theoretical framework to explore the institutional differences in TSLS use (Hall & Gingerich, 2009; Hall & Soskice, 2001). Comparative capitalism has been increasingly applied to the study of MNC (e.g. Cooke et al 2019; Farndale et al., 2022; Schotter et al., 2021). VOC distinguishes between liberal market economies (LMEs) and coordinated market economies (CMEs). The former are recognized for coordinating their activities primarily via hierarchies and competitive market arrangements. The latter, to a certain extent, also use markets and hierarchies as a coordination mechanism but depend more heavily on non-market relationships to coordinate their endeavors with other actors and construct their core competencies (e.g., trade unions, suppliers of finance, etc.) (Hall & Gingerich, 2009; Hall & Soskice, 2001). Mainly using non-market relations between actors as the key organizing mechanism gives rise to longer time horizons for activity and variety of action (Tregaskis & Heraty, 2012). The categorization between LMEs and CMEs is not mutually exclusive; rather, economy types vary across different national contexts, with LMEs standing at one end of the spectrum and CMEs at the other. The UK represents a typical LME, while Denmark and Norway are good examples of relatively pure CMEs. The binary classification of countries under VOC implies that there might be individual differences between nations in a single category, which has been one of the criticisms of VOC. In particular, there has been some controversy about whether four southern nations of Europe (Spain, Portugal, France, and Italy) are CMEs or examples of another, distinct, type of capitalism. This “southern” type of capitalism is often associated with high levels of state intervention, and its institutional capacities for strategic coordination in labor relations and corporate governance are higher than those of LMEs. Compared to northern European countries, however, the capacities for strategic coordination in labor relations tend to be lower in the four named nations. Although

these southern European countries are distinct from those that qualify as LMEs, they might also be systematically different from the purer versions of CMEs located in the northern part of Europe (e.g., Germany and the Nordic countries). Therefore, this southern cluster is referred to as mixed-marked economies (MME), with Spain among the countries labeled in this manner (Hall & Gingerich, 2009; Hall & Soskice, 2001).

The literature has repeatedly demonstrated differences in HRM practices between institutional contexts (Wood et al., 2012). In essence, the types of HRM practice employed in CME and LME locations differ (Gooderham et al., 1999). However, most HRM areas identified with differences are closely linked to compensation and industrial relations. We argue that TSLS are considerably more generic because these practices are transnational and are, instead, means to transfer practices in general within the MNC. Transnational forms of management practices are not a new phenomenon in the field and have long been identified in the literature (Marginson et al., 1995). Little research has been conducted in this area, but McDonnell et al. (2010) found no significant differences in the use of learning mechanisms due to country of origin among the foreign subsidiaries of MNCs operating in Ireland.

All MNCs, regardless of institutional origin, are dependent on TSLS as generic practices for organizational learning and other control and coordination purposes; therefore, these practices would be obvious tools to enable the transfer of best practices across borders within all business areas. Therefore, we argue that MNCs intend to use these mechanisms to facilitate learning and knowledge sharing across borders regardless of country of origin. Hence, there is no association between the country of origin and the presence of TSLS. However, in contrast, the operational context of foreign subsidiaries may influence TSLS utilization.

One specific trait of a pure CME, compared to an LME, is that the rules of the game are more intricate and more complex. Since LMEs mainly use markets and hierarchies as a coordination mechanism, the rules of the game make the context more explicit and easier to interpret in terms of expected consequences, particularly for newcomers or external actors (e.g., foreign MNCs). Therefore, LME countries are relatively homogenous, while CME countries are not. For example, both Norway and Germany are CME countries, but the respective rules of the game are significantly different (Hegewisch & Holt Larsen, 1996). Even though the foreign context for MNCs operating in both Norway and Germany is categorized as CME, the

respective contexts will most likely be unique in its own way, and therefore require a considerable adjustment to practices transferred from a different CME context or an LME context. Hence, it is easier to transfer practices and facilitate knowledge sharing in an LME context than in a CME context, regardless of institutional origin. The CME institutions are expected to impose more decisive constraints on firms than LME institutions that are more driven by markets (Edwards et al., 2013), resulting in the range of practices open to firms is much more controlled in CMEs than in LMEs (Farndale et al., 2008). Findings from Farndale, Brewster and Poutsma (2008) supports the difference between the LME and CME context in terms of variations in HR practices, suggesting that the CME context oppose more restrictions on the choice of HR practices than for subsidiaries located in LMEs. MNC subsidiaries in an CME context has less autonomy in choice of HR practices arrangements than subsidiaries located in LMEs. Therefore, we assume that subsidiaries located in a CME context are less included in TSLs practices, mainly because their context of operation comprises more complex structures and they are more challenging to operate in and understand.

Gooderham et al. (2006) found that while US MNCs reproduced their HRM practices in LME locations, they were significantly less likely to do so in CME settings; instead, they transferred a modified version of such practices. The findings of Gooderham, Nordhaug, and Ringdal (1998) were similar. Further, Ferner and Varul (2000) suggest that German MNCs tend not to reproduce their HRM practices in LME settings, preferring to employ HRM practices associated with LME settings. Under VOC, Germany is defined as a CME, underpinning the assumption that it is difficult to transfer practices from a particular CME context to other institutional contexts. Further, findings from Pudelko and Harzing's (2008) suggest that MNCs from CMEs do not transfer HRM practices from their home context to their foreign subsidiaries.

Based on the findings outlined above we assume that MNCs operating in a CME context, regardless of the institutional context of origin, will be more reluctant to transfer their practices to a foreign CME context because they are meeting a different institutional context – that is, one which is specific to the focal CME rather than generalizable across CME contexts. Even though an MNC may attempt to transfer practices or utilize TSLs for cross-border learning and knowledge sharing, the foreign CME institutional context of operation is difficult to navigate and operate and might imply more resistance and constraints. In contrast, the assumption is that MNCs operating in a foreign LME context do not meet the same obstacles

as MNCs operating in an CME context. The LME context aspires to achieve an explicit and transparent structure, facilitating the transfer of practices not necessarily only within the field of HRM but for business in general. The ease of transferring practices will most likely positively impact the use of TSLS. Therefore, we expect that the presence of TSLS is generally higher in subsidiaries operating in an LME context than in foreign subsidiaries operating in a CME context, regardless of country of origin.

Hypothesis 3:

When comparing subsidiaries in LME and CME contexts of operation, TSLS is more common in the former than in the latter.

Overall Model

Insert Figure 1 about here

Methods

The data are derived from a large-scale survey of HRM practices in MNCs conducted in multiple countries by an international research network named INTREPID (Investigation of Transnationals' Employment Practices: an International Database. For greater detail on this study, see Edwards et al. (2013; 2016)).

The questionnaires were developed by drawing on measures used in previous survey work such as CLIRS (Marginson et al., 1995) and case study research in which the initial group of members in the Intrepid network was involved. The questionnaires were thoroughly piloted and tested in each country's context. Data collection administration varied, as both face-to-face interviews and online surveys were used. The differences in collection methods presented in Table 1 were primarily owing to the availability of financial support.

Data Collection Overview

Insert Table 1 about here

The total population of MNCs was derived from multiple listings in the respective countries (Table 2). The survey comprised both indigenous-owned MNCs (parent companies) and subsidiaries of foreign-owned MNCs operating in the focal countries. The population of foreign-owned units was defined as follows: All wholly-owned or majority foreign-owned organizations operating in the country concerned which had first, 500 or more employees worldwide and second, 100 or more employees employed in their operations in that country.

The respondent was the highest representative within the HR function in the company. Table 2 gives an overview of the sample/population in each country included in the analysis of the foreign-owned subsidiaries in the respective countries.

Sample and Response Rates

Insert Table 2 about here

Measures

Dependent Variable: TSLS. The dependent variable was developed from four questions about the use of formal and informal methods of facilitating knowledge sharing and organizational learning internationally between managers within the MNC. These four items overlap with the measure of TSLS in Tregaskis et al. (2010). There is no recognized standard measure of TSLS. The questions related to this measure were developed from a combination of the literature and previous case study research examining international intra-organizational structures associated with learning across national borders (e.g. Lam, 2003; Tregaskis et al., 2005). However, the measure of TSLS used in this paper only partly overlaps with the measure of TSLS used in Tregaskis et al. (2010). Tregaskis et al. (2010) conducted their analysis on the

UK context, where the UK survey covered several items used in the operationalization of TSLS which are not covered by the other country surveys included in this paper. The measure of TSLS is therefore not identical, and since it is only partially overlapping it is not directly comparable.

Specifically, participants were asked the following question: “Thinking about managers, do [company name] in [country] use any of the following to facilitate international organizational learning?

- Expatriate assignments
- International project groups or task forces
- International formal committees
- International informal networks?”

Each item is dichotomous, where 1 = yes when using the mechanism. These four items were combined to generate the TSLS construct. Since the items have binary responses and give dichotomous variables, Cronbach’s alpha as reliability measure is less suitable. We therefore used the Mokken scale (Mokken, 1971), which is a generalization of both the Guttman scale and classical test theory (Gooderham et al., 1999). According to Mokken (1971), the strength of Loevinger’s H coefficient is evaluated as weak if $0.3 \leq H < 0.4$ for the complete item set; medium when $0.4 \leq H < 0.5$; and strong if $H \geq 0.5$. Hence, if H values lie between 0 and 0.3, the items do not have enough in common to trust that the ordering of respondents by total score accurately reflects an ordering on a meaningful unidimensional latent trait (here, TSLS). The Mokken scale, conducted using the msp/loevh function in Stata, has a medium strength of 0.43 (Cronbach’s alpha = 0.65).

Independent Variables.

Strategic Variables. Autonomy is measured by the degree of standardization of the MNC’s main product. This variable was measured with the following question “Which of the following statements best describes the worldwide company’s most important product, service, or brand?” Dummy coding was used with the following values: 1 = standardization regionally or globally; 0 = national adaptation to local markets (reference category).

Interdependency is represented by two measures of interdependency between units within the MNC.

1. Supplies to worldwide company

This variable was used as a measure of whether other units of the MNC are dependent on deliveries/production from the focal subsidiary. It was operationalized by the question “Are any of the components, products, and services of [company name] in [country] produced for operation of the worldwide company based outside [country]?” Dummy coding was used with the following values: 1 = all/some of the components; 0 = none of the components.

2. Supplies by worldwide company

This second variable was used as a measure of the interdependency level of the responding unit (subsidiary) on deliveries/production from other units within the MNC. It was operationalized by the question “Do other parts of the worldwide company supply components, products or services to [company name] in [country]?” Dummy coding was used with the following values: 1 = all/some of the components; 0 = none of the components.

R&D is a measure of the R&D role of the focal subsidiary internationally in the MNC, operationalized by the question “Significant expertise in R&D within the worldwide company is generated in the operations of [company name] in [country name].” This variable was initially measured by Likert scale but was recoded into a dummy to simplify and streamline it with other strategic variables. The main aim was to measure whether R&D resources and capabilities are present in the foreign subsidiary. The following values were applied: 1 = significant expertise in R&D is generated by the subsidiary; 0 = no significant expertise in R&D is generated by the subsidiary (reference category).

HR Structure Variables. HR networking: The extent of networking within the HR function is measured by four types of activities, operationalized by the question “How frequently does contact between HR managers in different countries take place through any of the following mechanisms:

- Regular meetings
- International conferences
- Task forces
- Virtual groups, e.g., conference calls?”

Each activity was measured on the following scale: 1 = weekly; 2 = monthly; 3 = quarterly; 4 = annually; 5 = ad hoc; 6 = other; and 7 = never. The scale was recoded into a dummy variable where 1 = regular meetings and 0 = no regular meetings for each mechanism. The variable “HR-networking” was recoded to a dummy, where 0 = no regular meetings and 1 = regular meetings (at least regular meetings for one of the four mechanisms).

International HR policy committee was measured with the following question: “Is there a body within the worldwide company, such as a committee of senior managers, that develops HR policies that apply across countries?” This was coded into a dummy variable with the following values: 1 = yes; 0 = no.

Organizational learning policy was measured by the existence of a formal policy on organizational learning in the survey country operations with the following values: 1 = yes, there is a policy in all/some country operations; 0 = no, there is no policy.

Management development program was measured by the existence of a management development program in the survey country operations specifically aimed at developing the company’s ‘high-potential individuals’ or senior management potential. The variable was coded as a dummy, where 1 = yes – there is a formal management development program for high-potential individuals in all/some of the country operations; and 0 = no – there is no formal management development program for high-potential individuals in the country operations.

Institutional Variables.

The nationality of the parent companies was coded as dummy variables according to VOC (Hall & Gingerich, 2009; Hall & Soskice, 2001).

The country of operation was coded as dummy variables based on nationality (Denmark, Norway, Spain, UK), where, as per our previous discussion of VOC, Denmark and Norway are categorized as CMEs, Spain as an MME, and the UK as an LME (Hall & Gingerich, 2009; Hall & Soskice, 2001).

Control Variables. We included employment size and industry variables in our analyses as controls, given their long pedigree of being key explanators of the variation of practice in MNCs (Gooderham et al., 1999, 2006). A dummy variable separating service and production industries was used for our industry control, where 1 = production and 0 = services.

Size was measured through two categorical variables. The number of employees in the country of operation and worldwide was measured through employee bands. To reduce the number of variables in the regression analyses, we dummy coded the number of employees in the country of operation to 1 = low (fewer than 1,000 employees) and 0 = high (more than 999 employees). The number of employees worldwide within the MNC was dummy coded into 1 = low (fewer than 5,000 employees) and 0 = high (more than 4,999 employees).

Analysis

Hierarchical multiple OLS regression analysis was used to test the hypotheses. Control variables were entered at step 1, strategic variables at step 2, HR variables at step 3, and institutional variables at step 4. We also undertook checks for potential multicollinearity, non-response bias, and missing value concerns. None of the correlations indicated that multicollinearity (far below the .9 threshold) was a concern (see Table 5), as there were no violations of the suggested threshold for tolerance (.10) or VIF (10) (Hair et al., 2006). We checked for potential non-response bias concerns by analyzing the participant firms against two criteria in the general population: country of origin and sector. The comparison of the sample against the general population showed no significant differences and close alignment with the MNC population. Due to missing variables, n varies across tables. In the regression analysis, missing is treated listwise. Multiple approaches were considered to estimate missing values (Fichman & Cummings, 2003), but these methods were deemed insufficient due to the nature of the data and variables. However, complementary analysis using multiple imputation and bootstrapping was conducted to evaluate the effect of missing values. Both multiple imputation and bootstrapping analysis confirmed the regression analysis results. Table 3 shows the number of mechanisms by country, and Table 4 shows the distribution of types of mechanism for each country.

Number of Mechanisms by Country

Insert Table 3 about here

Distribution of Types of Mechanism for Each Specific Country

Insert Table 4 about here

Results

Correlations

Insert Table 5 about here

Results of Hierarchical Regression Analysis

Insert Table 6 about here

For the strategic factors the analysis indicates a significant positive association between standardization and TSLS utilization through Models 2–4. Therefore, hypothesis 1a is supported. Interdependence based on the subsidiary supplies to other units worldwide shows no significant effect. The same apply for interdependence based on whether the subsidiary is dependent on supplies from other units in the MNC outside the country operations. Hypothesis 1b is consequently rejected. The analysis indicates a consistent significant positive association between R&D capabilities and the presence of TSLS through Models 2–4. Hypothesis 1c is therefore supported.

HR networking shows a significant positive association with the utilization of TSLS. The same applies to the existence of a formal international HR committee. Hypotheses 2a and 2b are therefore supported. The existence of a formal policy on organizational learning has a

significant positive association with the utilization of TSLS. The same applies to the existence of a management development program. Hypotheses 2c and 2d are therefore supported.

The effect of the institutional variables indicates no association between the country of origin and the presence of TSLS. The analysis indicates that country of operation has a significant association between foreign subsidiaries operating in Norway/Denmark and a lower presence of TSLS. Hypothesis 3 is therefore supported. Foreign subsidiaries operating in Spain, which is categorized as an MME, show no negative association with the presence of TSLS. This finding might indicate that an MME is closer to the LME context than a pure CME context in regards to the presence of TSLS.

Control variables make a significant contribution to the explanatory power of Model 1, although the contribution to explained variance is relatively small. Strategic factors contribute to explanatory power, although the greatest contribution comes from HR structures. The contribution of the strategic factors is smaller than that of the variance explained by the HR structure variables. Further, the change in f-values indicates significant increase in explanatory power.

For the institutional variables, the change in f-values is significant, but the change in the adjusted R^2 is relatively low, especially if compared with the change in R^2 for the other categories of variables.

Discussion and Conclusion

This paper contributes to the fields of knowledge management MNCs (e.g., Gaur, 2019; Kostova et al., 2016; Zeng et al. 2018) and particular comparative international human resource management (IHRM) (e.g. Schotter, 2021; Gooderham et al. 2019; Tregaskis et al., 2010), adding insights to how factors on the organizational- and institutional levels are associated with the utilization of TSLS in foreign subsidiaries.

At the organizational level the results suggest that strategic factors to some extent influence the presence of TSLS in foreign subsidiaries. The significant association between standardization and the presence of TSLS, imply that subsidiaries with low autonomy use TSLS to be aligned with the rest of the company and secure knowledge transfer for specific products/standards. While subsidiaries with high autonomy makes less use of TSLS because

they are less dependent on interaction and knowledge transfer with other units in the MNC (Björkman & Lervik, 2007). However, interdependence on supplies to and from the focal unit had no association with TSLS utilization, indicating that such interdependencies between units do not generally facilitate the systematic use of organizational mechanisms enabling social interaction for learning and knowledge transfer between managers in MNCs. This is not in line with our initial expectation that the utilization of TSLS would be high where the subsidiary has a high degree of interdependence with other units. According to previous findings interdependence has a positive association with socialization (Ambos and Schlegelmilch, 2007); a positive association between interdependence, represented by subsidiary supplies to other parts of the MNC, and the use of different HR practices (Edwards et al, 2013); and a positive association between interdependence and knowledge flows between units (Persson, 2006). An explanation for our finding might be that the anticipated influence on TSLS due to interdependence might be overestimated and that other means are used to coordinate related resource flows between the units within the MNC. Alternatively, the measures used to capture interdependence might be too general and fail to reflect nuances within the MNCs related to the utilization of TSLS.

The positive association between R&D capabilities and the presence of TSLS suggests that MNCs with subsidiaries which have significant R&D capabilities are more likely to have a higher presence of TSLS than MNCs whose subsidiaries do not possess such capabilities. This effect of subsidiary R&D capabilities on the utilization of TSLS can be explained from both the parent company and the subsidiary perspective, where the parent companies need to control these resources and secure knowledge flows between units; while the subsidiaries seek to reinforce their strategic position within the MNC (Foss & Pedersen, 2004; Andersson & Holm, 2010; Tregaskis et al., 2010). This effect might be because R&D, by its nature, is a crucial capability to develop a sustainable competitive advantage (Kogut & Zander, 1993), where TSLS can be an important facilitator in the strategic management of these resources to create firm-specific advantages (Gupta & Govindarajan, 2000; Martin & Salomon, 2003; Minbaeva et al. 2003). It can therefore be inferred that MNCs which disperse their knowhow across units utilize TSLS to facilitate learning and knowledge sharing across the organizational structure and units internationally.

Further on the organizational level, the HR structure variables indicate a positive association with TSLS utilization and add most of the explained variance to the results, suggesting that HR networking influences the utilization of TSLS in the subsidiaries. This implies that the cross unit HR structures are essential in terms of explaining the levels of TSLS. This can be explained by the HR function being more directly involved in daily operations and is, therefore, more intertwined with the focal unit's role in the MNC. The participation in HR networking makes the HR representatives of the focal subsidiary more conscious of the needs of the MNC as a whole and the importance of interaction between units (Björkman & Lervik, 2007), and further strengthens the local HR capabilities (Sumelius, 2009). Strong HR capabilities enable the focal subsidiary to effectively acquire and assimilate practices in local unit (Björkman & Lervik, 2007) and implementing HR activities that support the overall business strategy (Sumelius et al., 2008). It is therefore in the parent company's interest to use HR structures to secure the use of TSLS by involving the HR personnel at the focal subsidiary. It is natural to assume that the HR function of subsidiaries will be more involved in the MNC's HR networking arenas when their unit, in general, is involved in organizational learning and knowledge-sharing activities. Therefore, the link between HR networking structures and TSLS utilization is evident in the subsidiaries. This supports our assumption that a highly integrated cross unit HR network positively influences the cooperation and internalization of HR policies and practices in subsidiaries (Ahlvik & Björkman, 2015).

In this way, HR can offer central support for the overall needs of the MNC in terms of facilitating learning and knowledge sharing. The same arguments apply to the presence of an international HR committee. Given the nature of the data, the analysis could not specify whether the members of the committees are only from the parent company or represent the MNC overall. Despite this, the results indicate that where MNCs have an international HR committee, there is increased utilization of TSLS in foreign subsidiaries, suggesting that the support from the HR function is more aligned with business needs in the MNC (Sumelius et al., 2008). Overall, it seems that the HR structure variables, specifically those facilitating social interaction among HR employees, are crucial for the utilization of TSLS by foreign subsidiaries.

The presence of a formal policy on organizational learning and a management development program in the country operations had a positive association with the utilization of TSLS. This indicates that a formal policy on organizational learning increases focus on learning and

knowledge transfer processes, as well as the awareness of how these processes can be facilitated by utilizing TSLS (Tregaskis, 2003; Tregaskis & Brewster, 2006). Further, this implies that companies which focus on management and talent development use TSLS to support and develop managers in the MNC (Tarique & Schuler, 2010; Morrison, 2000). Manager development programs facilitate the socialization of central resources by supporting the development of shared values and organizational culture and building social capital and social networks among future talents within the organization, strengthening the context for knowledge sharing and transfer within the MNC (Espedal et al., 2012, 2013). Hence, it can be inferred that formal structures that focus on developing managers and facilitate knowledge sharing positively influence the presence of TSLS.

The results indicate that these HR structures are important antecedents to the utilization of TSLS, facilitating the development of networks and social capital which further influences the knowledge transfer processes in the MNC (Minbaeva et al., 2009; Taylor, 2007). In this way TSLS represents integration mechanisms facilitating socialization to coordinate knowledge sharing- and transfer in MNCs (Zeng et al., 2018).

Testing of the institutional context, was grounded in the categorization provided by VOC (Hall & Gingerich, 2009; Hall & Soskice, 2001). Country of origin shows no association with the presence of TSLS, suggesting that TSLS might be a form of transnational practice for organizational learning (Tregaskis et al., 2010; Lam, 2003).

However, the analysis indicates a lower presence of TSLS among foreign subsidiaries operating in a CME institutional context of operation than those operating in an MME or LME context. The analysis indicates that the operational institutional context for foreign subsidiaries seems to influence the presence of TSLS in the focal subsidiary, as TSLS is less present in subsidiaries located in a CME context than in those located in an MME or LME context. Hence, it can be inferred that MNCs generally transfer less knowledge and do not include subsidiaries located in a CME context as much as they do subsidiaries located in an LME context.

This finding supports the expectation that the CME context is considerably more complex for foreign subsidiaries, where a foreign CME context might be more difficult to operate in because it is less transparent and the rules of the game are more intricate; hence, MNCs transfer/implement fewer practices in general to/in subsidiaries operating in a CME foreign

institutional context. However, there was no sign of support for a lower TSLs presence in the MME context. One explanation might be that even though VOC places the MME context closer to the CME context if compared to the LME context, it may be easier to transfer practices to an MME context than a CME context. The MME context provides more transparency and less intricate rules of the game for people-based activities. Thus, the institutional context of MMEs may, in this case, be more similar to the LME context than the CME context.

Building on the construct introduced by Tregaskis et al. (2010), this paper examines the utilization of TSLs and its association contextual factors on both the institutional- and firm level (Caligiuri, 2014; Gooderham & Nordhaug, 2010; Minbaeva et al., 2014). This expands the insights in the use of these types of organizational mechanisms in MNC subsidiaries, focusing on how to facilitate learning and knowledge processes in MNCs and their associations to the institutional context of operation and organizational factors. This is a contribution in to the field of comparative IHRM where the majority of previous studies have examined other types of HR practices (e.g., Gooderham et al., 1999; Farndale et al., 2008; Edwards et al., 2013).

By providing insight to how differences in institutional context of operation and organizational factors influence the use of HR practices, our findings contribute to the comparative IHRM literature (e.g. Schotter, 2021; Gooderham et al., 1999) and the contextual paradigm in IHRM research (Farndale et al., 2022). Further, our findings provide insights to the knowledge management literature suggesting how institutional context and organizational factors might influence the utilization organizational mechanisms facilitating socialization and the development of social capital which enables knowledge sharing- and transfer between units (e.g. Zeng et al. 2018, Gaur et al., 2019).

Managerial implications

Several managerial implications can be drawn. First, it seems that TSLs can initially be considered a transnational practice that can be used as a mechanism for the governance of organizational learning and knowledge sharing among managers across borders without regard to the institutional context. Nevertheless, the transfer of knowledge and practices in general through social interaction might be more complex in a CME context than in an MME

or LME one. According to the analysis, it seems that organizational-level factors play the most significant role in explaining the variation in the use of TSLS. For example, the results of the analysis suggest that MNCs with foreign subsidiaries in possession of important R&D capabilities make more extensive use of TSLS as mechanisms for transferring organizational learning and knowledge amongst managers.

The proficiency of the HR function seems to be an even more critical factor in the utilization of TSLS. The analysis indicates that HR networking structures are essential for MNC subsidiaries. As mentioned earlier, involving HR managers from foreign subsidiaries in regular networking might increase support for and awareness of how HR can support the overall business needs for organizational learning and knowledge sharing between units in the MNC. This finding relates specifically to managers. The role of formal policies on organizational learning and management development programs in foreign subsidiaries seems to be important facilitators since the existence of such formal policies seem to increase the utilization of TSLS.

Limitations and further research

Several limitations to this study and areas for further research have been identified. First, the cross-sectional design of this study raises concerns of endogeneity and reverse causality. Second, the study only investigates the associations between organizational factors and TSLS on the firm level and does not consider variations within the focal MNC. Third, all measures are perception-based and only provided by a single respondent. Despite having the person in the company's top HR position fill out the questionnaire, the assumption that this person has a complete overview of all knowledge sharing and organizational learning activities in the MNC might not be completely borne out. This is a common approach used in the literature, however by combining different methodical approaches to support a context-dependent theorizing would provide the opportunity to get a deeper understanding of the factors influencing the utilization of TSLS in different institutional contexts (Ferndale et al., 2022).

Fourth, the variation in institutional context is limited since the countries involved are all in Western Europe, giving a relatively homogeneous institutional environment. Variations due to institutional factors might be more evident if countries from other parts of the world were included in the analysis, assuming that extended differences in institutions and cultures might

influence TSLS use. Further, including a variation of different CME contexts (Hegewisch & Holt Larsen, 1996) would provide better understanding of why an CME context can be challenging to operate in. Additionally, insight in how institutions in emerging economies influence the use of HR practices is an area that is of further interest and would provide further nuances to the understanding on how institutional context can influence the use of TSLS (Edwards et al., 2019).

Fifth, further investigation is needed to gain more insight, in particular, to verify TSLS as a transnational practice (Tregaskis et al., 2010). Even though the low explanatory power of the institutional variables only provides an indication of differences between operational contexts, further investigation is needed. Further development of the operationalization of the construct of TSLS would be relevant for future research. The results indicate that TSLS are generic, however this calls for more insight, to verify TSLS as a transnational practice. This applies to the current debate between the universalist paradigm and contextual paradigm (Farndale et al., 2017). Even though TSLS can be considered to be transnational learning structures used across different institutional contexts, the outcome of these might be context dependent when implemented. Additionally, further understanding of why they are less used in a CME context calls for an investigation of how MNCs respond to different institutional settings of operation and what factors specifically influence the knowledge and learning processes in a CME context. It therefore remains essential to further investigate how institutional factors influence the use of TSLS in MNCs, especially when distinguishing between institutional context of origin and operational context.

Sixth, this study examined the direct effects of institutional context and organizational level factors on the utilization of TSLS. Further understanding of how relevant antecedents to the utilization of TSLS interact is of special interest, for example findings from Tregaskis et al. (2010) indicates that country of origin impacts on the mechanisms used to control and co-ordinate subsidiary behavior, and further as a consequence affects the extent to which social learning structures are being used. Future studies should therefore further investigate effects of institutional country of origin and operational institutional context in relation to other relevant factors with possible moderating effects (e.g., organizational level factors).

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Figure 1

Overall Model

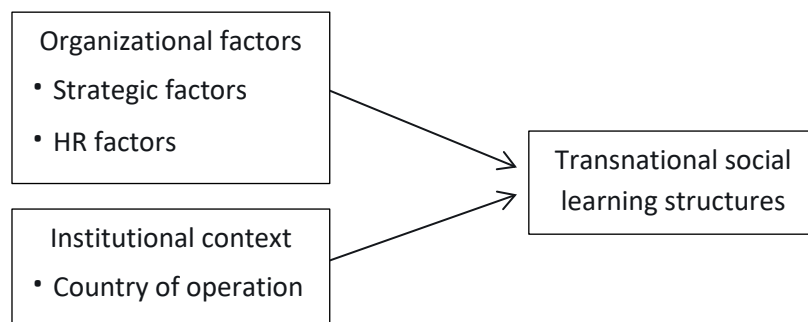


Table 1

Data Collection Overview

Country	Primary databanks for population development	Data collection time frame	Method
Denmark	AMADEUS, CD-Direct	April–June 2009	Online survey
Norway	Dun & Bradstreet, AMADEUS, proff.no, bedriftsdatabasen.no	Dec. 2008–Aug. 2009	Online survey
Spain	AMADEUS, SABI, HOOVERS, ORBIS	June 2006–Feb. 2009	Face-to-face
UK	FAME, AMADEUS	Nov. 2005–June 2006	Face-to-face

Table 2***Sample and Response Rates***

Country	Sample/ response rate
Denmark	81/311 (26 %)
Norway	45/217 (21 %)
Spain	247/ 894 (27 %)
UK	258/ - (17,5%)*
Total	631

*The UK, had a stepwise screening process, where the response rate is 17,5% of the estimated population, and 33,3% of the screened population (the response rate comprises both home and foreign-owned companies, where the estimated population is 1729 companies in total)

Table 3***Number of Mechanisms by Country***

Number of mech.:	Denmark N=81	Norway N=45	Spain N=247	UK N=258	Total N=631
0	8 (10%)	5 (9%)	27 (11%)	23 (8%)	60 (10%)
1	5 (6%)	6 (11%)	13 (4%)	27 (9%)	45 (7%)
2	28 (32%)	9 (18%)	31 (12%)	35 (14%)	100 (16%)
3	24 (28%)	11 (24%)	86 (31%)	88 (27%)	181 (29%)
4	16 (14%)	12 (24%)	90 (24%)	84 (27%)	151 (24%)
Missing	0	2 (4%)	0	1 (<1%)	0 (<1%)

Table 4***Distribution of Types of Mechanism for Each Specific Country***

	Expat assignments	Task forces	International formal committee	International informal network
Denmark (n=81)	39 (48%)	67 (83%)	39 (48%)	52 (64%)
Norway (n=45)	20 (44%)	29 (64%)	22 (49%)	34 (76%)
Spain (n=247)	128 (52%)	206 (83%)	177 (72%)	182 (74%)
UK (n=258)	155 (60%)	189 (73%)	137 (53%)	216 (84%)
Total (n=631)	342 (54%)	491 (78%)	375 (59%)	484 (77%)
Mean %	51 %	76.75%	55.5%	74.5%

Table 4**Correlations**

	Variable	Mean	std.dev.	N	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19
X1	DV - TSLS	2.69	1.27	628	1																		
X2	Services vs production	0.50	0.50	631	0.023	1																	
X3	< 1000 employees survey country	0.67	0.47	618	-0.121**	-0.008	1																
X4	< 5000 employees worldwide	0.23	0.42	573	-0.144**	0.024	0.320**	1															
X5	Standardization	0.76	0.43	606	0.102*	0.058	0.030	-0.029	1														
X6	Supplies other units worldwide	0.57	0.50	614	0.093*	0.340**	-0.031	0.081	0.093*	1													
X7	Supplied by other units worldwide	0.73	0.44	619	0.118**	0.262**	0.070	0.063	0.174**	0.478**	1												
X8	R&D in subsidiaries important	0.33	0.47	627	0.127**	0.237**	-0.042	0.085*	0.011	0.198**	0.123**	1											
X9	International HR committee	0.64	0.48	621	0.271**	-0.046	-0.034	-0.211**	-0.008	0.047	0.059	-0.028	1										
X10	HR-networking regular	0.67	0.47	629	0.330**	-0.041	-0.176**	-0.246**	0.031	0.033	0.049	-0.035	0.365**	1									
X11	Formal OL policy	0.37	0.48	616	0.185**	-0.050	-0.092*	-0.053	-0.056	0.000	-0.089*	-0.047	0.134**	0.115**	1								
X12	Manager Development Program	0.72	0.45	628	0.260**	0.026	-0.188**	-0.360**	0.065	-0.006	-0.028	0.032	0.184**	0.325**	0.136**	1							
X13	Denmark	0.13	0.33	631	-0.079*	-0.099*	0.147**	0.016	0.007	0.022	-0.064	-0.064	0.045	-0.007	0.061	-0.003	1						
X14	Norway	0.07	0.26	631	-0.054	0.007	0.022	0.041	-0.035	-0.037	-0.004	-0.037	0.069	0.063	0.206**	0.010	-0.106**	1					
X15	Spain	0.39	0.49	631	0.070	-0.080*	-0.049	-0.181**	-0.016	-0.096*	-0.067	0.017	0.142**	0.099*	-0.075	0.085*	-0.308**	-0.222**	1				
X16	UK	0.41	0.49	631	0.012	0.143**	-0.064	0.146**	0.029	0.100*	0.111**	0.045	-0.207**	-0.127**	-0.074	-0.087*	-0.319**	-0.230**	-0.667**	1			
X17	LME origin	0.46	0.50	631	0.056	-0.065	-0.048	-0.029	0.006	0.062	0.002	0.055	0.093*	0.121**	0.009	0.044	-0.127**	-0.108**	0.033	0.110**	1		
X18	CME origin	0.37	0.48	631	-0.089*	0.057	0.092*	0.046	0.024	-0.010	0.063	-0.090*	-0.079*	-0.107**	0.013	-0.005	0.175**	0.143**	-0.094*	-0.101*	-0.713**	1	
X19	MME origin	0.14	0.34	631	0.037	-0.009	-0.081*	0.006	-0.048	-0.076	-0.094*	0.030	-0.023	-0.027	-0.012	-0.051	-0.070	-0.038	0.107**	-0.039	-0.368**	-0.306**	1
X20	Other origin	0.03	0.17	631	0.013	0.047	0.044	-0.055	0.011	-0.003	0.001	0.035	-0.003	0.005	-0.039	-0.013	0.016	-0.013	-0.046	0.042	-0.163**	-0.136**	-0.070

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson's Correlation, Pairwise

N=631

Table 6**Results of Hierarchical Regression Analysis**

Independent Variables	Dependent variable: Transnational Social Learning Structures (TSLs)			
	Model 1, <i>Control variables</i> b (se)	Model 2 <i>Strategic factors</i> b (se)	Model 3 <i>HR structures</i> b (se)	Model 4 <i>Institutional context</i> b (se)
Constant	3.062 (0.109)***	2.636 (0.154)***	1.416 (0.192)***	1.446 (0.208)***
Services vs. production	0.007 (0.108)	– 0.123 (0.114)	– 0.058 (0.105)	– 0.077 (0.106)
< 1000 employees survey country	– 0.277 (0.120)*	– 0.274 (0.121)*	– 0.171 (0.112)	– 0.108 (0.114)
< 5000 employees worldwide	– 0.447 (0.134)**	– 0.479 (0.134)***	– 0.100 (0.131)	– 0.109 (0.133)
Standardization		0.298 (0.128)*	0.287 (0.118)*	0.290 (0.118)*
Supplies other units worldwide		0.025 (0.126)	– 0.048 (0.116)	– 0.045 (0.117)
Supplied by other units worldwide		0.215 (0.140)	0.205 (0.130)	0.196 (0.130)
R&D in subsidiaries important		0.290 (0.117)***	0.318 (0.108)**	0.290 (0.108)**
International HR committee			0.486 (,110)***	0.520 (0.110)***
HR_networking regularly			0.544 (,118)***	0.563 (0.119)***
Formal OL ¹ policy			0.297 (,103)**	0.353 (0.104)**
Manager development program			0.373 (,125)**	0.385 (0.124)**
<i>Country (ref cat - UK)</i>				
Denmark				– 0.344 (0.170)*
Norway				– 0.526 (0.207)*
Spain				– 0.119 (0.113)
<i>National origin (ref cat -LME origin)</i>				
CME origin				– 0.041 (0.114)
MME origin				0.191 (0.153)
Other origin				0.125 (0.271)
R ²	0.045	0.077	0.227	0.247
R ² (Adjusted)	0.039	0.064	0.21	0.221
ΔR ²	0.045	0.032	0.151	0.020
F-statistic	7.927***	5.980***	13.379***	9.551***

*p<0.05; **p<0.01; ***p<0.001; regression coefficient and standard errors are reported.

1) OL=organizational learning; N=513

Paper 3

The Governance of Knowledge Sharing and Application in MNCs:
The Role of Management and Autonomous Motivation

**The Governance of Knowledge Sharing and Application in MNCs:
The Role of Management and Autonomous Motivation**

Christina Roe Steen

NHH Norwegian School of Economics

Torstein Nesheim

Centre for Applied Research at NHH

Karen M. Olsen

NHH Norwegian School of Economics

Abstract

This paper deepens the examination in prior literature of how firms promote knowledge application through formal knowledge networks in multinational companies (MNCs). The unique contribution of this paper is its focus on the association between knowledge-sharing behavior and knowledge application and the influence of network management, structural social capital across borders, and different types of autonomous motivation in this setting. This paper contributes to knowledge management literature by identifying important conditions for effective knowledge networks, the importance of different types of autonomous motivation, and the role of structural social capital across borders. Moreover, it contributes to the understanding of how to bridge the gap between knowledge sharing and knowledge application.

The analysis is based on a survey of 2,517 employees who are members of formal intraorganizational knowledge networks in an MNC. Two types of motivation grounded in the self-determination theory were investigated: intrinsic autonomous motivation and extrinsic autonomous motivation. Intrinsic autonomous motivation showed a positive indirect effect on

knowledge application through knowledge-sharing behavior, and extrinsic autonomous motivation showed a direct effect on knowledge application but no association with knowledge-sharing behavior. The analysis resulted in the following key findings. (1) Formal management of knowledge networks is essential for both knowledge-sharing behavior and knowledge application. (2) Knowledge sharing and application are influenced in different ways by diverse types of motivation. (3) Both formal management of knowledge networks and knowledge-sharing behavior facilitate structural social capital across borders, which is positively associated with knowledge application.

The Governance of Knowledge Sharing and Application in Multinational Corporations: The Role of Management and Autonomous Motivation

The knowledge-based view of firms states that a firm's superiority in sharing and transferring knowledge constitutes its organizational advantage (Eisenhardt & Santos, 2002; Grant, 1996; Gupta & Govindarajan, 2000; Kogut & Zander, 1993). Multinational companies (MNCs) may be regarded as social communities where a set of capabilities can be developed that are easier to transfer within the firm than across organizations (Kogut & Zander, 1993). However, the organizational setting of an MNC is complex because its employees are located in different countries and may have multiple memberships in organizations (Nesheim et al., 2011). Thus, knowledge sharing in an MNC may have both structural and geographical barriers. One main aim of organizations in their quest to build an organizational advantage is to encourage knowledge-sharing behavior among their employees so as to achieve valuable knowledge application (Brachos et al., 2007; Minbaeva et al., 2003). However, knowledge sharing, particularly sharing of tacit knowledge, is difficult to govern because it inherently relies on the willingness of individuals to share their knowledge (Osterloh & Frey, 2000). Nevertheless, even though individual factors take a central role in the knowledge transfer process, socialization has been proven to facilitate this behavior (e.g., Gooderham et al., 2011; Tsai & Ghoshal, 1998; Zeng et al., 2018).

The use of socialization as an integration mechanism to facilitate knowledge sharing and transfer is well established in literature (Zeng et al., 2018). It is well recognized that close relationships between senders and receivers facilitates knowledge transfer (Bresman et al., 1999; Gupta & Govindarajan, 2000). As a social arena, knowledge networks constitute a basis for enhancing the social relationships between employees and potentially facilitate the development of social capital as well as the opportunity to share and transfer knowledge. Social capital increases the efficiency of knowledge transfer because it encourages cooperative

behavior (Nahapiet & Ghoshal, 1998). Thus, the way in which managers facilitate knowledge sharing in a knowledge network is crucial to the achievement of the full potential of knowledge sharing as a mechanism for governing the knowledge processes in the company.

Despite the increased focus on social capital in organizations, few studies have explained how elements of social capital are promoted within MNCs (Gooderham et al., 2011). Gooderham et al. (2011) found that social governance mechanisms promote social capital, whereas hierarchical governance mechanisms constrain the development of social capital. Furthermore, the association between social capital and knowledge application has hardly been investigated. Closely related, Tsai and Ghoshal (1998) did find a performance effect in terms of value creation (product innovation), providing strong support for the argument that social capital facilitates value creation. One main goal of knowledge sharing is to transfer and utilize knowledge from one place in the company to other locations or areas, yet the source of competitive advantage resides in the application of knowledge rather than in the knowledge itself (Alavi & Leidner, 2001). Even when relevant knowledge is shared, it does not necessarily lead to knowledge application. Therefore, the success of knowledge-sharing activities initiated by a company depends on whether the knowledge gained in such activities is applied elsewhere in the company. A key factor of knowledge application is the extent to which the knowledge shared is potentially useful and utilized in the receiving unit (Minbaeva et al., 2003). This reinforces the importance of understanding the link between knowledge sharing and knowledge application. Knowledge processes in MNCs are more complex compared to purely national companies, due to cross-national differences such as cultural- and institutional differences and spatial distance factors (Gooderham, 2007; Gaur et al., 2019). These types of distances could also apply to companies only operating within one national context, however, within the context of an MNC where units operate in multiple national contexts, distance factors represent higher levels of diversity, which is more challenging and demanding to navigate.

Knowledge-sharing motivation has gained increased research attention in the last decades (e.g., Foss et al., 2009; Minbaeva et al., 2012), there the majority of the research has concentrated on discussing such motivation in terms of its level or intensity. The quality of knowledge-sharing motivation and the levels of autonomy in such motivation have rarely been examined (Gagné, 2009; Wang & Hou, 2015) and deserve more focus. The types of motivation, particularly intrinsic and extrinsic motivation, and the difference between them have a solid foundation in organizational literature, and especially the role of intrinsic motivation in knowledge-sharing behavior. Autonomous motivation provides an additional dimension to the difference between intrinsic and extrinsic motivation (Deci & Ryan, 2000), but research is lacking on extrinsic autonomous motivation in the workplace and especially how it can promote performance (Gagné & Deci, 2005). Furthermore, little focus has been given to the potential differences between intrinsic and extrinsic autonomous motivation related to behavior in the knowledge transfer process, as autonomous motivation is considered only one category (e.g., Reinholt et al., 2011). Additionally, most studies have centered on the distinction between extrinsic and intrinsic motivation, whereas the differentiation between controlled and autonomous motivation is largely ignored and the definition of extrinsic motivation is limited to control-oriented motivation (Lam & Lambermont-Ford, 2010; Lin, 2007; Minbaeva, 2008). Finally, the focus has generally been on the relationship between knowledge sharing and motivation, and knowledge application is rarely included (Gagné, 2009; Hung et al., 2011).

Nesheim et al. (2011) found a positive association between knowledge application and the following factors: community management, intrinsic motivation, and line management support. However, they did not find any interaction effect between motivation and community management, but a positive association of the interaction effect between intrinsic motivation and line management support. This last finding suggests that the effect of line management support on knowledge application is stronger among intrinsically motivated employees than

among employees with low intrinsic motivation. Building on Nesheim et al. (2011), this paper further develops the understanding of antecedents of knowledge application by adding to such antecedents individual knowledge-sharing behavior in communities and structural social capital across borders. While line management is excluded from this model version, this paper will investigate different types of autonomous motivation and the way they interact with knowledge-sharing behavior and knowledge application. Thus, this paper focuses on the interplay between the aforementioned antecedents, together with formal network management. Additionally, a new methodological approach is applied.

Based on the arguments presented above and drawing on insights from Nesheim et al. (2011), this paper examines how knowledge networks can be used as governance mechanisms to facilitate knowledge sharing, structural social capital across borders and knowledge application through formal network management, and the role of autonomous motivation in such a setting. The empirical context is intraorganizational disciplinary networks in a Norwegian MNC. The purpose of these networks is to provide an arena for knowledge sharing and to increase knowledge application across units. The analysis is based on a survey of 2,517 employees in 131 disciplinary networks.

This paper has three objectives. First, we examine how formal network management facilitates knowledge-sharing behavior and knowledge application in the network members' home units, where they are based in their daily work. Second, we examine how two types of autonomous motivation, intrinsic and extrinsic, influence knowledge-sharing behavior within the knowledge network and the degree of knowledge application that results. Third, we examine how knowledge management and knowledge-sharing behavior in the network facilitate structural social capital across borders and the association of such social capital to knowledge application. The remainder of the paper is organized as follows. The next section gives an overview of the relevant theoretical field and presents the theoretical model and hypothesis to

be tested. The section after discusses the methodological approach followed by the results of the analysis conducted using structural equation modeling. The last section presents the conclusion, managerial implications, and suggestions for future research.

Governing Knowledge Sharing and Knowledge Application through Disciplinary Networks

According to the knowledge governance approach (KGA), the deployment of governance mechanisms influences knowledge processes, which suggests that the knowledge processes can be both influenced and directed by the management of organizations. The KGA particularly notes the lack of focus on microfoundations, pointing out the tendency to focus on the organizational level when investigating capabilities and knowledge transfer in organizations (Foss, 2007; Foss & Pedersen, 2019). To understand how organizations can influence knowledge processes through governance mechanisms, it is essential to focus on these microfoundations, which are based on individual action and the interaction of organizational knowledge-based phenomena (i.e., knowledge sharing and organizational knowledge creation) (Foss, 2007; Foss & Pedersen, 2019). In this context, a knowledge network can be viewed as a governance mechanism that a company can use to increase knowledge sharing and application between units within the company. However, relevant microfoundations will be dependent on the individuals participating in the knowledge network. We capture microfoundations by investigating the role of high-quality network management and distinguishing between distinct types of motivation, as well as by examining how high-quality network management, structural social capital across borders and types of motivation are associated with knowledge sharing and knowledge application.

Knowledge networks in companies come in different forms but are commonly classified as informal and formal networks. Informal networks are either ad hoc in nature (Hislop, 2009)

or shaped by the frequency and closeness of interactions between individuals (Granovetter, 1973; Hansen, 1999). Communities of practice are an example of an informal network structure where the community develops from the interaction that occurs in most work activities but are separate from the operative tasks in the organization (Hislop, 2009). They are based on self-organization principles that are self-sustaining and emphasize trust (Wenger et al., 2002). In formal networks, managerial interventions are used to facilitate knowledge sharing, and thus, the management plays a crucial role in stimulating and creating an environment for such process (van den Hooff & Huysman, 2009). Although in practice there may not always be an entirely clear distinction between formal and informal knowledge networks, the networks we investigate are unambiguously formal in that managers are actively managing them. Secondary intraorganizational structures that facilitate knowledge activities, such as formal communities, may both facilitate and overlap with informal networks (Büchel & Raub, 2002; Mahesh & Suresh, 2009). This paper studies formal intraorganizational discipline networks, referred to herein as “knowledge networks.” The purpose of such networks is to contribute to knowledge creation, sharing, dissemination, and application (Nesheim et al., 2011). Their emphasis is on developing explicit knowledge elements, such as standardized work processes, although not ignoring the importance of tacit knowledge in the knowledge-sharing process.

Knowledge Sharing and Application

Knowledge sharing takes place when there is a process through which an individual or a group of individuals is affected by the experience of another (Noe et al., 2003). Knowledge sharing essentially involves sending and receiving knowledge, indicating an act of reciprocity where the transfer of knowledge travels in more than one direction (Hislop, 2009).

Knowledge sharing in itself is not sufficient for performance benefits at the organizational level. . It only becomes valuable if it can be utilized by other individuals or units

in the organization, according to what Brachos et al. (2007) described as the “perceived usefulness of knowledge.” Knowledge is applied when the experience of one individual or unit influences another unit through changes in behavior (Brachos et al., 2007). Previous studies on knowledge application vary in their empirical contexts, definitions, and operationalization (e.g., Gooderham et al., 2011; Song et al., 2005; Szulanski, 1996; Watson & Hewett, 2006) but commonly emphasize the use and utility of knowledge.

Nesheim et al. (2011, p. 837) defined knowledge application as “the extent to which knowledge acquired from other employees or units has been applied in a beneficial manner in a given organizational unit.” The sharing of best practices and similar knowledge elements has limited value if such knowledge elements are not disseminated and used elsewhere in the company where such knowledge is relevant.

However, as knowledge application is dependent on knowledge being shared in the first place, we anticipate a positive association between knowledge-sharing behavior in the knowledge network and knowledge application.

H1: Individual engagement in knowledge-sharing activities within the disciplinary network has a positive association with knowledge application in the home unit.

As previously emphasized, knowledge sharing alone is not sufficient to achieve a valuable knowledge transfer process. Knowledge application is also necessary. Thus, it is important to know how companies can influence both knowledge sharing and knowledge application. One way to facilitate this behavior in MNCs is to implement proper governance mechanisms to ensure knowledge sharing and knowledge application.

When implementing a knowledge network as a governance mechanism for the knowledge transfer process, the behavior of the network manager will most likely influence the success of the network and the motivation of the network members to participate in the network. In the following section, we present our main arguments for including network management

and autonomous motivation as antecedents of knowledge sharing, structural social capital across borders, and knowledge application.

Network Management

Any practice or mechanism meant to facilitate knowledge sharing in MNCs depends on active management (Gooderham, 2007). Establishing a disciplinary network is an example of a management intervention. Once the network is in place, the way in which managers of the network facilitate knowledge sharing and knowledge application becomes crucial (Nesheim et al., 2011). In this setting, the network manager coordinates across several disciplines without any formal line authority. The main way to influence the knowledge processes is by facilitating trust and informal discussions, and through them, establishing a platform where the network members can exchange ideas (Schönström, 2005). Therefore, the actions and capabilities of the network manager to influence knowledge processes in the network are essential. A successful manager will be able to identify and disseminate relevant information and thereby stimulate knowledge sharing among the members as well as knowledge application in the members' home units (Nesheim et al., 2011).

Previous studies have identified management skills and activities that promote knowledge sharing, e.g., how managers engage and emphasize relevant knowledge (e.g., McDermott & Archibald, 2010) and management characteristics and behaviors that can lead to communities failing, such as lack of networking skills, not prioritizing the management role, and lack of technical knowledge (e.g., Wenger et al., 2002).

Besides Nesheim et al. (2011), literature is limited on the direct association between network management and knowledge application in formal knowledge networks. Some related literature exists; for example, Sarin and McDermott (2003) indicated that team leaders in new product development teams can positively influence knowledge application through their

management behavior, such as their involvement in the knowledge application process and their initiation of a goal structure. Both Lo (2016) and Murawwi (2014) found a positive relationship between transformational leadership and knowledge application.

We also see the role of network managers according to the engineering approach, which assumes that knowledge sharing can be managed (van den Hooff & Huysman, 2009). The managers of knowledge networks have the ability to “create a collaborative context through culture and organizational structure” (Eisenhardt & Santos, 2002, p. 152) that facilitates knowledge sharing and transfer. Management can play a central role, not by directly influencing the knowledge-sharing process but by stimulating and creating conditions for its emergence. Overall, we expect network management to be positively related to both knowledge-sharing behavior and knowledge application.

H2: High-quality network management has a positive association with knowledge-sharing behavior in the network.

H3: High-quality network management has a positive association with knowledge application.

Structural Social Capital

The social capital theory serves as an important basis for identifying the capabilities that organizations are uniquely equipped to develop for the sharing of knowledge. Nahapiet and Ghoshal (1998, p. 243) defined social capital as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit.” Nahapiet and Ghoshal (1998) distinguished between three dimensions of social capital: the structural, the relational, and the cognitive, all three being parts of the knowledge transfer and creation process. Our analysis will only include the *structural dimension* of social capital, which refers to “the overall pattern of connections between actors—

that is, who[m] you reach and how you reach them” (Nahapiet & Ghoshal, 1998, p. 244). However, the three dimensions are not mutually exclusive but influence and interact with one another (Nahapiet & Ghoshal, 1998; Putnam, 1995). The structural dimension, manifesting as social interaction ties, may stimulate trust among actors and permit them to share information and create a common point of view (Tsai & Ghoshal, 1998).

Different forms of social capital have been promoted in the literature. Especially, the two concepts of ‘bridging’ (structure) and ‘bonding’ (content) have been central. *Bridging* refers to the resources embedded within the social network that tie a focal actor to other actors (Adler & Kwon, 2002; Portes, 1998; Richardson & Bourdieu, 1986). *Bonding* refers to those features of social capital that facilitate the pursuit of collective goals through common cohesion (Adler & Kwon, 2002). Gooderham et al. (2011) emphasized that social capital can employ both of these approaches. The core intuition of social capital is the “goodwill” that makes organizational resources, information, influence, and solidarity available for individual use (Adler & Kwon, 2002). This goodwill enables individual members of an organization to tap into resources derived from the organization’s network of relationships without necessarily having participated in the development of those relationships (Inkpen & Tsang, 2005). In this way, social capital is, in the context of knowledge sharing and transfer, a product of goodwill between individuals across the organization and is a collective asset, although it is still anchored in the minds of the individual actors (Gooderham et al., 2011; Leana & Van Buren, 1999). Therefore, the structural dimension of social capital is important as the foundation for building this goodwill. How participation in the knowledge network facilitates the development of social capital may be even more important for those who work in international operations, especially where there may be geographical and cultural distances between members of the knowledge networks. Even if social capital is relevant in any context, it is assumed to be even more relevant in MNCs for employees cross national borders, where it can facilitate the mitigation of different

types of distances (Gooderham, 2007). Therefore, structural social capital across borders is of special interest in this context, where it can connect members from different parts of the MNC and mitigate structural wholes over large geographical distances between members located in multiple national contexts.

How the network manager facilitates the activities in the network will influence not only the social interaction but also how the structural social capital is formed between the members of the network. Therefore, we assume that high-quality network management has a positive association with structural social capital across borders within the company.

H4: High-quality network management has a positive association with structural social capital across borders in the network.

Studies have found strong empirical support for the relationship between structural social capital and the knowledge-sharing process (van Dijk et al., 2016). However, many of such studies assumed that structural social capital facilitates knowledge sharing and is an antecedent of knowledge sharing and transfer (Nahapiet & Ghoshal, 1998; van Dijk et al., 2016). In this study, we assume that the knowledge network facilitates knowledge-sharing behavior; as a comparison the knowledge network is assimilated into human resource management (HRM) practices in terms of facilitating the development of social capital and knowledge sharing (Aklamanu et al., 2016). The knowledge-sharing behavior further facilitates structural social capital, which is followed by knowledge application. It is through active participation in the network that the structural relationships evolve. Therefore, we assume that individual knowledge-sharing behavior has a positive association with structural social capital across borders in the network.

H5: Individual knowledge-sharing behavior has a positive association with structural social capital across borders in the network.

According to Nahapiet & Goshal (1998), structural social capital refers to the impersonal linkages between people or units that represent the overall patterns of connection between actors. Hence, individuals with high levels of structural social capital will have easier access to relevant resources when applying knowledge from the network in their own unit (e.g., through bridging). In the context of MNCs, this will be especially relevant across borders, where distance factors represent more challenges and complexity than for companies only operating in one single national context. Therefore, we assume that structural social capital across borders will improve access of individuals to knowledge located in units abroad and therefore, positively facilitates knowledge application in one's own unit.

H6: Structural social capital across borders in the network has a positive association with knowledge application.

Motivation

Successful implementation of knowledge management initiatives depends on employee behavior and motivation. Motivation is particularly relevant for knowledge sharing among employees (Gagné, 2009). According to the self-determination theory (SDT), there are two main types of motivation: intrinsic and extrinsic. Intrinsic motivation is the drive to engage in an activity mainly out of one's own interest in and enjoyment of the activity or of the value one sees in the activity itself (Deci & Ryan, 2000; Gagné, 2009), whereby one experiences the activity as meaningful and as a fit for one's value system. Therefore, intrinsic motivation is inherently autonomous; it involves acting with a sense of self-determination or choice and with self-will (e.g., I work because I think it is fun). On the other hand, extrinsic motivation is the drive to engage in an activity for reasons to either be rewarded or to avoid punishment, which can come from either outside sources (e.g., rewards, threats of punishment, or external regulations) or inner sources (e.g., the dependence of one's self-esteem on the successful

completion of a task). Thus, extrinsic motivation involves acting with a sense of pressure or with a sense of having to engage in the action (Deci et al., 2017; Deci & Ryan, 2000; Gagné & Deci, 2005). Both intrinsic and extrinsic motivation are intentional and are contrary to amotivation, which implies a lack of intention (Gagné & Deci, 2005).

Some motivation studies have reported mixed results with regard to extrinsic motivation and knowledge transfer (Bock et al., 2005). On the other hand, there is empirical evidence that intrinsic motivation is linked to positive attitudes towards knowledge sharing (Lin, 2007; Minbaeva & Pedersen, 2010). These suggest that the relationship between intrinsic and extrinsic motivation and their respective influences on knowledge sharing are not straightforward, yet they are both central to knowledge transfer processes.

SDT proposes a motivation continuum from amotivation to four types of extrinsic motivation to the opposite end of the continuum, intrinsic motivation. Along the continuum are degrees of self-determined behavior associated with the following types of regulation: none, external, introjected, identified, integrated, and intrinsic; and the following loci of causality: impersonal, external, and internal. Internalization is central for the internal locus of control and is defined as people imbibing or assimilating values, attitudes, or regulatory structures, resulting in the transformation of the external regulation of a behavior into an internal regulation and thus, no longer requiring the presence of an external contingency (e.g., I work even when the boss is not watching) (Deci & Ryan, 2000). Figure 1 presents a simplified illustration of the self-determination continuum (Gagné & Deci, 2005, p. 336):

Self-Determination Continuum (Gagné & Deci, 2005, p. 336)

Insert Figure 1 about here

In this paper, we focus on two categories of motivation: intrinsic autonomous motivation (i.e., intrinsic motivation that is inherently autonomous) and one representing extrinsic autonomous motivation (identified and integrated regulated), which is the most autonomous form of extrinsic motivation.

In the context of knowledge networks, ‘intrinsic autonomous motivation’ means that participation in the network is driven mainly by the knowledge-sharing activities in the network, and the individual has an intuitive interest in meeting and sharing knowledge with colleagues with the same interests. The activity of knowledge sharing gives direct satisfaction and has value and purpose, which means it is intrinsic and autotelic.

In contrast, extrinsic autonomous motivation is both autonomous and fully volitional yet cannot be defined as intrinsic because it does not have a direct value or purpose in itself; it is not autotelic. Integration is the fullest, most complete form of internalization of extrinsic motivation (Deci et al., 2017; Deci & Ryan, 2000; Gagné & Deci, 2005). The individual not only identifies with the importance of the behavior but also integrates such identification with other aspects of the self. When regulations are integrated, people will have fully accepted them by bringing them into harmony or coherence with other aspects of their values and identity.

In the context of knowledge networks, ‘extrinsic autonomous motivation’ means that the main motivation for participating in the knowledge network is generally to do a good and professional job and not necessarily because the person likes to share knowledge and meet like-minded people. Doing a good job is a duty; but it is natural to anticipate that for most members in the network, doing a good job is internalized and voluntary, in line with their own values, and performance-focused because the person who performs it can identify with it. Therefore, ‘extrinsic autonomous motivation’ is defined as internalized and autonomous, but the activity itself does not give direct satisfaction.

Highlighting this distinction further, Gagné & Deci (2005) suggested that people tend to be autonomously motivated when they find a task interesting and spontaneously satisfying (intrinsically motivating) or personally important in achieving one's self-selected aims and purposes (extrinsically autonomously motivating). They added that both intrinsic motivation and extrinsic autonomous motivation are related to performance, satisfaction, trust, and well-being in the workplace:

“When people are autonomously motivated at work, they tend to experience their jobs as interesting or personally important, self-initiated, and endorsed by relevant others. When people perform effectively at these jobs, they experience satisfaction of the basic psychological needs and have positive attitudes toward their jobs (p. 353).”

However, Gagné & Deci (2005) emphasized that even though the different types of autonomous motivation have many qualities in common, the concepts of intrinsic motivation and extrinsic autonomous motivation must still be kept separate. Koestner and Losier (2002) described an important difference between the two concepts from their findings. They contend that intrinsic motivation yields better performance of tasks that are interesting and enjoyable, while extrinsic autonomous motivation (i.e., identified/integrated regulation) yields better performance of tasks that are not in themselves necessarily interesting but are important and require discipline and concerted effort. Thus, these two types of autonomous motivation have different roles in task performance (Gagné & Deci, 2005).

Since intrinsic autonomous motivation is closely linked to the individual's direct enjoyment of the activity itself and previous studies have emphasized the importance of intrinsic motivation for knowledge-sharing activities, we propose that intrinsic autonomous motivation is positively associated with knowledge-sharing behavior. However, intrinsic autonomous motivation is not directly associated with knowledge application, since knowledge application is more performance-related and is not directly related to the individual's enjoyment

of the activity itself. To clarify, this does not suggest that the individual does not enjoy behavior related to knowledge application, but that the enjoyment is not necessarily linked to the activity itself, rather the result of the behavior (job performance) (Gangé & Deci 2005). Therefore, we propose that intrinsic autonomous motivation only has an indirect effect on knowledge application through knowledge-sharing behavior. Thus, our model only includes a direct effect between intrinsic autonomous motivation and knowledge-sharing behavior:

H7: Intrinsic autonomous motivation has a positive association with knowledge-sharing behavior in the network.

As proposed above, extrinsic autonomous motivation is fully volitional but clearly linked more to performance and the importance of doing a good job than to the knowledge network as an activity in itself. Therefore, we assumed that extrinsic autonomous motivation is positively related only to knowledge application and not to knowledge-sharing behavior. The main intention for participation in the network was to gain knowledge in order to improve the results in the home unit, followed by the recognition and satisfaction of doing a good job:

H8: Extrinsic autonomous motivation has a positive association with knowledge application in the home unit.

Figure 2 summarizes our conceptual framework.

Conceptual framework

Insert Figure 2 about here

Methodology

Description of the Knowledge Network and Case Company

The data were collected from a survey conducted in a large Norwegian MNC in 2009. Nesheim et al. (2011) based their research on the same survey and data set. The company's headquarters is located in Norway, and the company has a distributed organization with many different divisions both in the home country and internationally. The company operates in the energy sector and has expanded its operations internationally in the last decades, with activities in 40 countries worldwide. The majority of its employees are located in Norway.

The organization has a complex structure based on matrix principles. The primary governance is through the line organization, which consists of six business areas. Additionally, a number of lateral structures for functional areas intersect the business areas to secure coordination of activities within a functional area and across the different business units within the line organization. One of the business units is dedicated to international activities.

The survey covered five functional areas of the technical disciplines of the company. Within these five functional areas, a total of 131 networks were identified. In addition to the technical networks, there are networks for other company disciplines (marketing, HRM, accounting, etc.) that were not included in the survey.

Each network has a leader. This leader is the company's expert for the discipline area served by the network. The responsibility of this network leader is defined in the job description. This is a formal role. Most of the network leaders for the technical disciplines work in one business unit (the unit responsible for professional expert knowledge across the activities of the business units). The network members are employees from all business units. The design and outline of the networks for different disciplines are dynamic, meaning that their name/content may change over time due to the evolving business needs.

The networks themselves are highly informal. The employees are not formally assigned to networks. Membership in networks is voluntary, and the employees become familiar with the different networks through connections and colleagues within the company. They sign up by contacting the network leader.

These professional networks have similar knowledge stocks and people with similar educational backgrounds and professional identities. The objective of the network is to contribute to the creation, sharing, dissemination, and application of knowledge within the given disciplinary domain. The main emphasis is on standardized work processes and best practices. The employees view the networks as sources of information, ideas, and methods in their specialized areas of work and as arenas for building informal professional relationships within the organization.

A typical member of these networks is an engineer or other professionals with similar levels of education. The networks range in size from 10 to 547 members, where most of the networks have less than 100 members.

Most networks have members from several business units and from different geographical locations. The employees' position in the line organization is their primary "home," but the professional network is considered their "secondary" home. All employees are expected to be a member of at least one discipline network. This is an underlying expectation in the company culture.

Sample, Population, and Survey Design

The company does not have a formal member registration procedure for all its networks. Instead, its 4,328 network members were identified through the network managers. For this study, each member was sent the link to a web-based questionnaire. However, 239 of the respondents stated that they were not members of any network. Of the remaining 4,089 network members, 2,517 responded, for a response rate of 61.6%. Among the respondents, 184 were

employed abroad outside Norway (in Norway, 2,333). However, it was not possible to separate the respondents based on their nationalities, besides which the number of respondents abroad was considered too low for separate analysis.

The data was cross-sectional. The mean response rate per network was 35% because of the lower response rates of the larger networks. The majority of the respondents were members of more than one network but were asked to respond in relation to the network that they felt most affiliated with. Unfortunately, it was not possible to compare the characteristics of the respondents and the non-respondents due to the limited information. Because of missing information for some variables, N varied somewhat across tables. The next sections provide information on how missing variables were handled in the analysis.

Measures of Variables

All the variables were operationalized with perceptual measures, which are commonly used in studies on human behavior, and specifically, in studies on knowledge transfer (Gooderham et al., 2011; Howard, 1994; Spector, 1994). Our use of individual perceptual measures allowed us to capture the individuals' evaluations of the knowledge networks, which in turn enabled us to examine how each knowledge network works at the individual level. The concepts were measured with a combination of well-established scales that were developed specifically for this purpose. The questions were developed in close collaboration with the head coordinator of the 131 knowledge communities. For this reason, the items were a combination of indicators used in other studies and indicators developed specifically for this study to suit the given organizational context. All the questions were tested before the start of the survey to ascertain that they were meaningful to the respondents. All the statements were measured on a Likert scale that ranged from 1 (strongly disagree) to 6 (strongly agree). The following sections describe how the constructs were operationalized. The items included in the final measurement model are listed in Table 1.

The Final Measurement Model

Insert Table 1 about here

Network Management (NM)

The management quality and the leadership behavior in the networks were measured. The items used to measure them were based on the information given by key informants in the organization due to the lack of systematic research on such knowledge coordination across organizational units (Nesheim et al., 2011).

Intrinsic Autonomous Motivation (IAM) and Extrinsic Autonomous Motivation (EAM)

The measures for motivation was developed partly overlapping with the measurements by Reinholt et al. (2008) and built on the findings of Deci and Ryan (2000).

Knowledge-Sharing Behavior (KSB)

The items used to measure KSB were network-specific and were developed in collaboration with the head coordinator of the network and key informants.

Knowledge Application (KA)

The concept of knowledge application measures the extent to which knowledge acquired in the knowledge network or from other units has been applied and beneficially used in the employees' home unit. This concept resembles the concepts of the perceived usefulness of knowledge (Brachos et al., 2007), knowledge reuse (Watson & Hewett, 2006), and knowledge replication (Szulanski, 1996), all of which attempted to capture beneficial elements of knowledge transfer.

Structural Social Capital (SSC)

The single-item constructs for structural social capital were based mainly on the definitions provided in literature (Nahapiet & Ghoshal, 1998). All the items in the model were

modeled as reflective indicators because they were viewed as effects, not causes, of the focal construct.

Analysis

The main analysis was conducted using structural equation modeling (SEM) with Mplus 8. Some non-normality was detected in terms of skewness and kurtosis, so an MLR estimator for non-normal data was used in the analysis (Muthén & Muthén, 1998-2015; Stevens, 2009). Harman's single factor test was used to detect potential common method bias (Podsakoff & Organ, 1986). The results showed that 36.7% of the variance was common, which is under the recommended threshold of 50%, indicating that there were no issues related to common method variance. Neither were any of the variables highly correlated (above 0.9) (Bagozzi et al., 1991). The correlations are listed in Table 2.

Descriptive Statistics and Correlations

Insert Table 2 about here

The overall percentage of missing data in the set was 3.3% and totaled 3.9% for the variables included in the final analysis. This is within the acceptable rate of 5% (Kline, 2016). If the individual variables are evaluated separately, all have less than 7% missing. This is within the limit of 15% indicated by Hair et al. (2006). However, the rate of incomplete cases in the final analysis was 21% (total n = 2,517; complete cases = 1,997; and incomplete cases = 520, in two of which cases all the variables were missing). We reported our analysis of the estimated missing data using FIML (Muthén & Muthén, 1998-2015).

The relatively high N offered the opportunity for cross-validation between samples. This was initiated by randomly splitting the data file into two groups (Group 1 and Group 2) in

SPSS before further analysis. According to Kline (2016) cross-validation between random samples should always be conducted when the sample size is large enough. Cross-validating between random samples gives the opportunity to confirm that the measurement theory initially tested is valid between the samples (Hair et al., 2006; Pohlmann, 2004). The estimates reported in this paper are based on a full dataset.

Explorative principal component analysis (EPCA) was first conducted using SPSS to examine whether the items represented the concepts as expected. The EPCA was specifically aimed at the constructs of social capital and knowledge-sharing behavior, which had not been previously estimated. The items for network management, motivation, and knowledge application had been used by Nesheim et al. (2011) in a multiple regression analysis. Additionally, the split between intrinsic- and extrinsic autonomous motivation was of interest, since the four items have previously only been applied as a common construct. According to Medsker, Williams, & Holahan (1994) can exploratory factor analysis give useful information regarding the adequacy of items and scales before the use of confirmatory factor analysis in the assessment of the measurement model. The EPCA confirmed the expected structure related to the constructs in both Group 1 and Group 2. When the extraction criteria were set at an eigenvalue above 1, all the motivation variables were loaded on the same component, and the structural social capital variable was loaded on the component that represented knowledge sharing. When extracting six factors, the items for autonomous motivation loaded as expected on two components, and structural social capital, on a separate component. The fifth and sixth components had eigenvalues of 0.865 and 0.813, respectively.

Anderson & Gerbing (1988) recommended the use of a two-step approach to structural modeling by first examining the measurement model before testing the structural model. To test the measurement model, the item structure identified in the EPCA was used in confirmatory factor analysis (CFA), following the final measurement model that was used when the

theoretical structural model was tested. The CFA and structural models were conducted in Mplus 8.

Measurement Model

All the items from the EPCA were included in the initial CFA for Group 1. This model did not provide an acceptable fit, which initiated the need for re-specification. The re-specification was conducted stepwise by deleting one item at the time based on theoretical and practical considerations (Anderson & Gerbing, 1988; Kline, 2016). Two of the initial items were deleted, one of which represented knowledge management and the other, knowledge-sharing behavior. In the final model, both constructs for motivation had only two indicators each. Due to the high N, the evaluation is acceptable (Anderson & Gerbing, 1988). Due to the limitations of the items in the dataset that represented social capital, the final model included only a single-item construct for structural social capital. Both Fuchs & Diamantopoulos (2009) and Hayduk & Littvay (2012) supported the use of single-item measures for as long as they had acceptable psychometric properties. The items included in the final measurement model are listed in Table 1. The correlations for the latent variables are listed in Table 3.

Correlations Constructs

Insert Table 3 about here

Goodness-of-Fit Indices

None of the models in the analysis fulfilled the requirement of having a Chi-square (χ^2) p value ≥ 0.05 (Kline, 2016). Due to sensitivity to the sample size, it is common practice to assess the model on alternative-fit indices as an alternative (Byrne, 2012). A comparative fit index (CFI) value close to 0.95 is the revised cutoff value (Hu & Bentler, 1999). Steiger-Lind

root mean square error of approximation (RMSEA) with values of less than 0.05, indicate a good fit (Byrne, 2012). Hu & Bentler (1999) suggest that a value of .06 or less, indicates a good fit. Acceptable values of *Probability of a close fit* is > 0.05 (Kline, 2016). The Standard Root Mean Square Residual (SRMR) indication of good fit values < 0.05 (Hu & Bentler, 1999). The final measurement model in this study yielded an approximately good fit to the data for both Group 1 and Group 2 and for the full dataset.

For the convergent validity, all the factor loadings were significant, with $p < 0.001$. According to Hair et al. (2006), the factor loading estimates should be at least 0.5, preferably 0.7 or higher. This was the case for most of the factor loadings, except for KA_4, which was less than 0.5. Removing KA_4 yielded a worse RMSEA fit (reduced from 0.048 to 0.05 in Group 1), and the construct reliability (CR) for knowledge application was above the threshold of 0.70 when KA_4 was included (Hair et al., 2011). All the estimates of the average variance extracted (AVE) were above 0.50. Reliability is also an indicator of convergent validity, and all the CR values for all the constructs were acceptable and above the threshold of 0.7 (Fornell & Larcker, 1981). As shown in Table 4, none of the maximum shared variances (MSVs) exceeded the AVE, which supported discriminant validity (Fornell & Larcker, 1981).

Structural Model

The final step of the analysis involved the structural model, that is, specifying the causal relations (associations) linked with the hypotheses. The theoretical model indicated an acceptable fit for both Group 1 and Group 2. All the hypotheses were significant. The estimates for the full data set are listed in Table 4. The full causal model is presented in Figure 3.

Causal Structural Model (Full Data, MLR/FIML)

Insert Table 4 about here

Causal SEM

Insert Figure 3 about here

The results of the alternative models are listed in Table 5. None of the alternative models were evaluated as better options to the structural model. However, the tested alternative models confirmed the assumption that there is no association between extrinsic autonomous motivation and knowledge-sharing behavior, and only an indirect positive association between intrinsic autonomous motivation and knowledge application through knowledge-sharing behavior.

Alternative Models

Insert Table 5 about here

Invariance Analysis

The results of the invariance analysis between Group 1 and Group 2 indicated that both the measurement model and the structural model operated equally between the groups. The X^2 difference test results were insignificant at each step, thereby manifesting strict invariance, including latent means invariance (Kline, 2016). Additional support for invariance was given

by other relative fit indices such as the CFI, RMSEA, and SRMR, all of which changed by less than 0.01 (Cheung & Rensvold, 2002; Hair et al., 2006; Steenkamp & Baumgartner, 1998). Satorra-Bentler's scaling correction for Chi-Square was used due to the use of the MLR estimator (Kline, 2016). The results of the invariance analysis strengthened the reliability assumptions for the final measurement model and supported the assumption that the covariance structure was equal between the groups. Hence, the cross-validation was confirmed.

Strength of Associations and Indirect Effects

To obtain an indication of the differences between the estimates of specific paths in the final causal SEM model, the parameters of interest were constrained to be equal and then invariance-tested using the X^2 difference test. The Wald test was used to confirm the results. The Wald test can, in the same way as the X^2 difference test, test hypotheses comprising differences between parameters by comparing the nested submodels (Bentler, 1990). The following are the main results:

- 1) There was an indication that the association between network management and knowledge-sharing behavior is slightly stronger than the association between intrinsic autonomous motivation and knowledge-sharing behavior.
- 2) The results showed that network management has the strongest association with knowledge application when compared with both knowledge-sharing behavior and extrinsic autonomous motivation. However, there is no indication of difference between associations to Knowledge application when Knowledge sharing behavior and Extrinsic autonomous motivation are compared. The results showed that structural social capital across borders has a weaker association with knowledge application when compared individually with knowledge management, knowledge-sharing behavior, and extrinsic autonomous motivation.

- 3) There was no difference between the individual associations of network management and knowledge-sharing behavior with structural social capital across borders.

Testing Path Differences (MLR/FIML)

Insert Table 6 about here

Table 7 gives an overview of the indirect effects from network management and intrinsic autonomous motivation to knowledge application.

Indirect Effects NM and IAM

Insert Table 7 about here

Findings and Discussion

In our model, we assumed that network management, knowledge-sharing behavior, structural social capital across borders, and extrinsic autonomous motivation all have a positive direct association with knowledge application. This was confirmed by our analysis. However, our analysis revealed that network management has a stronger association with knowledge application than do knowledge-sharing behavior, extrinsic autonomous motivation, and structural social capital across borders with knowledge application. There was no evidence of any difference in the strength of the individual associations between knowledge application and extrinsic autonomous motivation or knowledge-sharing behavior. The structural social capital across borders had the lowest effect of all.

The results also showed that network management had a positive indirect effect on knowledge application through knowledge-sharing behavior and structural social capital across borders, but this indirect effect was smaller than the direct effect. Likewise, knowledge-sharing behavior had a positive indirect effect through structural social capital across borders, although this effect was also low. However, this does not undermine the relevance of cross-border structural social capital to facilitate the knowledge sharing and application across units within the MNC to mitigate possible negative effects of cross-national differences (Gaur et al., 2019; Gooderham, 2007).

The positive association of network management with knowledge-sharing behavior, structural social capital across borders, and knowledge application demonstrated the importance of formal management in knowledge transfer processes (Gooderham, 2007; Hoof & Huysman, 2009). Moreover, network management is important in the interplay between knowledge sharing in the network and the degree of application in the home unit (Sarin & McDermott, 2003). This was further supported by the indication that network management has the strongest association with both knowledge-sharing behavior and knowledge application. Our results strongly suggest that it is important to have some structure to the management of knowledge networks rather than just bringing together people with the same professional background and anticipating that this is sufficient for knowledge sharing and application to take place. This supports our assumption that with high-quality network management, companies can facilitate and govern their knowledge-sharing and -application activities to a certain degree (Foss et al., 2007; Hoof & Huysman, 2009). Further, the positive association between knowledge-sharing behavior and structural social capital supports our assumption that the knowledge network facilitates structural social capital across borders through the active participation in the network (Aklamanu et al., 2016).

The results therefore suggest that structural social capital across borders is possible to manage to a certain extent, since network management and active participation in the network is positively associated with structural social capital across borders and that it further facilitates knowledge application. This finding provide further insights in antecedents of knowledge application (Gagné, 2009; Hung et al., 2011). The structural social capital across borders is, in this context, especially important since most of the employees and network members are located in one country; and for those located abroad, the structural social capital is particularly important for the knowledge transfer process. This was also confirmed by the control factors, which showed that structural social capital was significantly higher for the members located abroad. Thus, structural social capital across borders will be more relevant for network members working abroad than for many network members located in the home country who are not involved in international activities. However, when controlling for location, this was insignificant for the other constructs included in the model.

As expected, intrinsic autonomous motivation had a positive association with knowledge-sharing behavior and only a positive indirect association with knowledge application through knowledge-sharing behavior. While extrinsic autonomous motivation has been shown to have a direct positive association with knowledge application, there was no indication that this type of motivation has any association with knowledge-sharing behavior. This change in motivation between knowledge-sharing behavior and knowledge application might be explained by the nature of the two different behaviors and their goals. While knowledge-sharing behavior is a mutual process where knowledge is being exchanged, the motivation for behavior in this context of knowledge networks is closely linked to the activity itself, not to external consequences of the activity for example job performance. Knowledge application on the other hand, is more closely connected to job performance and how the individual contributes to the performance of the home unit. In this way the two behaviors have

different goal contents (Deci & Ryan, 2000) while the goal of knowledge-sharing behavior is closely linked to the activity itself, the goal of knowledge application is more closely linked to job performance and extrinsic autonomous motivation (e.g. Koestner & Losier, 2002).

Whereas previous studies have reported mixed results with regard to the association between knowledge transfer and extrinsic motivation (Brock et al., 2005), the results of this study contribute to a better understanding of the role of extrinsic motivation in knowledge processes. Differentiating and distinguishing between extrinsic and intrinsic autonomous motivation is specifically relevant to our understanding of how tacit knowledge is shared and applied. As Osterloh & Frey (2000) distinguished between explicit and tacit forms of knowledge, they also argued that differentiating intrinsic motivation from extrinsic motivation is crucial in generating and transferring the two forms of knowledge. The authors argued that intrinsic motivation has a direct impact on the interest in learning new things and is therefore especially important for knowledge-sharing activities that have a high degree of voluntary contribution. The transfer of tacit knowledge is especially dependent on intrinsic motivation, since this type of knowledge is inherent in the person, and therefore, dependent on the person's willingness to share (Osterloh & Frey, 2000).

The results of this analysis clearly showed the benefits of having high-quality management of knowledge transfer processes both for knowledge sharing and application. Yet, having a better understanding of the relationship between motivation and knowledge sharing and application would further increase the opportunity to leverage the knowledge-sharing activities within MNCs. Our analysis revealed that different types of autonomous motivation have several aspects and influences on knowledge application. This finding adds to the understanding of how different types of motivation influence both the knowledge-sharing phase and the application phase. However not included in our model, this leads to the question on how management is associated with motivation. Previous research has found that supervisors

autonomy-supportive behaviors facilitate autonomous motivation (Gillet et al. 2013), where autonomy support facilitate the needs for autonomy, competence and relatedness and is therefore strongly related to autonomous motivation (Ryan & Deci, 2000). Several studies have shown that autonomous motivation leads to more positive consequences, such as enhanced performance (Deci & Ryan, 2008). This suggests that autonomy-supportive management is required for both types of autonomous motivation. On the contrary, for management associated with coordination and control we would assume that this type of management will undermine autonomous motivation and instead facilitate controlled motivation (Gillet et al., 2013).

This study contributes to the understanding of the types of motivations that are crucial in the processes of knowledge sharing and application, leading to several implications for management. Our results showed that extrinsic autonomous motivation is important for knowledge application but seems to have no direct influence on knowledge-sharing behavior. At the same time, our results showed that intrinsic autonomous motivation is not necessarily enough for the successful application of the knowledge gained from knowledge-sharing activities. Hence, this leads us to the assumption that both types of motivation should be present. The correlation between the two types of motivation was relatively high (0.601), which confirms that they are positively associated and suggests that both types of motivation are often commonly present.

To sum up the main findings, first, the results of this study supported our assumption that high-quality network management plays an important role in facilitating knowledge-sharing activities, structural social capital across borders, and knowledge application. Second, extrinsic autonomous motivation is important for knowledge application, while intrinsic autonomous motivation is important for knowledge-sharing behavior. Hence, both types of motivation are important for successful knowledge application outcomes in the context of knowledge networks in MNCs. Our findings contribute to the knowledge management

literature (e.g. Gaur et al., 2019; Zeng et al. 2018) and particularly the literature on knowledge transfer and motivation in MNCS (e.g. Foss et al, 2009, Minbaeva et al., 2012) and autonomous motivation (e.g. Gagné, 2009; Wang & Hou, 2015). Further, it provides insights to important conditions for effective knowledge networks and how the different types of autonomous motivation are associated with knowledge sharing behavior and knowledge application on the micro level (Foss, 2007; Foss & Pedersen, 2019). It further demonstrates how MNCs can use formal knowledge networks as a governance mechanism to facilitate structural social capital across borders, and further support the development of organizational capabilities for knowledge-sharing and transfer and building organizational advantage (Eisenhardt & Santos, 2002; Grant, 1996; Kogut & Zander, 1993).

Managerial Implications

The results of this study support the assumption that coordinated network management is important in how companies facilitate and govern the knowledge transfer process through knowledge sharing within their knowledge networks. This assumption is in contrast to the idea of randomly bringing together people with the same professional background and anticipating that this would be enough for knowledge sharing to take place. Our analysis demonstrated that network management plays an important role in knowledge application in one's own unit, which is the main desired outcome of knowledge network activities.

Our results also support the emphasis on high-quality network management as key to building effective knowledge transfer processes. Our findings further support the need to allocate adequate management resources to arenas of knowledge-sharing activities, particularly where companies aim to build competitive advantage through the sharing of best practices and other knowledge resources. This is especially relevant in the context of multinational companies, where members of the network are located in different national contexts and interact over large geographical distances. As the results shows, high-quality network management

facilitates the development of structural social capital among members located abroad, securing the benefit of the participants and their access to knowledge and resources.

Our analysis revealed the importance of having both types of motivation present, although this is more difficult to manage explicitly. For example, the level of intrinsic autonomous motivation is important for knowledge-sharing behavior, and this indirectly influences the knowledge application process (as shown earlier). Thus, organizations should keep this in mind when recruiting or placing employees in positions where knowledge sharing is essential. Personal traits such as curiosity, interest in learning, and the ability to collaborate with others through professional socialization are some of the key qualities to look for in appropriate candidates. The results also showed, however, that intrinsic autonomous motivation alone may not necessarily be sufficient for facilitating knowledge application. Clearly, extrinsic autonomous motivation is also important in this context, where relevant knowledge from the knowledge-sharing activities is to be applied in one's own unit. Therefore, both types of motivation are important but for different reasons.

Limitations and Future Research

This study had several limitations. First, the data were based on respondents from only one MNC and were analyzed at the individual level, where the majority of the respondents were located in the same country. The generalizability of our results is therefore questionable in this case; and since the population in this study was from knowledge networks in only one company, it is therefore not possible to transfer the findings directly to other MNCs or similar networks. Moreover, the structure of the disciplinary network is specific to this company, so it raises further questions about the possibility of generalizing the results.

One of the criticisms of post-hoc analyses and the development of alternative models is that model modification may be driven by characteristics of the particular sample on which the model was tested (Byrne, 2010; MacCallum et al., 1992). Cross-validation is a strategy that is

commonly used to address this problem, where the invariance analysis conducted indicates no difference between the randomly split groups. The issue of generalizability is anyway discussible in this case, since the population is only from knowledge networks in one company, and it is therefore not possible to transfer the findings directly to other MNCs or knowledge networks. The cross-sectional nature of the data makes it problematic to draw conclusions on causal relations, something that calls for more longitudinal designs.

Having only one company represented in the data may additionally influence the variation. If the data were collected from several companies with similar knowledge networks, the variation would most likely have been higher. However, even though there are limited possibilities to generalize the results, this type of knowledge network as a mechanism for facilitating knowledge sharing and application is highly relevant for knowledge-intensive companies.

An area for future research is to expand the understanding how companies can involve people in these types of motivations to ensure effective knowledge transfer processes. Related to the discussion on management and autonomous motivation above, a suggestion for future research is to further investigate the relationship between management and the associations with different types of autonomous motivation in knowledge sharing- and application processes. This would provide a deeper understanding in how to facilitate the different types of autonomous motivations, hence, contributing with insight in how to manage knowledge sharing versus knowledge application by facilitating autonomous motivations.

This brings us to the question on whether knowledge sharing and application require the same type of management. Our results indicates that network management is important for both knowledge sharing- and application. Future studies could focus on particular ways a network manager best facilitates these different types of knowledge processes. It is also important to take into account the multiple sources of management that can be present. Based on the context

of a matrix organization, the line manager in addition to the network manager, will be in position to exercise influence on the individual employee. Findings from Nesheim et al. (2011) indicates that line managers support in participating in the network has a positive association with knowledge application. Line manager support was not included in this paper's model. However, future studies could include both the role of the line manager and network management, in order to investigate their association to both knowledge sharing behavior and knowledge application.

Where previous studies related to knowledge transfer (e.g. Reinholt et al., 2011) considers autonomous motivation as one construct, we separate between intrinsic and extrinsic autonomous motivation. Broadening the discussion of different autonomous motivations would be of further interest. The measures included for autonomous motivation are only being represented by two items each. Future research should therefore, in the context of knowledge sharing and transfer, focus on developing relevant operationalizations and standardization for the distinction between intrinsic and extrinsic autonomous motivation. This could build on the the multidimensional work related motivation scale Gagné et al. (2015) and further inclusion of the work-related basic need satisfaction scale by Broeck et al. (2010), where the latter could be could be relevant in operationalizations of autonomous supportive management styles.

In this analysis, both knowledge-sharing behavior and knowledge application were investigated regardless of the knowledge characteristics; that is, there was no distinction between explicit and tacit knowledge. Further research could consider the nature of the knowledge.

Clearly, the link between knowledge-sharing behavior and knowledge application needs to be further investigated. Our starting assumption was that intrinsic autonomous motivation is an important predictor of knowledge-sharing behavior. While knowledge-sharing behavior leads to high quantities of sharing, it is not necessarily the most useful form of knowledge

sharing (Gagné, 2009). The link between motivation to share knowledge and the usefulness of the shared knowledge could be the focus of further research.

Another area of interest is how different types of autonomous motivation and performance interact. Further insight into this can contribute to the understanding of how to facilitate or influence motivation. According to Gagné & Deci (2005), it is difficult to influence individual differences, and especially, intrinsic motivation. Focusing on how to change the environment to promote extrinsic autonomous motivation would therefore most likely be a more fruitful approach, which is an area in literature that has received limited attention.

A final area of interest is the role of social capital in the knowledge application process. This area has received very little attention compared to the area of knowledge sharing. Further development of the operationalization of social capital and its dimensions would be important in promoting knowledge sharing and application in MNCs.

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Figure 1

Self-Determination Continuum (Gagné & Deci, 2005, p. 336)

Amotivation	Extrinsic motivation				Intrinsic motivation
No regulation	External regulation	Introjected regulation	Identified regulation	Integrated regulation	Intrinsically regulated
Absence of intentional regulation	Contingencies of reward and punishment	Self-worth contingent on performance, ego-involvement	Importance of goals, values, and regulations	Coherence among goals, values, and regulations	Interest and enjoyment of the task
Lack of motivation	Controlled motivation	Moderately controlled motivation	Moderately autonomous motivation	Autonomous motivation	Inherently autonomous motivation

Figure 2

Conceptual Framework

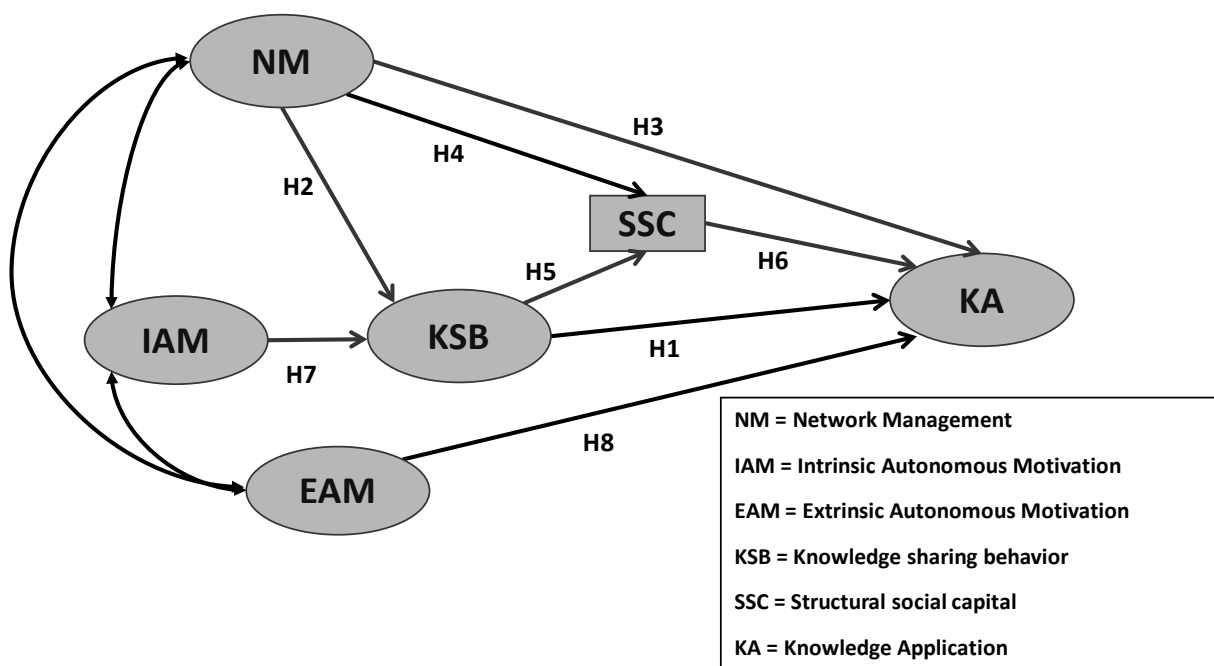


Table 1*The Final Measurement Model*

$\chi^2(138) = 867.367, p < 0.001$; CFI = 0.956; RMSEA = 0.046 (C.I. = 0.043–0.049, P = 0.990), SRMR = 0.038

Network management (NM)	Factor loadings				R ²	CR	AVE/ MSV
	B	SE B	β	SE β			
<i>What is your opinion of the following statements about the way your discipline network is run?</i>							
NM_1 - The network management is good at stimulating discipline related discussions	1.000	0.000	0.734	0.014	0.538	0.881	0.601/ 0.397
NM_2 - The network management sends out notice of meeting times and agendas for the discipline network meetings in due time	0.661	0.032	0.573	0.019	0.328		
NM_3 - The network management is good at passing on the experience and knowledge of the participants to the rest of the discipline network.	1.130	0.031	0.831	0.010	0.690		
NM_4 - The network management is good at communicating relevant discipline information between meetings	1.255	0.036	0.867	0.009	0.751		
NM_5 - The network management is good at communicating and disseminating best practice	1.193	0.033	0.841	0.009	0.707		
NM_6 - The network management is good at communicating recommended training/conferences to the discipline network	1.130	0.037	0.726	0.014	0.527		
<hr/>							
Intrinsic Autonomous motivation (IAM)	Factor loadings				R ²	CR	AVE/ MSV
	B	SE B	β	SE β			
<i>Why did you join this discipline network?</i>							
IM_3 - I like to take part in the exchange of experience and sharing of knowledge	1.000	0.000	0.781	0.026	0.610	0.716	0.558/ 0.365
IM_4 - To meet others in the company working in the same discipline area	0.966	0.059	0.712	0.027	0.507		
<hr/>							
Extrinsic Autonomous Motivation (EAM)	Factor loadings				R ²	CR	AVE/ MSV
	B	SE B	β	SE β			
<i>Why did you join this discipline network?</i>							
IM_1 - To be able to do my job in a good professional manner	1.000	0.000	0.744	0.021	0.554	0.730	0.575/ 0.365
IM_2 - To keep professionally up to date	0.857	0.042	0.772	0.022	0.595		

Knowledge Sharing Behavior (KSB)	Factor loadings				R ²	CR	AVE/ MSV
	B	SE B	β	SE β			
<i>What is your opinion of the following statements about your role in the discipline network:</i>							
KS_1 - I suggest relevant topics for meeting to the discipline manager	1.000	0.000	0.831	0.010	0.691	0.836	0.561/ 0.331
KS_2 - I give presentations at network management meetings	0.994	0.015	0.743	0.013	0.552		
KS_3 - I send links to interesting articles/reports etc. to my discipline network manager	0.912	0.023	0.753	0.013	0.566		
KS_4 - I am active as regards sharing experience with people in other entities	0.697	0.024	0.660	0.015	0.436		
Knowledge Application (KA)	Factor loadings				R ²	CR	AVE/ MSV
	B	SE B	β	SE β			
<i>What is your opinion of the following statements about the results of your participation in the discipline network?</i>							
KA_1 - Has led to concrete improvements in the way we solve tasks in my entity	1.000	0.000	0.872	0.009	0.761	0.820	0.548/ 0.397
KA_2 - Has resulted in more speedy solutions to work tasks	1.014	0.015	0.876	0.009	0.767		
KA_3 - Has led to greater degree of compliance with governing documents in my entity	0.810	0.023	0.698	0.015	0.488		
<i>In the following, please respond to some statements about the work situation in your entity. By entity is meant the department managed by your immediate line manager.</i>							
KA_4 - In the past year professional advice from other entities has resulted in improvements in the way we carry out work in our entity.	0.473	0.028	0.423	0.022	0.179		
Structural Social Capital (SSC)	Factor loadings				R ²	CR	AVE/ MSV
	B	SE B	β	SE β			
<i>What is the opinion of the following statements about your discipline network?</i>							
SSC - Has resulted in me taking contact with employees in overseas offices	*	*	*	*	*	*	*

Table 2*Descriptive Statistics and Correlations*

	Mean	Std.dev.	N	NM_1	NM_2	NM_3	NM_4	NM_5	NM_6	NM_7	IM_1	IM_2	IM_3	IM_4	KS_1	KS_2	KS_3	KS_4	KS_5	KA_1	KA_2	KA_3	KA_4
NM_1	4.41	1.04	2430	1																			
NM_2	4.98	0.88	2457	0.457**	1																		
NM_3	4.44	1.04	2440	0.639**	0.533**	1																	
NM_4	4.22	1.11	2440	0.606**	0.471**	0.739**	1																
NM_5	4.32	1.09	2437	0.609**	0.471**	0.671**	0.734**	1															
NM_6	4.15	1.19	2453	0.494**	0.397**	0.564**	0.657**	0.648**	1														
NM_7	4.33	1.10	2484	0.418**	0.336**	0.453**	0.492**	0.478**	0.539**	1													
IM_1	5.03	0.92	2490	0.273**	0.173**	0.262**	0.266**	0.283**	0.212**	0.237**	1												
IM_2	5.30	0.76	2502	0.258**	0.206**	0.235**	0.218**	0.243**	0.195**	0.253**	0.574**	1											
IM_3	5.47	0.67	2495	0.180**	0.175**	0.151**	0.109**	0.125**	0.081**	0.121**	0.306**	0.393**	1										
IM_4	5.43	0.71	2492	0.160**	0.123**	0.133**	0.113**	0.113**	0.055**	0.122**	0.293**	0.365**	0.557**	1									
KS_1	3.73	1.31	2379	0.301**	0.124**	0.253**	0.250**	0.240**	0.170**	0.159**	0.245**	0.153**	0.237**	0.192**	1								
KS_2	3.77	1.46	2347	0.276**	0.138**	0.214**	0.205**	0.198**	0.157**	0.128**	0.180**	0.139**	0.186**	0.163**	0.650**	1							
KS_3	3.28	1.32	2377	0.274**	0.065**	0.236**	0.254**	0.239**	0.212**	0.171**	0.202**	0.129**	0.181**	0.162**	0.610**	0.553**	1						
KS_4	4.29	1.15	2450	0.291**	0.160**	0.242**	0.241**	0.240**	0.205**	0.179**	0.231**	0.211**	0.288**	0.212**	0.526**	0.463**	0.525**	1					
KS_5	3.62	1.30	2351	0.278**	0.119**	0.249**	0.245**	0.239**	0.220**	0.177**	0.210**	0.157**	0.163**	0.119**	0.425**	0.321**	0.408**	0.410**	1				
KA_1	4.14	1.11	2399	0.474**	0.251**	0.419**	0.426**	0.469**	0.352**	0.332**	0.381**	0.315**	0.215**	0.206**	0.424**	0.338**	0.372**	0.382**	0.392**	1			
KA_2	3.93	1.12	2379	0.468**	0.230**	0.433**	0.448**	0.491**	0.387**	0.359**	0.362**	0.289**	0.186**	0.182**	0.407**	0.328**	0.388**	0.337**	0.389**	0.781**	1		
KA_3	4.25	1.12	2383	0.449**	0.242**	0.402**	0.415**	0.504**	0.343**	0.314**	0.337**	0.261**	0.205**	0.186**	0.373**	0.285**	0.351**	0.327**	0.338**	0.595**	0.600**	1	
KA_4	4.35	1.07	2345	0.292**	0.209**	0.282**	0.276**	0.328**	0.213**	0.208**	0.243**	0.219**	0.142**	0.108**	0.177**	0.149**	0.173**	0.206**	0.207**	0.346**	0.352**	0.316**	1
SSC	3.12	1.46	2352	0.299**	0.082**	0.268**	0.291**	0.268**	0.302**	0.255**	0.158**	0.119**	0.107**	0.106**	0.314**	0.289**	0.342**	0.279**	0.303**	0.341**	0.362**	0.314**	0.226**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3

Correlations Constructs

	KSB	NM	EAM	IAM	KA
KSB	<u>0.749</u>				
NM	0.379	<u>0.775</u>			
EAM	0.320	0.402	<u>0.758</u>		
IAM	0.354	0.208	0.604	<u>0.747</u>	
KA	0.575	0.630	0.513	0.307	<u>0.740</u>
SSC	0.408	0.337	0.180	0.138	0.408

Note. Underlined = square root of AVE, AVE not available for SSC.

Table 4

Causal Structural Model (Full Data, MLR/FIML)

Model	N	X ²	DF	CFI	RMSEA (C.I.) + p_close	SRMR	AIC BIC SABIC
no indication = $p < 0.001$							
NM → KSB SSC KA	2,515	878.188	142	0.956	0.045	0.039	115238.650
IAM → KSB		***			(0.043–0.048)		115629.262
EAM → KA					0.996		115416.385
KSB → SSC KA							
SSC → KA							

Figure 3

Causal SEM

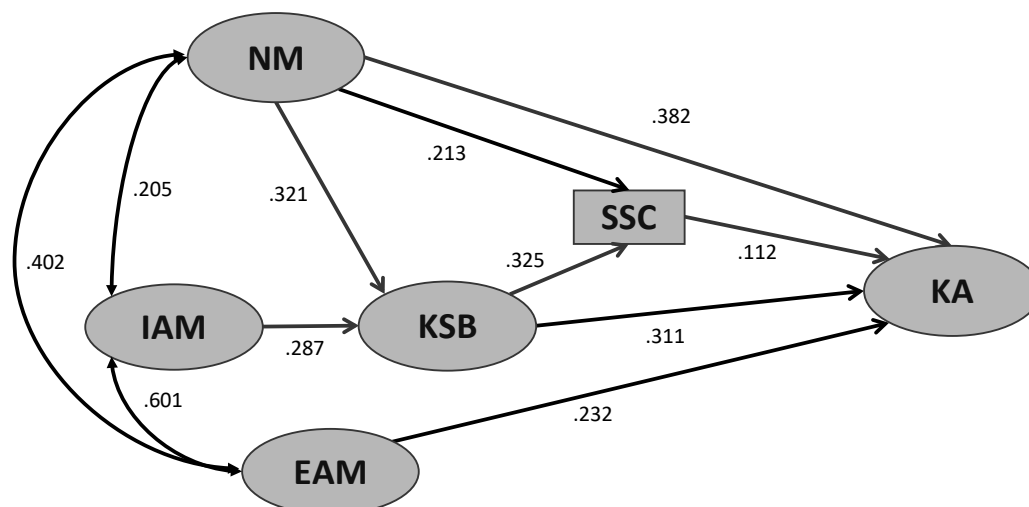


Table 5*Alternative Models*

no indication = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$, Strike through = $p > 0.05$	N	X ²	DF	CFI	RMSEA (C.I.) + p_close	SRMR	AIC BIC SABIC
Direct model: NM EAM IAM* SSC KSB → KA (IAM negative)	2,515	867.367 ***	138	0.958	0.046 (0.043–0.049) P = 0.950	0.038	115238.464 115652.396 115426.810
Model direct effects for IAM → KA and EAM → KSB: NM → KSB SSC KA IAM → KSB KA (negative) KSB → SSC KA SSC → KA EAM → KSB KA	2,515	871.495 ***	140	0.956	0.046 (0.043–0.049) P = 0.994	0.038	115235.539 115637.811 115418.580
Model with no direct effect NM → KA and EAM → KA: NM → KSB SSC IAM → KSB KSB → SSC KA SSC → KA EAM → KSB	2,515	1,390.994 ***	143	0.925	0.059 (0.056–0.062) P = 0.000	0.087	115862.180 116246.962 116037.263

Note. *** = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$, MLR/FIML

Table 6*Testing Path Differences (MLR/FIML)*

Coefficients to be tested	Estimate <i>B</i> Freely estimated	Esti-mate β Freely estimated	X ₂ when freely estimated * = Corr.fact. (df)	X ₂ when coeff. fixed equal* * = Corr.fact. (df)	$\Delta\chi^2$ (Δ df)/cd p value	CFI	RMSEA	SMRM	Wald test Value Df p
Freely estimated/ no constraints	-	-	878.188/ 1.2123* (142)	-	-	0.956	0.045	0.039	-
NM → KSB	0.458	0.321		882.613/ 1.2110* (143)	4.425 (1)/1.0264 P = 0.043	0.956	0.045	0.039	V = 3.708 df = 1 p = 0.0542
IAM → KSB	0.597	0.287							
NM → SSC	0.406	0.213	-	878.514/ 1.2121* (143)	0.326 (1)/1.837 P = 0.667	0.956	0.045	0.039	V = 0.176 df = 1 p = 0.6747
KSB → SSC	0.435	0.325							
NM → KA	0.481	0.382	-	904.407/ 1.2143* (143)	26.219 (1)/1.4983 P = 0.000	0.955	0.046	0.042	V = 23.596 df = 1 p = 0.0000
KSB → KA	0.274	0.311							
NM → KA	0.481	0.382	-	1017.240/ 1.2144* (143)	139.047 (1)/1.5126 P = 0.000	0.948	0.049	0.051	V = 112.763 df = 1 p = 0.0000
SSC → KA	0.074	0.112							
NM → KA	0.481	0.382	-	886.371/ 1.2136* (143)	8.183 (1)/1.3982 P = 0.005	0.956	0.045	0.040	V = 8.134 df = 1 p = 0.0043
EAM → KA	0.325	0.232							
SSC → KA	0.074	0.112	-	927.880/ 1.2131* (143)	49.692 (1)/1.3124 P = 0.000	0.953	0.047	0.042	V = 46.837 df = 1 p = 0.0000
KSB → KA	0.274	0.311							
SSC → KA	0.074	0.112	-	929.189/ 1.2131* (143)	51.001 (1)/1.3267 P = 0.0000	0.953	0.047	0.042	V = 48.955 df = 1 p = 0.0000
EAM → KA	0.325	0.232							
KSB → KA	0.274	0.311	-	878.605/ 1.2137* (143)	0.417 (1)/1.4125 P = 0.268	0.956	0.045	0.039	V = 1.240 df = 1 p = 0.2655
EAM → KA	0.325	0.232							

Table 7*Indirect Effects NM and IAM*

Effects NM → KA (MLR/FIML)	B	SE B	β	SE β
Total	0.651***	0.032	0.518***	0.023
Total indirect	0.170***	0.015	0.135***	0.011
NM → KSB → KA	0.125***	0.014	0.100***	0.010
NM → SSC → KA	0.030***	0.006	0.024***	0.005
NM → KSB → SSC → KA	0.015***	0.003	0.012***	0.002
Total direct	0.481***	0.032	0.407***	0.025
Effects IAM → KSB → KA (MLR/FIML)	B	SE B	β	SE β
Total	0	0	0	0
Total indirect	0.183***	0.021	0.100***	0.010
IAM → KSB → KA	0.163***	0.020	0.089***	0.010
IAM → KSB → SSC → KA	0.019***	0.004	0.010***	0.002
Total direct	0	0	0	0

Note. *** = $p < 0.001$, ** = $p < 0.01$, * = $p < .05$, NS = non-significant

Appendix

Appendix 1A

Survey questionnaire Intrepid

SURVEY OF HUMAN RESOURCE PRACTICES OF MULTINATIONAL COMPANIES OPERATING IN NORWAY

MAIN QUESTIONNAIRE

FOREIGN-OWNED FIRMS

First page:

EMPLOYMENT PRACTICES OF MULTINATIONAL COMPANIES

Welcome to the survey!

The completion of the survey is expected to take about 30-40 minutes. You can stop any time, save your entries and resume the completion of the survey later. You can navigate forward and backward by using the arrows at the top and the bottom of the page. We highly recommend saving the survey after completion of each page.

Thank you very much for taking the time to participate in this study.

SECTION A: INTRODUCTION

A0. What is the name of the Norwegian operations that you work for? By Norwegian operations we mean the operational units of the worldwide company located in Norway.

(COMPANY NAME FOR THE REST OF THE QUESTIONNAIRE)

A1. What is the name of the ultimate controlling company?

A2a. Can you confirm that the company is wholly or majority foreign-owned? By “majority owned” we mean at least 50% is owned by a foreign-based company

Yes..... ☐ 1

No ☐ 2

IF YES GO TO A3A

IF NO ASK A2B

A2b. Is your operation based on a franchise concept?

Yes..... ☐ 1

No ☐ 2

IF NO ⇒ REVERT TO PAGE ASKING FOR CONTACT INFO

A2c. Is this franchise concept foreign-owned?

Yes..... ☐ 1

No ☐ 2

IF NO ⇒ REVERT TO PAGE ASKING FOR CONTACT INFO

IF YES ⇒ DISPLAY THE FOLLOWING TEXT

"IF YOUR FRANCHISE CONCEPT IS FOREIGN OWNED AND/OR THE OWNERSHIP OF THE COMPANY IS MAJORITY NORWEGIAN OWNED – PLEASE CONSIDER YOUR NORWEGIAN UNITS AS SUBSIDIARIES/UNITS OF A MULTINATIONAL COMPANY WHERE THE FRANCHISE OWNER IS LABELLED AS THE WORLDWIDE COMPANY THROUGOUT THE QUESTIONNAIRE"

A3a. In which country is the operational head quarters of your ultimate controlling company located?

A14. What is your job title?

[TICK ONE ONLY]

- | | | | |
|---|---|--------------------------|---------|
| 1 | HR/Personnel Director..... | <input type="checkbox"/> | 1 |
| 2 | HR/Personnel Senior Manager/ Manager..... | <input type="checkbox"/> | 2 |
| 3 | HR/Personnel Senior Officer..... | <input type="checkbox"/> | 3 |
| 4 | HR/Personnel Officer..... | <input type="checkbox"/> | 4 |
| 5 | HR/Personnel Executive..... | <input type="checkbox"/> | 5 |
| 6 | HR/Personnel Assistant..... | <input type="checkbox"/> | 6 |
| 7 | Other (please specify)..... | <input type="checkbox"/> | 7 _____ |

A15. How long have you worked for the [COMPANY NAME] in Norway? _____
(Please specify if you are reporting months/years etc.)

ALL THE INFORMATION GIVEN IN THIS SURVEY WILL BE TREATED CONFIDENTIAL. WE ONLY ASK FOR YOUR NAME AND EMAIL TO BE ABLE TO SEND YOU THE FULL REPORT OF THE SURVEY.

X1. What is your name?

X2. What is your email?

A4a. In how many countries does the worldwide company have operating sites?

Help:

Include both manufacturing and sales operations.

- 1 country..... ☐ 1
 2 – 5 countries..... ☐ 2
 6 or more countries..... ☐ 3

A5. Does the [company name] in Norway have.....:

Help:

A site is where two or more staff are based permanently. We only seek the number of sites in Norway.

- 1 site..... ☐ 1
 2 – 5 sites..... ☐ 2
 6 or more sites..... ☐ 3

A6. Are you able to answer questions relating to HR issues in?

- All Norwegian operations..... ☐ 1
 A part or division only..... ☐ 2

A7a. What is the total number of employees worldwide by headcount of the ultimate controlling company of which you are part (including Norway)?

_____ (number of employees worldwide)

Help:

By headcount we mean all those who work regularly, but exclude those contract and causal staff who work on an occasional basis.

Please give an approximate number if you do not know the exact numbers.

Appendix 1A

[TICK ONLY ONE BOX BELOW]

- 100 – 499 employees..... ☐ 1
500 – 999 employees..... ☐ 2
1,000 – 4,999 employees..... ☐ 3
5,000 – 29,999 employees..... ☐ 4
30,000 – 59,999 employees ☐ 5
60,000+ employees..... ☐ 6
Don't Know ☐ 9

A8. What is the total number of employees by headcount in the following geographical regions?

Norway
Europe (excluding Norway)
North America
Asia-Pacific
Rest of the world

- Up to 99 employees ☐ 1
100 – 499 employees..... ☐ 2
500 – 999 employees..... ☐ 3
1,000 – 4,999 employees..... ☐ 4
5,000 + employees..... ☐ 5
None ☐ 6
Don't know ☐ 99

A9. Please estimate the approximate number of employees in [COMPANY NAME] in Norway in each of the following core functions.

Number

Research & Development (R&D) _____
Manufacturing Operations _____
Sales and Marketing _____
Customer Service _____
Business Services (finance, IT, payroll, etc)..... _____
Other (Please specify) _____

A10a. When was the worldwide company first established (year)?

[IF RESPONDENT IS UNSURE SEEK APPROXIMATE ANSWER]

_____ (year)

A11a0. What year did it establish its first foreign operation? (Thinking of the first significant investment outside of country of origin – ignoring minor sales presence)

[IF RESPONDENT IS UNSURE SEEK APPROXIMATE ANSWER]

_____ (year)

A11a. What year did the worldwide company first establish in Norway? (Thinking of the first significant investment in Norway – ignoring minor sales presence)

[IF RESPONDENT IS UNSURE SEEK APPROXIMATE ANSWER]

_____ (YEAR)

A11b. Was this through...?

A Greenfield investment ☐ 1

A merger or acquisition..... ☐ 2

Other (please specify) ☐ 3

C9a. How many of the top five management positions in the [Company Name] in Norway are filled by...?

Individuals who previously worked for the company in (pick up country from A3a)

_____ (MIN 1, MAX 5)

None

Don't know ☐ 99

Individuals from other parts of the world-wide company (i.e. outside Norway but not the country of origin – these are sometimes known as ‘third country nationals’)

_____ (MIN 1, MAX 5)

None

Don't know ☐ 99

A16. In which of the following sector(s) is the Norwegian part of the company engaged?

PLEASE STATE ALL THAT APPLY

- Manufacturing – food & beverages, non-metallic minerals, paper, publishing and printing, clothing & footwear..... ☐ 1
- Manufacturing – engineering, computer, electrical & medical equipment... ☐ 2
- Manufacturing – chemical & pharmaceuticals..... ☐ 3
- Services: financial & business..... ☐ 4
- Services: information & communication technology..... ☐ 5
- Construction..... ☐ 6
- Retail & wholesale..... ☐ 7
- Transport & utilities ☐ 8
- Other..... ☐ 9

A12. In what degree (percentage) has the following changed in the worldwide company for the last 3 years? CAN BE BOTH POSITIVE AND NEGATIVE, ONLY APPROX. NUMBERS IS NECESSARY

Number of employees _____ (%)

Sales _____ (%)

H7a. Approximately what percentage of revenues of [COMPANY NAME] in Norway comes from sales abroad?

_____ %

- 1) 0% ☐ 1
- 2) 1-25% ☐ 2
- 3) 26-50% ☐ 3
- 4) 51-75% ☐ 4
- 5) 76-100% ☐ 5
- 6) Don't know..... ☐ 99

H8. Is the worldwide company state or partly state owned?

Yes ☐ 1 No ☐ 2 Don't Know ☐ 99

H9. Is the worldwide company privately owned or are its shares publicly traded?

Privately owned ☐ 1 Publicly traded ☐ 2

SECTION B: WORKFORCE COMPOSITION

Throughout the questionnaire the focus will be on your policies and practices in relation to the following two main groups of staff.

B1. Approximately how many managers are there in the [COMPANY NAME] in Norway?

Help:

We do not want you to include those who simply oversee others, such as supervisors, even if their job title includes the word "manager", such as office manager. Equally, we do want you to include those who fit the definition but may not have manager in their job title.

_____ (number of managers in Norway)

- | | |
|------------------|-----------------------------|
| 0 | <input type="checkbox"/> 1 |
| 1 – 9 | <input type="checkbox"/> 2 |
| 10 – 24 | <input type="checkbox"/> 3 |
| 25 – 49 | <input type="checkbox"/> 4 |
| 50 – 99 | <input type="checkbox"/> 5 |
| 100 – 199 | <input type="checkbox"/> 6 |
| 200 – 249 | <input type="checkbox"/> 7 |
| 250 – 299 | <input type="checkbox"/> 8 |
| 300 – 399 | <input type="checkbox"/> 9 |
| 400 – 499 | <input type="checkbox"/> 10 |
| 500+ | <input type="checkbox"/> 11 |
| Don't Know | <input type="checkbox"/> 99 |

B2. Approximately, how many LOG are there in [company name] in Norway?

Help:

This includes staff who work regularly, but excludes occasional staff. By regularly we mean there is a mutual expectation that the employee works on an ongoing basis for your company

- *The largest non-managerial group of employees whose main terms and conditions are similar.*
- *If there are two or more large-sized groups, prompt for whether the main terms & conditions are similar. If similar, treat both groups together as the LOG, if different; treat the largest group as the LOG.*

- | | |
|---------------------|-----------------------------|
| 0..... | <input type="checkbox"/> 1 |
| 1 – 9..... | <input type="checkbox"/> 2 |
| 10 – 24 | <input type="checkbox"/> 3 |
| 25 – 49 | <input type="checkbox"/> 4 |
| 50 – 99 | <input type="checkbox"/> 5 |
| 100 – 249 | <input type="checkbox"/> 6 |
| 250 – 499 | <input type="checkbox"/> 7 |
| 500 - 749 | <input type="checkbox"/> 8 |
| 750 – 999 | <input type="checkbox"/> 9 |
| 1,000 – 2999 | <input type="checkbox"/> 10 |
| 3,000 – 4,999 | <input type="checkbox"/> 11 |
| 5,000+ | <input type="checkbox"/> 12 |
| Don't Know | <input type="checkbox"/> 99 |

SECTION C. THE HR FUNCTION

C1. For which of the following policy levels do you have any HR responsibilities:

[Multiple codes allowed]

- Global HR policy..... ☐ 1
 Regional HR policy..... ☐ 2
 HR policy in Norway..... ☐ 3
 Other (please specify) _____ ☐ 4

C2. What percentage of the managers spend the majority of their time on HR matters in [Company Name] in Norway?*Help:*

By managers we mean types of managers in according with our definition including the line management. We do not ask for an exact number of managers – but an estimate.

_____ %

C3a. On which, if any, of the following issues is information on [Company Name] in Norway monitored by management outside of Norway?

[TICK ALL THAT APPLY]

- Managerial pay packages..... ☐ 1
 Management career progression..... ☐ 2
 Overall labour costs..... ☐ 3
 Numbers employed (headcount)..... ☐ 4
 Staff turnover..... ☐ 5
 Absenteeism..... ☐ 6
 Labour productivity..... ☐ 7
 Workforce composition by diversity (e.g. gender, ethnicity, disability etc.)..... ☐ 8
 Employee attitude and satisfaction..... ☐ 9
 Other (please specify) _____ ☐ 10
 None of these ☐ 11
 Don't know ☐ 99

C4 from home based version is not relevant for the foreign version

C5. Is there a body within the worldwide company, such as a committee of senior managers, that develops HR policies that apply across countries?

Yes..... ☐ 1 ⇒ Go to C6 No..... ☐ 2 ⇒ Go to C7 Don't Know..... ☐ 8 ⇒ Go to C7

C6. Is there someone from Norway on this body/committee?

Yes..... ☐ 1 No ☐ 2 Don't Know ☐ 8

C7. Are HR managers from different countries brought together in a systematic way?

Yes – on a global basis ☐ 1 Yes – on a regional basis ☐ 2 No ☐ 3 Don't know..... ☐ 99

C8. How frequently does contact between HR managers in different countries take place through any of the following mechanisms:

[CODE ONLY ONE FOR EACH MECHANISM]

	Weekly	Monthly	Quarterly	Annually	Other	Ad hoc	Never
Regular meetings.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
International Conferences.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Task Forces	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Virtual Groups e.g. conference calls.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

C10. I would now like you to think about your company's approach concerning its management of employees. To what extent do you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	N/A	Don't know
There is a worldwide approach covering all global operations.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 8 ..	<input type="checkbox"/> 99
There is a regional approach covering all European operations.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 8 ..	<input type="checkbox"/> 99
The development of a specific approach is left to international product, service or brand based divisions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 8 ..	<input type="checkbox"/> 99
The development of a specific approach is left to national operating companies	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 8 ..	<input type="checkbox"/> 99
The approach is really a mix of the traditions of the different national operating companies.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 8 ..	<input type="checkbox"/> 99
Traditions in the country of origin have an overriding influence on the approach to the management of employees.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 8 ..	<input type="checkbox"/> 99

C11a. Has [COMPANY NAME] in Norway provided any new practices in the following areas that have been taken up elsewhere in the worldwide company:

CODE ONE FOR EACH CATEGORY.

	No	Yes, in Norway	Yes, in major businesses	Yes, taken up globally	Don't Know
Pay and performance management	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Training, development and organisational learning.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Employee involvement and communication	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Employee representation and consultation	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Other (Please specify).....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

C12. How is the performance of the [COMPANY NAME] in Norway relative to competitors?

Poor					Outstanding
<input type="checkbox"/> 1.....	<input type="checkbox"/> 2.....	<input type="checkbox"/> 3.....	<input type="checkbox"/> 4.....	<input type="checkbox"/> 5	

SECTION D. PAY AND PERFORMANCE MANAGEMENT

D1. Is there a system of regular formal appraisal for each of the following groups of employees in [COMPANY NAME] in Norway?

	Yes	No	Don't know
For [LOG Name]	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
For managers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

Help:

By appraisals we mean a system for setting individuals' performance objectives and monitoring performance against past objectives carried out annually or more frequently. If multi-site and situation varies across sites, answer for largest or most important site.

If multi-site and situation varies across sites, answer for largest site. Where practice varies within a group, please answer for the largest number of employees in the group. Code only one for each group

IF NEITHER STAFF GROUP IS CODED 'YES' ⇒ GO TO D7

IF ONLY ONE CODED 'YES' ⇒ GO TO D2

IF BOTH STAFF GROUPS ARE CODED 'YES' ⇒ GO TO D2

D2. Is a 'forced distribution' applied to the results of appraisals for the following employee groups in [COMPANY NAME] in Norway?

	YES	NO
For [LOG Name]	<input type="checkbox"/> 1	<input type="checkbox"/> 2
For managers.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2

Help:

By forced distribution we mean a certain % of employees have to be in a particular performance category or rating, e.g. 10% are poor performers, 70% are reasonable performers, and 20% are top performers

Please include formal and informal policy.

D3. What is the top and bottom percentages of this forced distribution for each of the following employee groups in [COMPANY NAME] in Norway?

For [LOG Name]:	Top		%	Bottom		%
For managers:	Top		%	Bottom		%

Don't know ☐ 99

D6. Is a formal system of '360-degree' feedback used in evaluating performance of any of these groups of employees in [COMPANY NAME] in Norway?

[CODE ONE FOR EACH GROUP]

	Yes	No	Don't know
For [LOG Name]	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
For managers.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

D4. Are the outcomes of performance appraisal used as inputs in decisions on redundancy and redeployment in the [COMPANY NAME] in Norway?

	Yes, as a <u>formal</u> input in decisions	Yes, as an <u>informal</u> input in decisions	No	N/A	Don't know
For LOG	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 99
For managers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 99

D5. Thinking about the managers in the [COMPANY NAME] in Norway, on a scale of 1-5 how important are the following kinds of performance evaluation?

Help:

Where different systems apply in different sites or business units, apply to the system covering the largest number of managers

	Not at all important					Very important					Don't know
Individual <u>quantitative</u> output targets.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 99					
(e.g. financial, numerical)											
Individual <u>qualitative</u> output targets	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 99					
(e.g. completion of a task)											
Group output targets	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 99					
(e.g. for site or business unit)											
'Competences' or personal skills	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 99					
(e.g. leadership or innovation skills)											
Behaviour in relation to corporate 'values'	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 99					

[ONLY ASK D6 IN RELATION TO GROUPS CODED YES AT D1]

D7. Does [Company Name] in Norway offer the following to any employees in each of these groups?

USE SHOWCARD 13

- 1. Approved employee share ownership scheme** is where the organisation establishes a trust which acquires shares on behalf of employees and provides employees with part ownership of the company.
- 2. Profit sharing** refers to rewards given to employees in addition to normal salary and bonuses which are dependent on the levels of profit in the business.
- 3. Share options** is where employees are given the option of buying company shares, often at a reduced rate

	Employee share ownership			Profit Sharing			Share Options		
	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know
For [LOG Name]	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
For managers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

Appendix 1A

D8. Is there variable pay for the following groups in [COMPANY NAME] in Norway?

	Yes	No	Don't Know
For [LOG Name]	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
For managers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

Help:

By variable pay we mean merit pay, performance related pay, performance related bonuses or payment by results.

Where practice varies within a group, please answer for the largest number of employees in the group.

IF 'YES' FOR LOG AT D8, ASK CORRESPONDING PARTS OF D9, IF 'NO', GO TO D10

D9. For [LOG Name] receiving variable pay in [COMPANY NAME] in Norway, how important are each of the following factors in determining variable pay? [CODE ONE FOR EACH GROUP]

Help:

Where practice varies within a group, please answer for the largest number of employees in the group.

	Not at all important	Very important	Don't know
Individual performance	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
Work group performance (e.g. team or departmental performance).....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
Organizational performance (e.g. site, region, company)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

D11. To what extent do [NAME] in Norway have discretion over the determination of the following aspects of pay and performance policy?

[CODE ONE ONLY FOR EACH CATEGORY]

Help:

Where situation varies across sites or business units within Norway, please answer for the primary site or unit.

Aspect of pay and performance policy Use codes 1-5 from N/A

a) Relating pay levels in [NAME] in Norway to market comparators (e.g. aiming to be in top quartile) _____ ☐ 8

[ONLY ASK: OPTION B) if coded 'employee share ownership scheme' (ESO) at D7; Otherwise Use code 8 (NA)]

b) Employee share ownership schemes in [NAME] in Norway _____ ☐ 8

[ONLY ASK: OPTION C) IF CODED YES AT D1 (PERFORMANCE APPRAISAL) FOR GROUPS TICKED, OTHERWISE USE CODE 8 (NA)]

c) Performance appraisal system: For managers _____ ☐ 8

For [LOG Name] _____ ☐ 8

[ONLY ASK: OPTION D) IF CODED YES AT D8 (VARIABLE PAY) FOR WHICHEVER GROUPS TICKED, OTHERWISE USE CODE 8 (NA)]

d) Variable payments scheme: For managers _____ ☐ 8

For [LOG Name] _____ ☐ 8

1	2	3	4	5
The [COMPANY NAME] in Norway has no discretion (must implement policy set by a higher organizational level such as corporate or regional HQ).	The [COMPANY NAME] in Norway has a little discretion.	The [COMPANY NAME] in Norway has some discretion (can develop policy within the guidelines/ framework set by a higher organisational level).	The [COMPANY NAME] in Norway has quite a lot of discretion.	The [COMPANY NAME] in Norway has full discretion (can set own policy).

E. TRAINING, DEVELOPMENT AND ORGANISATIONAL LEARNING

E1. What percentage of the annual pay bill in [COMPANY NAME] in Norway was spent on training and development for all employees over the past 12 months?

%

- | | |
|--------------------------------|----|
| 0% | 1 |
| Up to 1% | 2 |
| Over 1% and less than 4% | 3 |
| Over 4% | 4 |
| Don't Know | 99 |

E2. Thinking of [COMPANY NAME] in Norway is there a formal system of succession planning for senior managers?

- 1 Yes in all operations ☐ 1 ⇒ Go to E3
2 Yes in some operations ☐ 2 ⇒ Go to E3
3 No ☐ 3 ⇒ Go to E4
4 Don't Know ☐ 99 ⇒ Go to E4

E3. Is this system also used in other parts of the worldwide company?

Yes in all operations ☐₁ Yes in some operations.....☐₂ No☐₃ Don't Know.....☐₉₉

E4. Do [COMPANY NAME] in Norway have a management development programme specifically aimed at developing its 'high potentials' or senior management potential?

- 1 Yes in all operations ☐ 1 ⇒ Go to E5
2 Yes in some operations ☐ 2 ⇒ Go to E5
3 No ☐ 3 ⇒ Go to E7
4 Don't Know ☐ 99 ⇒ Go to E7

E5. Is this system also used in other parts of the worldwide company?

[TICK ONE BOX ONLY]

Yes in all operations ☐₁ Yes in some operations..... ☐₂ No ☐₃ Don't Know..... ☐₉₉

E6. How extensively are each of the following techniques used for the development of these managers in [COMPANY NAME] in Norway?

USE SHOWCARD 16				
1	2	3	4	5
Not used at all	A little use	Some use	Used quite extensively	Used very extensively

Technique ...

Use codes 1-5 from
Showcard 16
Enter one code only

Don't
know

NA

Short term International assignments (12 months or less) ... 99.....8

Long term international assignments (more than 12 months) 99 8

Formal global management training 99..... 8

Assessment of performance against a set of global management competencies.....	99	8
--	----	---

Qualifications programme (e.g. MBA, professional qualifications) 99 8

Appendix 1A

E7a. How many expatriates from the company's foreign operations are currently working on long-term assignments (i.e. more than 12 months) in Norway? Please include all types of long-term assignments for any purpose.

Help:

Expatriates in this question refers to employees from operating companies outside Norway who are currently working on assignment in Norway

Parent country nationals..... (number) Don't Know ☐ 9 9

Help:

By parent country nationals we refer to expatriates with same national origin as the parent company

Third country nationals (number) Don't Know ☐ 9 9

Help:

By 'Third-country nationals' we mean employees whose national origin is not the same as the parent company or the host country (in this case Norway).

E8a. How many expatriates from [COMPANY NAME] in Norway are currently working on long-term (i.e. more than 12 months) assignments abroad? Please include all types of long-term assignments for any purpose.

Help:

By expatriates in this question refers to employees of the company's operations in Norway who are currently on assignment in operations of the worldwide company abroad

The parent company headquarters (number) Don't know..... ☐ 9 9 9

Other parts of the worldwide company..... (number) Don't know..... ☐ 9 9 9

E9. Thinking of your policy/approach on training and development for the company in Norway. To what extent do you agree with each of the following statements:

[CODE ONE FOR EACH CATEGORY]

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Don't know
----------------------	----------	----------------------------------	-------	-------------------	---------------

For the [LOG Name] in the [COMPANY NAME] in Norway

On-the-job learning (experience gained on the job) is more valuable than off-the-job classroom training and development ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 9 9

Investment in training is critical to either developing or retaining key skills in this company ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 9 9

For managers in the [COMPANY NAME] in Norway

Our company favours internal promotion over external management recruitment ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 9 9

International experience is a key criterion for career progression at senior levels. ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 9 9

IN THIS SECTION YOU WILL BE ASKED ABOUT THE MECHANISMS YOU USE FOR ORGANISATIONAL LEARNING ON AN INTERNATIONAL LEVEL. BY THIS WE MEAN MECHANISMS USED TO CREATE NEW KNOWLEDGE INVOLVING MANAGERS FROM DIFFERENT COUNTRY OPERATIONS OR TO TRANSFER KNOWLEDGE ACROSS THE INTERNATIONAL ORGANISATION.

E10. Thinking of [COMPANY NAME] in Norway is there a formal policy on organisational learning?

- Yes in all operations ☐ 1 ⇒ Go to E11
 Yes in some operations ☐ 2 ⇒ Go to E11
 No ☐ 3 ⇒ Go to E12
 Don't Know ☐ 99 ⇒ Go to E13

E11. Is this system also used in other parts of the worldwide company?

- Yes in all operations ☐ 1 Yes in some operations ☐ 2 No ☐ 3 Don't Know ☐ 99

[IF ANSWERED "YES" TO E11]

E12. To what extent is the organizational learning policy for the [COMPANY NAME] in Norway and the worldwide company similar?

- Not at all similar ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 99
 Highly similar Don't know

E13. Thinking about managers, do [COMPANY NAME] in Norway use any of the following to facilitate international organisational learning

[TICK ONE BOX FOR EACH ITEM]

- | Type of Information | Yes | No | Don't Know |
|--|----------------------------|----------------------------|-----------------------------|
| Expatriate assignments..... | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 99 |
| International project groups or task forces..... | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 99 |
| International formal committees' | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 99 |
| International informal networks | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 99 |
| Secondments to other organisations internationally
(e.g. to suppliers, customers, universities, private R&D facilities) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 99 |

[ONLY ASK E13 IF MORE THAN ONE 'YES' CODED IN E12. OTHERWISE GO TO E15]

E14. Which of these is the most important international organisational learning mechanism used by managers within [COMPANY NAME] in Norway?

[TICK ONE BOX ONLY]

- Expatriate assignments..... ☐ 1
 International project groups or task forces..... ☐ 2
 International formal committees'

E16. To what extent do [company name] in Norway have discretion over determining the following training and development policies?

Help:

Where the situation varies across sites or business units in Norway, please answer for the most typical situation.

	Use codes 1-5 from Showcard 21 Enter one code only	Don't Know	NA
<i>Policy ...</i>			
1. Overall policy on training and development in the Norwegian operations			<input type="checkbox"/> 99
<input type="checkbox"/> 8			
2. Policy on organisational learning for the Norwegian operations		<input type="checkbox"/> 99	<input type="checkbox"/> 8
3. Policy on succession planning for senior managers in the Norwegian operations			<input type="checkbox"/> 99
<input type="checkbox"/> 8			

USE SHOWCARD 21				
1	2	3	4	5
The [COMPANY NAME] in Norway has no discretion (must implement policy set by a higher organizational level such as corporate or regional HQ).	The [COMPANY NAME] in Norway has a little discretion.	The [COMPANY NAME] in Norway has some discretion (can develop policy within the guidelines/ framework set by a higher organisational level).	The [COMPANY NAME] in Norway has quite a lot of discretion.	The [COMPANY NAME] in Norway has full discretion (can set own policy).

F. EMPLOYEE INVOLVEMENT AND COMMUNICATION

THIS SECTION IS ABOUT POLICIES ON EMPLOYEE INVOLVEMENT AND COMMUNICATION, STARTING WITH THE INVOLVEMENT OF EMPLOYEES IN THE WORK PROCESS.

F1. Could you tell me whether you use the following practices in relation to the LOG in [COMPANY NAME] in Norway?

[CODE ONE ONLY FOR EACH CATEGORY]

<i>Involvement mechanisms</i>	Yes	No	Don't Know
Formally designated teams in which employees have responsibility for organising their work and carrying out a set of tasks	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
Groups where employees discuss issues of quality, production or service delivery such as problem-solving or continuous improvement groups	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

F2. Which of the following most closely corresponds to the pattern of employee involvement in [COMPANY NAME] in Norway?

[USE SHOWCARD 23 - CODE ONE ONLY]

- | | | |
|---|--|-----------------------------|
| 1 | An identical or similar pattern exists across all or most sites..... | <input type="checkbox"/> 1 |
| 2 | All or most sites have involvement systems, but they differ from site to site..... | <input type="checkbox"/> 2 |
| 3 | Some sites have involvement systems while others do not..... | <input type="checkbox"/> 3 |
| 4 | Not applicable (1 site only in Norway)..... | <input type="checkbox"/> 4 |
| 5 | Don't Know | <input type="checkbox"/> 99 |

F3. How important have each of the following been in providing examples of employee involvement that have been taken up in [COMPANY NAME] in Norway?

[CODE ONE ONLY]

	Not drawn on at all	Source of v. important examples
Specific practices elsewhere in the worldwide company.....	<input type="checkbox"/> 1..... <input type="checkbox"/> 2.....	<input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5
Formal model of good practice codified elsewhere in worldwide company	<input type="checkbox"/> 1..... <input type="checkbox"/> 2.....	<input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5
Examples drawn from other firms	<input type="checkbox"/> 1..... <input type="checkbox"/> 2.....	<input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5

F5. Would you say that practices in relation to employee involvement in the worldwide company are:

Very similar across all operations	Yes <input type="checkbox"/> 1	No <input type="checkbox"/> 2.....	Don't Know <input type="checkbox"/> 99
Broadly similar but with some variations	Yes <input type="checkbox"/> 1	No <input type="checkbox"/> 2.....	Don't Know <input type="checkbox"/> 99
Similar to some extent but with substantial variations	Yes <input type="checkbox"/> 1	No <input type="checkbox"/> 2.....	Don't Know <input type="checkbox"/> 99
Fairly diverse	Yes <input type="checkbox"/> 1	No <input type="checkbox"/> 2.....	Don't Know <input type="checkbox"/> 99
Very diverse	Yes <input type="checkbox"/> 1	No <input type="checkbox"/> 2.....	Don't Know <input type="checkbox"/> 99

F6. Does the [company name] regularly use project teams or task forces, embracing employees other than managers, that function across more than one operating unit in Norway?

Yes..... ☐ 1 No..... ☐ 2 NA..... ☐ 8 Don't Know.... ☐ 99

IF F7A = YES ASK F7C; IF NO, N/A OR DK GO TO F7b

F7. Do these groups in Norway also include employees from outside Norway?

Yes..... ☐ 1 No..... ☐ 2 NA..... ☐ 8 Don't Know.... ☐ 99

IF F7C = YES ASK F7D; IF NO GO TO F8

F8. How common is the cross-national structure of these teams?

[TICK ONE ONLY]

	Very rare	Very common
.....	<input type="checkbox"/> 1..... <input type="checkbox"/> 2.....	<input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5

F9a. Do project teams or task forces, embracing employees other than managers that function across more than one operating unit, operate elsewhere in the worldwide company?

Yes..... ☐ 1 No..... ☐ 2 NA..... ☐ 8 Don't Know.... ☐ 9

F10. Which of the following communication mechanisms are regularly used for the LOG within [COMPANY NAME] in Norway?

[CODE ONE FOR EACH CATEGORY]

<i>Communication mechanisms</i>	<i>Yes</i>	<i>No</i>	<i>Don't Know</i>
1. Meetings between senior managers and the whole of the work force	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
2. Meetings between line managers or supervisors and employees (sometimes called briefing groups)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
3. Attitude or opinion surveys	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
4. Suggestion schemes	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
5. Systematic use of management chain to cascade information	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
6. Newsletters or emails	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
7. A company intranet providing information to employees'	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

F11. Which of the following types of information is regularly provided to the LOG within [COMPANY NAME] in Norway?

<i>Type of Information</i>	<i>Yes</i>	<i>No</i>	<i>Don't Know</i>
Financial position of the company.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
Investment plan for the company.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
Staffing plans for the company.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

F12. Which of the following types of information is regularly provided to the LOG within [COMPANY NAME] about the worldwide company?

<i>Type of Information</i>	<i>Yes</i>	<i>No</i>	<i>Don't Know</i>
Financial position of the company.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
Investment plan for the company.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99
Staffing plans for the company.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 99

F13. To what extent does [COMPANY NAME] in Norway have discretion over the determination of the following aspects of employee involvement and communication policy....?

[CODE ONE ONLY FOR EACH CATEGORY].

Help:

Where situation varies across sites or business units outside of Norway please answer for the most typical situation.

<i>Policies relating to ...</i>	<i>Use codes 1-5 from</i>	<i>Don't Know</i>	<i>Not Applicable</i>
a) Involvement of employees in work process, e.g. team work or problem-solving groups.....	<input type="checkbox"/> 99.....	<input type="checkbox"/> 8
b) Attitude or opinion surveys	<input type="checkbox"/> 99.....	<input type="checkbox"/> 8
c) Suggestion schemes	<input type="checkbox"/> 99.....	<input type="checkbox"/> 8
d) Provision of information to employees'	<input type="checkbox"/> 99.....	<input type="checkbox"/> 8

Appendix 1A

USE SHOWCARD 26				
1	2	3	4	5
<i>[COMPANY NAME]</i> in Norway has no discretion (must implement policy set by a higher organisational level such as corporate or regional HQ).	<i>[COMPANY NAME]</i> in Norway has a little discretion.	<i>[COMPANY NAME]</i> in Norway has some discretion (can develop policy within the guidelines/framework set by a higher organisational level).	<i>[COMPANY NAME]</i> in Norway has quite a lot of discretion.	<i>[COMPANY NAME]</i> in Norway has full discretion (can set own policy).

SECTION G. EMPLOYEE REPRESENTATION AND CONSULTATION

IN THIS SECTION YOU WILL BE ASKED QUESTIONS ABOUT EMPLOYEE REPRESENTATION AND CONSULTATION.

G1. Thinking of the LOG in the [COMPANY NAME] in Norway, are trade unions recognised for the purposes of collective employee representation at ... ?

[CODE ONE ONLY]

- | | | | |
|---|---|--------------------------|---|
| 1 | No sites in the Norwegian operations..... | <input type="checkbox"/> | 1 |
| 2 | All sites in the Norwegian operations..... | <input type="checkbox"/> | 2 |
| 3 | Most sites in the Norwegian operations..... | <input type="checkbox"/> | 3 |
| 4 | Some sites in the Norwegian operations..... | <input type="checkbox"/> | 4 |
| 5 | The company's single Norwegian site | <input type="checkbox"/> | 5 |

ASK G2 IF CODE 2,3, 4 OR 5 AT G1 IF CODE 1 AT G1 GO TO G3

G2. Are there any non-union based structure(s) of collective employee representation used?

[TICK ALL THAT APPLY]

- | | | | |
|---|---|--------------------------|---|
| 1 | Yes, at sites where there is <u>no</u> trade union recognition..... | <input type="checkbox"/> | 1 |
| 2 | Yes, at sites where there is <u>also</u> trade union recognition..... | <input type="checkbox"/> | 2 |
| 3 | No | <input type="checkbox"/> | 3 |

G3. How would you describe the policy of management towards union recognition within [COMPANY NAME] in Norway?

[CODE ONE ONLY]

- | | | | |
|----|---|--------------------------|---|
| 1. | In favour of union recognition | <input type="checkbox"/> | 1 |
| 2. | Not in favour of union recognition..... | <input type="checkbox"/> | 2 |
| 3. | Neutral towards union recognition | <input type="checkbox"/> | 3 |

G4 from home based version not relevant

G5. Is there collective bargaining with trade unions over pay and major conditions (e.g. working time) at any of the following levels covering all or some of the LOG within the [COMPANY NAME] in Norway...?

[TICK ALL THAT APPLY, MULTI-CODE ONLY ALLOWABLE FOR CODES 2, 4, AND 5]

- | | | | |
|----|--|--------------------------|---|
| 1. | At Norwegian company level, covering all sites..... | <input type="checkbox"/> | 1 |
| 2. | At the company's single Norwegian site..... | <input type="checkbox"/> | 2 |
| 3. | Covering more than one, but not all Norwegian sites..... | <input type="checkbox"/> | 3 |
| 4. | At individual site level..... | <input type="checkbox"/> | 4 |
| 5. | At industry level, covering more than one employer..... | <input type="checkbox"/> | 5 |
| 6. | There is no collective bargaining over pay..... | <input type="checkbox"/> | 6 |

G6. Thinking about trade unions in the [COMPANY NAME] in Norway, what approach do the trade union representatives generally adopt?

[CODE ONE ONLY]

Appendix 1A

- 1 A cooperative approach..... ☐ 1
 2 An adversarial approach..... ☐ 2
 3 It depends on the issue..... ☐ 3
 4 Don't Know..... ☐ 99

ASK G7 IF CODED 2, 3, 4 OR 5 AT G1 (I.E. UNIONS RECOGNISED AT LEAST AT ONE SITE)

G7. Using this rating scale, which best describes the policy towards working with unions on the following matters relating to the LOG:

[CODE ONE ONLY]

1	2	2	4	5
Management decides on its own	...	Management consults union representatives	...	Management decides jointly with union representatives

Alternative issues: 1 2 3 4 5 Don't know

1. Work organisation ☐ 1..... ☐ 2..... ☐ 3 ☐ 4 ☐ 5 ☐ 99
 2. Sub-contracting and outsourcing ☐ 1..... ☐ 2..... ☐ 3 ☐ 4 ☐ 5 ☐ 99
 3. Variable payments schemes..... ☐ 1..... ☐ 2..... ☐ 3 ☐ 4 ☐ 5 ☐ 99
 4. In-work training/ upgrading skills ☐ 1..... ☐ 2..... ☐ 3 ☐ 4 ☐ 5 ☐ 99
 5. Direct employee involvement schemes ☐ 1..... ☐ 2..... ☐ 3 ☐ 4 ☐ 5 ☐ 99

G8. Using this rating scale, to what extent does the [COMPANY NAME] in Norway have discretion over setting the following elements of policy trade unions?

[CODE ONE ONLY]

Help:

Please think about a level above the company in Norway.

The higher level may be e.g. an international business headquarters, a European headquarters (in Norway or elsewhere), or Global HQ.

Where situation varies across sites or business units within Norway, answer for the primary site or unit.

	Norwegian/Norwegian operations have no discretion (must implement policy set by a higher organizational level such as corporate or regional HQ).	Norwegian/Norwegian operations have a little discretion.	Norwegian/Norwegian operations have some discretion (can develop policy within the guidelines/framework set by a higher organisational level).	Norwegian/Norwegian operations have quite a lot of discretion.	Norwegian/Norwegian operations have full discretion (can set own policy).	Don't know
	1	2	3	4	5	99
Union recognition						
Scope of union involvement in decision-making						

G9. Using the same scale, to what extent does [the [COMPANY NAME] in Norway have discretion over determining employee consultation policy?

[CODE ONE ONLY]

Help:

Policy on employee consultation includes how to comply with domestic legislative requirements, balance between direct and indirect employee consultation etc.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ Don't know 9 9

G10 and G11 from D/N home based version not to be covered in the foreign version

G12. Are regular meetings held between management and representatives of employees at this level in [COMPANY NAME] in Norway for the purpose of information provision and consultation?

Help:

by "regular" we mean: more than once a year

by "this level" we mean that for example Norwegian HQ calls in meetings with employee representatives from all the units in Norway

Yes ☐ 1 No ☐ 2 Don't Know ☐ 99

ASK G13 IF YES AT G12 [IF NO GO TO G14]

G13. Do these meetings cover ... ?

[CODE ONE ONLY]

- | | | |
|---|---|----------------------------|
| 1 | All employees under a single arrangement | <input type="checkbox"/> |
| 1 | | |
| 2 | All employees, but with different arrangements for different groups | <input type="checkbox"/> |
| 2 | | |
| 3 | Some groups of employees under a single arrangement..... | <input type="checkbox"/> |
| 3 | | |
| 4 | Some groups of employees, but with different arrangements for different groups..... | <input type="checkbox"/> |
| 4 | | |
| 5 | Other | <input type="checkbox"/> 5 |

G14. Which of the following statements best describes management's relative emphasis in [COMPANY NAME] in Norway on mechanisms for communicating and consulting with employees?

[ONLY ONE ALTERNATIVE?]

- | | | |
|----|--|----------------------------|
| 1. | Emphasis on direct communication and consultation..... | <input type="checkbox"/> 1 |
| 2. | Emphasis on indirect communication and consultation
(e.g. through joint consultative committee or company council)..... | <input type="checkbox"/> 2 |
| 3. | Equivalent emphasis on direct and indirect communication and consultation | <input type="checkbox"/> 3 |

G17. Over the past 3 years, has the EU Directive on Information and Consultation prompted any changes in arrangements for employee consultation in Norway?

Yes ☐ 1 No ☐ 2 Don't Know ☐ 99

G18. Is there a European Works Council (EWC) or similar European-level structure which covers [COMPANY NAME] in Norway?

Yes $\square_1 \Rightarrow$ Go to G19 No $\square_2 \Rightarrow$ Go to H1 Don't Know $\square_{99} \Rightarrow$ Go to H1

G19. Which of the following statements best describes the overall nature of the European Works Council in Norway?

- | | | |
|---|---|-----------------------------|
| 1 | Management provides minimal information required for compliance;
there is little or no dialogue with employee representatives over issues;
and no impact on decision outcomes | <input type="checkbox"/> 1 |
| 2 | Management provides information slightly beyond that required for compliance | <input type="checkbox"/> 2 |
| 3 | Management provides information somewhat beyond that required for compliance;
there is a substantive dialogue with employee representatives on a limited range of issues;
and a limited impact on decision outcomes | <input type="checkbox"/> 3 |
| 4 | Management provides information considerably beyond that required for compliance | <input type="checkbox"/> 4 |
| 5 | Management provides information far beyond that required for compliance;
there is substantive dialogue with employee representatives over a wide range of issues;
and an extensive impact on decision outcomes | <input type="checkbox"/> 5 |
| 6 | Don't Know | <input type="checkbox"/> 99 |

G20. Do you receive information about the activity and meetings of the EWC ... ?

[CODE ONE ONLY]

1. Systematically at the time of EWC meetings..... ☐ 1
2. Periodically, on an 'as necessary' basis ☐ 2
3. Little or no information about the EWC received..... ☐ 3

Section H: Company Background

A13. How is the overall performance of the [COMPANY NAME] in Norway?

Poor ☐ 1..... ☐ 2..... ☐ 3..... ☐ 4..... Outstanding ☐ 5

H1. Which of the following statements best describes the [COMPANY NAME] in Norway?

The company produces...

- A single product or service that accounts for more than 90% of sales
A number of products and services but one of these accounts for between 70% and 90% of sales
A number of products and services but no single one of these accounts for more than 70% of sales
A range of unrelated products and services
Don't know

H2. Which of the following statements best describes the worldwide operations?

The worldwide company produces...

- A single product or service that accounts for more than 90% of sales
A number of products and services but one of these accounts for between 70% and 90% of sales
A number of products and services but no single one of these accounts for more than 70% of sales
A range of unrelated products and services
Don't know

H3. Is the worldwide company's most important product, service or brand (or group of products, services or brands)....?

[CODE ONE ONLY]

Help:

With 'most important' we want you to think of the product, service or brand that generates the most revenue.

- 1) Adapted significantly to national markets ☐ 1
- 2) Adapted to different regions of the world but standardised within them ☐ 2
- 3) Standardised globally ☐ 3
- 4) Don't know ☐ 99

H4. Are any of the components, products and services of [Company Name] in Norway produced for operation of the worldwide company based outside Norway?

- 1. Yes – all..... ☐ 1
- 2. Yes – some but not all..... ☐ 2
- 3. No – none..... ☐ 3
- 4. Don't know..... ☐ 99

H5. Do other parts of the worldwide company supply components, products or services to [company name] in Norway?

- 1. Yes..... ☐ 1
- 2. No..... ☐ 2
- 3. Don't know..... ☐ 99

H6a. Please rate the following series of statements about the role of the [company name] in Norway by using a scale of 1 to 5 where 1 is 'strongly disagree' and 5 is 'strongly agree'.

[CODE ONE ONLY.]

- 1 = strongly disagree
- 2 = disagree
- 3 = neither agree nor disagree
- 4 = agree
- 5 = strongly agree

(a) The [company name] in Norway has international responsibility for one or more products or services on behalf of the worldwide company

☐ 1..... ☐ 2..... ☐ 3..... ☐ 4..... ☐ 5

(b) Significant expertise in R&D within the worldwide company is generated in the operations of [company name] in Norway.

☐ 1..... ☐ 2..... ☐ 3..... ☐ 4..... ☐ 5

H10a. How important is [company name] in Norway to the global performance of the parent company?

- 1) Not at all important ☐ 1
- 2) Of little importance ☐ 2
- 3) Somewhat important ☐ 3
- 4) Important ☐ 4
- 5) Very important ☐ 5
- 6) Don't know..... ☐ 9

H11a. Has this level of importance changed over the past five years?

- 1) Significantly decreased ☐ 1
 2) Slightly decreased ☐ 2
 3) Stayed about the same ☐ 3
 4) Slightly increased ☐ 4
 5) Significantly increased ☐ 5
 6) Don't know..... ☐ 9

H12. How would you compare performance of the [Company Name] in Norway over the past three years with that of other competitors in your sector?

- | | Poor | | Outstanding |
|---|---------------------------------|---------------------------------|--|
| 1. Quality of products/services | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 2. Development of new products/services | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 3. Profit generation | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 4. Turnover | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 5. Market share | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 6. Ability to recruit essential employees | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 7. Ability to retain essential employees | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 8. Customer/client satisfaction | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 9. Manager-employees relations | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |
| 10. General employee relations | <input type="checkbox"/> 1..... | <input type="checkbox"/> 2..... | <input type="checkbox"/> 3..... <input type="checkbox"/> 4..... <input type="checkbox"/> 5 |

H13. Please rank the importance of the following factors in influencing decisions on new investments or new mandates for your [COMPANY NAME] in Norway? With 1 being the most important factor and 7 the least important factor.

- Rank
ENTER ONE NUMBER (FROM 1 TO 7) ON EACH LINE.
- Labour Availability..... _____
- Labour costs _____
- The industrial relations climate _____
- General infrastructure (e.g. transportation) _____
- Overall operating costs _____
- The capacity of the [COMPANY NAME] in Norway to innovate in the development of goods, services and processes..... _____
- Financial incentives (including the corporate tax rate) _____

Thank you very much for taking the time to participate in this study.

Appendix 1B: Mokken Scale

Measure of international social learning structures and Mokken scale

The measure of transnational social learning structures (TSLs), the dependent variable, is based on four types measures based on the following question:

“Thinking about managers, do [company name] in [country] use any of the following to facilitate international organizational learning?”

- Expatriate assignments
- International project groups or task forces
- International formal committees
- International informal networks

Each item is dichotomous, where 1 = Yes, when using the mechanism.

Since the items have binary responses and therefore give us dichotomous variables, regular measures like the Cronbach's alpha are not sufficient as a reliability measure of the latent construct TSLs. An option is to use the Mokken scale (Mokken, 1971), which is a generalization of both the Guttman scale and classical test theory (Gooderham et al., 1999). Mokken scaling relates to Item Response Theory (IRT), where Mokken scaling is a unidimensional scaling developed in item response theory and is a probabilistic generalization of the traditional Guttman scale. The Guttman scale is used when the assumption is that a set of binary items are theoretical interpretable as measures representing some underlying trait or ability, as for example TSLs in this case. A Mokken Scale comprises both the idea of cumulativeness inherent in Guttman's approach, but still allows for nonperfect response patterns. If compared to classical test theory the Cronbach's alpha is central in evaluating reliability, but its assumption of unidimensionality may only be tested with procedures such as factor analysis. Since we here are dealing with a dichotomous scale the assumption of interval scale items in factor analysis is not fulfilled. When using dichotomous items, as 0-1, in factor analysis the risk of skewed distribution increases. The Mokken scale therefore attempts to develop a set of not too restrictive assumptions and an internal scaling criterion that ensures a unidimensional scale (Gooderham et al., 1999).

The analog to reliability coefficient (Cronbach's alpha) in Mokken scaling is Loevinger's H coefficient. The H coefficient can be calculated for each item and for the total scale. The H coefficient is 1 minus the proportion of observed Guttman errors to the expected number of

Appendix 1B

Guttman errors that would result by chance alone (Lizardo, 2006). In a perfect Guttman scalogram $H=1$. The H coefficient gives

an indication on whether the items have enough in common to explain one underlying latent construct (TSLS).

Common rules of thumb for the classical reliability coefficient is that it has to be at least 0.7 or 0.6 for valid inferences about groups or persons, and even stronger in cases where one is trying to draw conclusions on personality traits (Sijtsma & Molenaar, 2002). According to Mokken (1971) a scale is considered weak if $0.3 \leq H < 0.4$ for the total item set, medium when $0.4 \leq H < 0.5$ and strong if $H \geq 0.5$. This means that if H values lies between 0 and 0.3 then the items would not have enough in common to trust the ordering of respondents by total score to accurately reflect an ordering on a meaningful unidimensional latent trait (here TSLS).

The mokken scale has medium strength with 0.43. The Mokken analysis was conducted using the msp/loevh function in Stata. The following table gives the result for the four items included in TSLS:

Item	Observed Guttman errors	Expected Guttman errors	Loevinger H coefficient	z-statistic
Expatriate assignments	757	1172.58	0.35442	10.8679***
International project groups or task forces	469	1058.39	0.55688	17.4580 ***
International formal committees	697	1231.99	0.43425	14.1158 ***
International informal networks	657	1090.34	0.39744	12.6701***
Scale	1290	2276.66	0.43338	19.3346***

***H0: $H_j \leq 0$, p-value = 0.00000

N=631

Cronbachs alpha = 0,648

Appendix C: Representativeness of the National Surveys

			UK	Spain	Denmark		Norway	
			%	%	number	%	number	%
Sector	Manufact	Population	46	45	188	45	80	27
		Achieved Sample	50	37	48	43	24	32
	Services	Population	47	46	138	33	107	37
		Achieved Sample	43	53	32	29	20	27
	Other Production	Population	7	9	91	22	104	36
		Achieved Sample	7	10	31	28	30	41
Country of Origin	Domestic	Population	18	18	113	27	82	28
		Achieved Sample	15	25	30	27	29	39
	North American	Population	38	21	60	14	38	13
		Achieved Sample	41	28	17	15	7	10
	European	Population	30	57	226	54	164	56
		Achieved Sample	31	42	58	52	37	50
	East Asia	Population	8	4	18	4	7	3
		Achieved Sample	8					
Size	Rest of World	Population	6	5	6	5	1	1
		Achieved Sample	6					
	100-499	Population	46	61	246	59	150	52
		Achieved Sample	42	35	64	58	28	38
	500-999	Population	18	15	79	19	59	20
		Achieved Sample	18	18	22	20	18	24
	1000-4999	Population	27	18	75	18	70	24
		Achieved Sample	32	34	21	19	23	31
	5000+	Population	9	6	17	4	12	4
		Achieved Sample	9	13	4	4	5	7

Denmark: Population: 417 (304 foreign and 113 Danish). Sample: 111 (81 foreign and 30 Danish)

Norway: Population 291 (209 foreign and 82 Norwegian). Sample: 74 (45 foreign and 29 Norwegian)

Appendix 2A

Survey questionnaire Disciplinary networks

STATOILHYDRO FAGNETTVERK

startinfo - info

This is a discipline network survey which is part of a research project on the StatoilHydro merger.

gender - Gender

Please specify your gender

- ☐ Male
☐ Female

age - Age group

Which age group are you in?

- ☐ Under 25 years old
☐ 25-35 years old
☐ 36-45 years old
☐ 46-57 years old
☐ 58 years old and older

organisationalEntity - Organisational Entity

Organisational entity in StatoilHydro

- ☐ EPN
☐ INT
☐ M&M
☐ NG
☐ TNE
☐ PRO
☐ GBS
☐ Corporate

employmentRelationship - Employment relationship

Employment relationship

- ☐ StatoilHydro employee (1)
☐ Hired personnel (2)

CONDITION	f('employmentRelationship') == '1'	
	true	false
	Question employmentLength(Employment length)	

employmentLength - Employment length

How long have you been a StatoilHydro employee, including period as a Statoil or Hydro employee?

- ☐ Less than 3 years

- ☐ 3-10 years
- ☐ More than 10 years

companyPreMerger - Company pre merger

Which company did you work for prior to the merger (1 October 2007)?

- ☐ Hydro
- ☐ Statoil
- ☐ Other

END || Condition f('employmentRelationship') == '1'

currentworkLocation - Current work location

Current work location

- ☐ Norway
- ☐ Europe, outside Norway
- ☐ Africa
- ☐ North America
- ☐ South America
- ☐ Asia
- ☐ Australia

i34 - info

Discipline networks (technical and HSE).

diciplineNetwork - Which network

To which discipline network do you feel the greatest sense of affiliation?

Network leaders: Please do not answer related to the network you are responsible for. Your answers should be related to another network to which you are affiliated.

- ☐ Drilling and well technology (header1)
- ☐ 1 Borehole stability and drilling practice (1)
- ☐ 2 Completion technology (2)
- ☐ 3 Directional drilling and well positioning (3)
- ☐ 4 Drilling and well operations (4)
- ☐ 5 Drilling facilities (5)
- ☐ 6 Drilling technology (6)
- ☐ 7 Fluids (7)
- ☐ 8 Intervention technology (8)
- ☐ 9 Through tubing drilling and completion (9)
- ☐ 10 Well integrity (10)
- ☐ 11 Well intervention (11)
- ☐ 12 Well systems and subsea well intervention (12)
- ☐ 13 Work processes and integrated operations (13)

- ☐ Exploration and petroleum technology: (Header2)
- ☐ 14 Advanced recovery methods (14)
- ☐ 15 Advanced well optimisation (15)
- ☐ 16 Carbonates (16)
- ☐ 17 Cased hole logging and downhole monitoring (17)
- ☐ 18 Core analysis (18)

- 19 Data management (19)
- 20 Drainage strategy (20)
- 21 Early phase (21)
- 22 Early phase reservoir technology (22)
- 23 Fluid and PVT (23)
- 24 Gas field development (24)
- 25 Geo operations (25)
- 26 Geomechanics (26)
- 27 Geophysical interpretation analysis (27)
- 28 Geophysical petroleum technology (28)
- 29 Heavy oil recovery (29)
- 30 Petroleum systems (30)
- 31 Petrophysics (31)
- 32 Play and prospect analysis (32)
- 33 Production chemistry (33)
- 34 Production optimisation and monitoring (34)
- 34 Reservoir geology and geomodelling (35)
- 36 Reservoir simulation (36)
- 37 Sand management (37)
- 38 Sand control and Fracturing (38)
- 39 Sedimentology and sequence stratigraphy (39)
- 40 Seismic acquisition, processing and imaging (40)
- 41 Special geophysical methods (41)
- 42 Structural geology (42)
- 43 Uncertainty analysis (43)
- 44 Water management (44)
- 45 Well and network hydraulics (45)
- 46 Well chemistry and stimulation (46)
- 47 Well productivity (47)
- 48 Well testing (48)

- Health, safety and environment: (header3)
- 49 Accidents investigation (49)
- 50 Analyses and statistics (50)
- 51 Authority relations (51)
- 52 Emergency preparedness (52)
- 53 Environmental network onshore facilities (53)
- 54 Environmental risk (54)
- 55 Environmental supervision (55)
- 56 Environmental technology (56)
- 57 Ergonomics - human factors (57)
- 58 Group security (58)
- 59 HSE management in projects (59)
- 60 Impact assessment (60)
- 61 Occupational hygiene (61)
- 62 Offshore health services (62)
- 63 Psychosocial working environment (63)
- 64 Psychosocial working environment (64)
- 65 Risk and emergency preparedness analyses (65)
- 66 Safety technology offshore (66)
- 67 Safety technology onshore (67)
- 68 Safety technology projects (68)

- Marine technology: (header4)
- 69 Corrosion (69)
- 70 Gas quality (70)
- 71 Dynamic risers (71)
- 72 Geo hazards (72)
- 73 Life cycle information (73)
- 74 Manned sea operations (diving) (74)
- 75 Mapping and geographic information (75)
- 76 Marine operations (76)
- 77 Metallic materials and welding (77)
- 78 Multiphase flow (78)
- 79 Multiphase metering (79)
- 80 Offshore pipeline construction (80)
- 81 Onshore pipelines (81)
- 82 Pipeline technology (82)
- 83 Pipeline commissioning (83)
- 84 Pipeline design (84)
- 85 Pipeline operations (85)
- 86 Pipeline tie-in and repair (86)
- 87 Platform technology (87)
- 88 Structural analysis (88)
- 89 Subsea control systems (89)
- 90 Subsea electrical power systems (90)
- 91 Subsea interventions (91)
- 92 Subsea operations & maintenance (92)
- 93 Subsea processing (93)
- 94 Subsea production operations (94)
- 95 Subsea production systems (95)
- 96 Subsea structures & manifolds (96)
- 97 Subsea umbilical & power cable (97)
- 98 Subsea valves (98)
- 99 Surface treatment and polymers (99)
- 100 Transport analysis (100)
- 101 Transport system design (101)

- Operation, maintenance and modifications: (header5)
- 102 Automation (102)
- 103 Civil and structures (103)
- 104 Cranes and lifting operations (104)
- 105 Electrotechnology (105)
- 106 Energy systems (106)
- 107 Facility layout (107)
- 108 Field allocation (108)
- 109 Fiscal metering (109)
- 110 Gas conversion and gasification (110)
- 111 Gas processing (111)
- 112 Gas production systems (112)
- 113 HVAC (113)
- 114 Inspection (114)
- 115 Integrated operations OMM (115)
- 116 LNG technology (116)
- 117 Maintenance management (117)
- 118 Modifications (118)
- 119 Piping/valves (119)

Appendix 2A

- ☐ 120 Planning OMM (120)
- ☐ 121 Portable water systems (121)
- ☐ 122 Power plants and energy systems (122)
- ☐ 123 Process cleaning technology (123)
- ☐ 124 Process safety (124)
- ☐ 125 Production chemicals (125)
- ☐ 126 Production separation systems (126)
- ☐ 127 Rotating equipment downstream (127)
- ☐ 128 Rotating equipment upstream (128)
- ☐ 129 Static mechanical equipment (129)
- ☐ 130 Technical information (130)
- ☐ 131 Telecommunication (131)

numberOfNetworksConnectedTo - Number of networks connected to

Looking at the list of discipline networks, how many of them are you a member of?

- ☐ 0
- ☐ 1
- ☐ 2-3
- ☐ 4-5
- ☐ 6 or more

CONDITION	f('numberOfNetworksConnectedTo') == '1'	
	true	false
	Question ()	

STOP	Screened – info screened	
	<i>since you are not a member of any of the discipline networks you do not need to proceed this survey. Thank you for your attention. You may close this window.</i>	

END	Condition f('numberOfNetworksConnectedTo') == '1'	

i10 - info

Answer the questions below with reference to network "^{f("disciplineNetwork").valueLabel()}".

howLongInNetwork - How long participated in this network?

How long have you participated in this discipline network?

- ☐ 0 - 1 year
- ☐ 1 - 2 years
- ☐ 2 - 5 years
- ☐ More than 5 years

networkExperience - Experience of participation in corresponding networks

In total, how much experience do you have of participation in corresponding discipline networks?

- ☐ 0 - 1 year
☐ 1 - 2 years
☐ 2 - 5 years
☐ More than 5 years

i13 - info

Please state your opinion about some statements about various aspects of your work situation. In some of the following statements the expression 'my entity' is used. By entity is meant the department managed by your immediate line manager.

whyJoinedNetwork - Why joined network

Why did you join this discipline network?

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
To be able to do my job in a good professional manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To keep professionally up to date	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The discipline network manager invited me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My line manager encouraged me to join	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to take part in the exchange of experience and sharing of knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To meet others in the company working in the same discipline area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

opinionOfStatements - Your opinion

What is your opinion of the following statements about your discipline network?

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
The discipline network places great emphasis on best practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The discipline network offers varied activities in which to participate (meetings, conferences, workshops, courses)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the discipline network, there is a great deal of contact across entity boundaries in the company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The members of the discipline network share the same view about the	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
professional challenges in the company							
The discipline network is useful in terms of keeping abreast of ongoing activities and initiatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get on well with many people in the discipline network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My line manager believes it is important for me to participate in the discipline network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

opinionYourRole

What is your opinion of the following statements about your role in the discipline network?

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
I suggest relevant topics for meetings to the discipline manager (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I give presentations at network management meetings (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I send links to interesting articles/reports etc. to my discipline network manager (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am active as regards sharing experience with people in other entities (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sum up the most important points from the discipline network meetings for my manager/colleagues in my entity (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

opinionParticipation - Results of your participation

What is your opinion of the following statements about the results of your participation in the discipline network?

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
Has led to concrete improvements in the way we solve tasks in my entity (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has resulted in more speedy solutions to work tasks (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has helped me build up personal networks in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
the company (3)							
Has led to a greater degree of compliance with governing documents in my entity (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has been very useful for my own personal professional development (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has resulted in me making contact with employees in overseas offices (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

opinionNetworkRun - Opinion on how network is run

What is your opinion of the following statements about the way your discipline network is run?

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
The network management is good at stimulating discipline-related discussions (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The network management sends out notice of meeting times and agendas for the discipline network meetings in due time (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The network management is good at passing on the experience and knowledge of the participants to the rest of the discipline network (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The network management is good at communicating relevant discipline information between meetings (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The network management is good at communicating and disseminating best practice (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The network management is good at communicating recommended training/conferences to the discipline network (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

attendedNetworkMeetings - Attended network meetings 2008

Have you attended discipline network meetings/gatherings in 2008

☐ Yes

☐ No

noNetworkMeetings - Why no network meetings

Why not?

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
There have not been any discipline network meetings/gatherings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prioritised other meetings/activities that coincided with the discipline network meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am too busy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The invitation arrived a bit too late	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The line manager did not agree that I should give priority to it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was too far to travel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not see any benefits to me personally in participating in discipline network meetings/gatherings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

i33 - info

Communication in the period between discipline network meetings.

commBetweenMeetings - Communication between meetings

How important are the following forms of communication for the sharing of knowledge in the discipline network?

	Completely unimportant (1)	Unimportant (2)	Of little importance (3)	Slightly important (4)	Important (5)	Very important (6)	Not relevant (na)
Discipline network site on the intranet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Team site for the discipline network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-mails from the network manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-mailing other discipline network participants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Telephone conversations with other members of the discipline network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meetings with other members of the discipline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Completely unimportant (1)	Unimportant (2)	Of little importance (3)	Slightly important (4)	Important (5)	Very important (6)	Not relevant (na)
network							

commHowImprove - How improve communication

In what way could communication and networking between network meetings/gatherings be improved?

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
Wiki and other social software as social networking tools, sharing of bookmarks etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better opportunities to ask questions about and receive answers to discipline-related questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better opportunities to receive information about the main points from meetings in the form of podcasts etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

i24 - info

In the following, please respond to some statements about the work situation in your entity. By entity is meant the department managed by your immediate line manager.

entity - Meaning of entity

	Completely disagree (1)	Disagree (2)	Slightly disagree (3)	Agree slightly (4)	Agree (5)	Completely agree (6)	Not relevant (na)
In the past year, professional advice from persons in other entities has resulted in improvements in the way we carry out the work in our entity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our entity is run by a manager who is capable of implementing changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

offerAdvise - Offer advice

How often do you offer professional advice to people in other entities? (tick one of the alternatives)

- ☐ Daily
☐ Several times a week
☐ Weekly
☐ At least once a month
☐ A few times a year
☐ Rarely or never

offeredAdvise - Offered advice

How often are you offered professional advice from people in other entities? (tick one of the alternatives)

Appendix 2A

- ☐ Daily
- ☐ Several times a week
- ☐ Weekly
- ☐ At least once a month
- ☐ A few times a year
- ☐ Rarely or never

toolsContribute - Tools contribute

To what extent do the following tools contribute to the exchange of experience/learning between entities in StatoilHydro today?

	To a very small extent 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	To a very large extent 6 (6)	Not relevant (na)
Personnel rotation (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short-term exchange of personnel (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peer Assist (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality assurance (QA)/Quality control (QC) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discipline networks (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal networks (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discipline network site on the intranet (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good examples (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competence-raising courses (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal workshops/seminars (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reports/articles (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

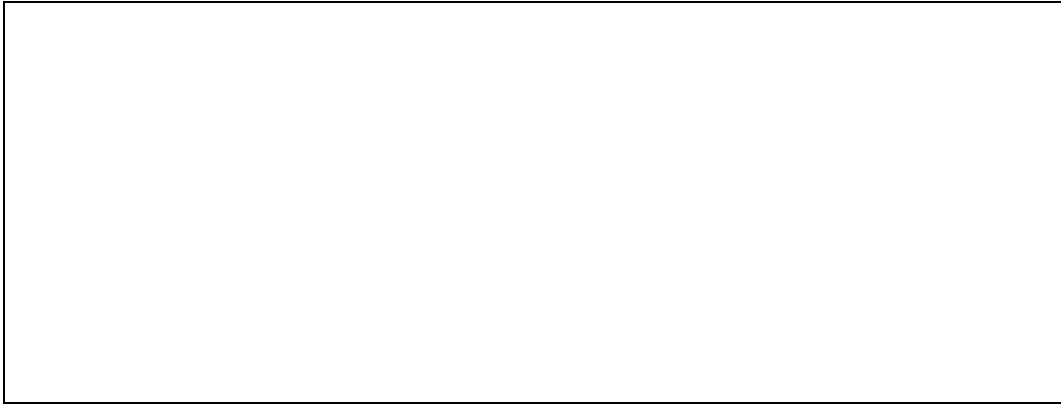
toolsFacilitate - Tools facilitate

To what extent do the following tools have the potential to facilitate the exchange of experience/learning between entities in StatoilHydro?

	To a very small extent 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	To a very large extent 6 (6)	Not relevant (na)
Personnel rotation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short-term exchange of personnel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peer Assist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality assurance (QA)/Quality control (QC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discipline networks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal networks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discipline network site on the intranet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good examples	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competence-raising courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal workshops/seminars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reports/articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

comments - Comments

If you think that this survey has failed to address any important issues, please use the comments field below:



STOP || **Complete –**
You have now finished the survey and the results have been submitted. Thank you for your time and valuable input. You may close this window.

Appendix 2B – Invariance testing

When applying invariance testing, it is not sufficient that each group separately meets the criteria for reliability and construct validity for comparison; the measurement structure must also be equivalent (invariant), albeit not perfectly (Byrne et al., 1989). The invariance of the parameter matrices is tested for invariance by constraining cross-group equality of these matrices. The testing is done in a stepwise approach where each step constrains a particular matrix to be equal across all groups. Each restricted model is nested within a less restricted one. The models can then be statistically compared using the difference in the chi-square statistics and degrees of freedom (Steinmetz et al., 2009).

Invariance testing is conducted using χ^2 difference testing, where insignificant results indicate no difference between the groups. Test of invariance can likewise be tested by comparing key relative fit indices. Under conditions with very small or large samples, the researcher may rely more on changes in key relative fit indices such as CFI (Hair et al., 2006). In cases where the fit indices are used to evaluate invariance, differences of 0.01 or higher in CFI indicate that the models are not invariant (Milfont & Fischer, 2010); or, as Cheung & Rensvold (2002), ΔCFI is smaller than or equal to -0.01 indicates that the null hypothesis of invariance should not be rejected. Smaller RMSEA and higher CFI indicate a better fit, hence invariance (Steenkamp & Baumgartner, 1998). Since the analysis uses the estimator for non-normal data (MLM/MLR), regular indifference testing on χ^2 is not possible. Therefore, the invariance testing uses Chi-Square difference testing by Satorra-Bentler (Byrne, 2012). The test statistic is the Satorra-Bentler scaled (mean-adjusted) chi-square, where the usual normal-theory chi-square statistic is divided by a scaling correction to better approximate the chi-square under non-normality (Satorra, 2000).

Unless the assumption of invariance of the measurement structure, one cannot claim that the construct is the same in the different groups. Therefore, legitimate comparison of means or structural relations across groups requires equivalence of the indicators' underlying measurement structures (Polyhart & Oswald, 2004).

The following describes the recommended equality constraints and steps of measurement invariance (Steenkamp & Baumgartner, 1998; Steinmetz et al., 2009):

	Step	Meaning	Interpretation
Loose cross-validation (Hair et al., 2006)	Loose cross-validation	No constraints or comparison of fit. CFA model from reference group is conducted using validation sample.	Acceptable fit in both samples (original/reference group and validation group)
Weak invariance (Kline, 2016)	Configural invariance	No constraints, Same pattern of fixed and non-fixed parameters. Factor structure equivalence.	Same model structure in the groups
	Metric invariance	Equally constrained matrices of factor loadings	Same metric in the groups. Implications for construct comparability. Prerequisite for any quantitative comparison
Strong invariance (Kline, 2016)	Scalar invariance	Equally constrained vector with item intercepts. This stage also tests for invariance between common residual covariances (not relevant in this paper).	Same systematic response bias in the groups. Prerequisite for latent mean comparison
Strict invariance (Kline, 2016)	Invariance of factor variances	Equally constrained diagonal of the matrix with factor variances and covariances.	Same heterogeneity of latent variables in the groups. Prerequisite to interpret equal factor covariances as equal correlations and equal error variances as equal reliabilities.
	Invariance factor covariances	Equally constrained sub-diagonal of the matrix with factor variances and covariances	If equal factor variances, same correlations between factors. Implications for construct comparability.
	Invariance of error variances	Equally constrained matrix with error variances and covariances	If equal factor variances, same reliabilities in the groups.
Latent means invariance	Invariance of latent means	Equally constrained vector with latent means	If equal intercepts, the same latent means in the groups.

Byrne et al. (1989) and others distinguish two types of invariance: (a) ‘Measurement invariance’ (in a narrower sense) is invariance of factor loadings, item intercepts, and error variances; (b) ‘structural invariance’ is invariance of the variances and covariances of the latent variables. Invariance testing follows the same procedure for both CFA and causal SEM models. For causal SEM models, the invariance of the paths is additionally checked for invariance after the measurement invariance is confirmed by the same steps used for the testing of invariance for the measurement model (Kline, 2016).

Full and partial invariance

It is acknowledged that a requirement of full measurement invariance may be too strict and an unrealistic goal for group comparisons (Steinmetz et al., 2009). Partial invariance was introduced by Byrne et al. (1989), in which only a subset of parameters in each matrix (level) has to be invariant, whereas others are allowed to vary between the groups. Byrne et al. (1989) argued that at least two indicators per construct must be invariant to ensure the meaningfulness of latent mean comparisons. This was also supported by (Steenkamp & Baumgartner, 1998). This applies to metric and scalar invariance, equating at least two intercept terms per construct to be equal between groups (Hair et al., 2006).

Invariance testing measurement model (MM) - Group1 versus Group2

Appendix 2C lists the results of the invariance testing of the final measurement model between Group1 and Group2. The results for the invariance analysis indicate that Group1 and Group2 are invariant, with strict invariance, including the comparison of means. This indicates that the measurement instrument operates equally between the groups. This applies to the X^2 difference testing, which is non-significant on every step (including differences in means), and other relative fit indices such as the CFI, RMSEA, and SRMR, which all have a change of less than 0.01. This strengthens the reliability assumptions and supports the assumption that the covariance structure is equal between the groups. Hence cross-validation is confirmed.

Invariance testing structural model (SEM) - Group1 versus Group2

The results of the invariance analysis for the full structural model are that Group1 and Group2 are invariant, indicating that the theoretical model operates equally between the groups. This applies to the X^2 difference testing, which is non-significant on every step, including the structural paths. The same applies to other relative fit indices such as the CFI, RMSEA, and SRMR, which all have a change of less than 0.01. This strengthens the reliability assumptions and supports that the structural paths operate equally between the groups. The results are listed in Appendix 2D.

Appendix 2C: Invariance testing the measurement model (MM) model

Group 1 versus Group 2: Loose cross-validation											
Group	Model	Significance estimates	N	χ^2	DF	CFI	RMSEA (C.I.) + p_close	SRMR	AIC BIC SABIC	Missing	Estimator
1	Final MM	All***	1274	535.834***	138	0.954	0.048 (.043-.052) 0.822	0.038	58234.484 58600.128 58374.598	FIML ¹	MLR ²
2	Final MM	All***	1241	488.905***	138	0.958	0.045 (.041-.050) 0.962	0.043	57058.643 57422.424 57196.896	FIML ¹	MLR ²

1. FIML=full information maximum likelihood
2. MLR = estimator in Mplus for non-normal continuous dependent variables

Testing for invariance between Group 1 and Group 2 - summary of Model Fit and χ^2 –difference Test Statistics

Model 1. Configural model										
No constraints										
Significance levels:	χ^2 (corr.factor)	df	CFI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1023.831*** (1.2065)	276	0.956	0.046 (0.043-0.049) P=0.973	0.041	-	-	-	-	MLR/ FIML

Model 2. Metric invariance										
Model 2A										
All factor loadings invariant										
Significance levels:	χ^2 (corr.factor)	df	CFI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1040.439*** (1.2071)	289	0.956	0.045 (0.043-0.048) P=.994	0.044	Model 2A Versus Model 1	1.22	16.608 (13)	0.202	MLR/ FIML

Model 3. Scalar invariance										
Model 3A										
All factor loadings invariant, all intercepts invariant										
Significance levels:	χ^2 (corr.factor)	df	CFI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1059.753*** (1.1944)	308	0.956	0.044 (0.041-0.047) P=1.000	0.044	Model 3A Versus Model 2A	1.001	19.31 (19)	0.957	MLR/ FIML

Model 4. Factor variances and covariances invariant										
Model 4A										
All factor loadings invariant, intercepts invariant, common residual covariance invariant (NA), factor variances and covariances invariant										
Significance levels:	χ^2 (corr.factor)	df	CFI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1074.927*** (1.2042)	329	0.956	0.042 (0.040-0.045) P=1.000	0.047	Model 4A Versus Model 3A	1.35	15.12 (21)	0.443	MLR/ FIML

Model 5. Error variances invariant										
Model 5A										
The following are invariant: All factor loadings, intercepts, common residual covariance (NA), factor variances and covariances, error variances (except for SSC where the error variance is already set to 0 due to single item construct)										
Significance levels:	χ^2 (corr.factor)	df	CFI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1069.481*** (1.2367)	347	0.957	0.041 (0.038-0.043) P=1.000	0.051	Model 5A versus Model 4A	1.83	-5,446 (18)	0.634	MLR/ FILM

Model 6: Comparing mean structures*										
Significance levels:	χ^2 (corr.factor)	df	CFI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1054.606*** (1.1982)	302	0.956	0.045 (0.042-0.047) P=.999	0.044	Model 6 versus Model 3A	1.00	3.17 (6)	0.787	MLR/ FILM

Appendix 2C

Means – FIML/MLR – validation Group 2, standardized results				
<i>Mean</i>	<i>Estimat</i>	<i>S.E.</i>	<i>Est./S.E.</i>	<i>p-value¹</i>
NM	-0.043	0.041	1.055	0.292
IAM	0.032	0.047	0.670	0.503
EAM	0.006	0.046	0.121	0.903
KSB	0.004	0.043	0.099	0.921
KA	-0.019	0.043	-0.434	0.664
SSC	-0.025	0.041	-0.608	0.543

1. two-tailed

NS =not significant; †p<0.10; *p<0.05; **p<0.01; ***p<0.001;

Appendix 2D: Invariance testing the structural model

Baseline model for both groups (Group1 and Group2) is the same as final SEM model.

Model 0: Baseline model/loose cross validation									
Group/ data	Model (Strike through – significance > 0.05) (no indication<0.001, **<0.01, *<.05)	N	χ^2	DF (CMIN/DF)	CFI/ TLI	RMSEA (C.I.) + p_close	SRMR	AIC BIC SABIC	Missing/ Estimator
1	NM → SSC KSB KA IAM → KSB EAM → KA KSB → SSC KA SSC → KA	1274	541.338***	142	0.954	0.047 (.043- .051) P=0.878	0.039	58230.984 58576.029 58363.204	FIML ¹ / MLR ²
2	NM → SSC KSB KA IAM → KSB EAM → KA KSB → SSC KA SSC → KA	1241	494.846	142	0.957	0.045 (.040- .049) P=0.977	0.044	57054.852 57398.138 57185.316	FIML ¹ / MLR ²

1. FIML=full information maximum likelihood
2. MLR = estimator in Mplus for non-normal continuous dependent variables

Appendix 2D

Model 1. Configural model										
No constraints										
Significance all*** Except:	χ^2 (corr.factor)	df	CFI/ TLI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
SSC → KA** (GR1)	1035.331*** (1.2015)	284	0.956	0.046 (0.043-0.049) P=0.988	0.041	-	-	-	-	MLR/ FIML

Significance ***= <0.001; **= <0.01; *= <0.05

Model 2 – Fully constrained										
Fully constrained on structural paths, factor loadings and intercepts										
Significance all*** Except:	χ^2 (corr.factor)	df	CFI/ TLI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1087.033*** (1.1901)	324	0.955	0.043 (0.040-0.046) P=1.000	0.046	Model 2 Vs Model 1	1.11	44.83 (40)	0.276	MLR/ FIML

Significance ***= <0.001; **= <0.01; *= <0.05

Model 3 – Fully constrained + invariant error variances										
Fully constrained on structural paths, factor loadings and intercepts + invariant error variances										
Significance all*** Except:	χ^2 (corr.factor)	df	CFI/ TLI	RMSEA	SRMR	Model comparison	cd	$\Delta\chi^2$ (Δ df)	p-value	Estimator/ Missing
All***	1080.746*** (1.2222)	342	0.956	0.041 (0.039-0.044) P=1.000	0.049	Model 3 Vs Model 2	1.8	6.287 (18)	0.654	MLR/ FIML

Significance ***= <0.001; **= <0.01; *= <0.05

Appendix 2E: Respecification steps measurement model

All the variables from the EPCA conducted in SPSS were included in the initial measurement model generated in Mplus. The analysis was conducted on the Group1 data. The model did not provide an acceptable fit and it was, therefore, necessary for a respecification. The respecification for Group1 was conducted stepwise, introducing one change at a time guided by the modification indices given by the software program. According to Anderson & Gerbing (1988) is it almost always necessary to make respecifications to the measurement model. However, when model modification is practiced, especially based on modification indices, this should only be done when the modifications are theoretically and practically plausible and with caution (Kline, 2016). Due to the EPCA results, there was a relatively good knowledge of which items would belong to the constructs of interest, and which items would propose a challenge to the overall fit of the model. The modifications from the initial measurement model to the final measurement model for Group1 are documented in the table below. Likert scale variables are strictly nominal/categorical variables, but are usually treated as continuous.

Single and two item constructs

Both Fuchs & Diamantopoulos (2009) and Hayduk & Littvay (2012) support the use of single-item measures as long as they have acceptable psychometric properties. When using single item constructs conducting structural equation modeling, the factor loading is fixed to 1 and the error term to 0 or a predefined level. The analysis was conducted setting the error term for structural social capital (SSC) to 0. The analysis was also run by providing a modest estimate a reliability level for the SSC construct. This was set to 0.75. Examples from previous research indicates reliability measures around .8 for social capital constructs (Gooderham et al., 2011; Van Wijk et al., 2008), although these are not directly comparable since the operationalizations are not identically framed. This was evaluated to indicate an acceptable level, and according to Nunnally and Bernstein (1994) 0.7 is a modest reliability level applicable in the early stages of research. The error term is set to 0 throughout the analysis, but the estimation of the error term based on the

anticipated reliability of 0.75 for the measurement model was tested in additional analysis. Differences in reliability levels for the SSC item does not influence the results for the measurement model to a high degree.

In addition to the single item constructs for SSC, the final measurement model ended up with only 2 indicators for each of the constructs for autonomous motivation (AM). This can easily be justified theoretically, but could in terms of analysis be problematic. According to Anderson & Gerbing (1998) models with constructs only consisting of 2 indicators would require larger samples in order to obtain a converged and proper solution. A high N provides more stable estimates for consistent estimators. Due to high N this was therefore evaluated as acceptable (Anderson & Gerbing, 1988).

Respecification of the model

The following two variables were eliminated through the re-specification of the measurement model (CFA analysis):

What is your opinion of the following statements about the way your discipline network is run?

NM_7 - The discipline network offers varied activities in which to participate (meetings, conferences, workshops, courses)

What is your opinion of the following statements about your role in the discipline network:

KS_5 - I sum up the most important point from the discipline network meetings for my manager/colleagues in my entity

Group1

Step/Model	Action description	Significance estimates	N	X ²	DF (CMIN/DF)	CFI	RMSEA (C.I.) p_close	SRMR	AIC/ BIC/ SABIC	Missing	Estimator
1	All items	All***	1274	716.405***	175	0.943	0.049 (.046-.053) 0.617	0.041	65194.766 65591.310 65346.720	FIML	MLR ¹
2	Deleted KS_5	All***	1274	631.245***	156	0.948	0.048 (.045-.053) 0.668	0.039	61516.248 61897.342 61662.282	FIML	MLR ¹
3 Final MM	Deleted KS_5, NM_7	All***	1274	535.834***	138	0.954	0.048 (.043-.052) 0.822	0.038	58234.484 58600.128 58374.598	FIML	MLR ¹
Final MM	Deleted KS_5, NM_7	All***	1274	633.998 ***	138 (4.59)	0.954	0.053 (.049-.057) 0.107	0.038	58234.484 58600.128 58374.598	FIML	ML
Final MM	Deleted KS_5, NM_7	All***	991	570.381 ***	138	0.952	0.056 (.051-.061) 0.016	0.040	46615.671 46963.479 46737.981	Listwise	MLM ²
Final MM	Deleted KS_5, NM_7	All***	991	482.707 ***	138 (3.50)	0.954	0.050 (.045-.055) 0.463	0.040	46615.671 46963.479 46737.981	Listwise	ML

²MLM is estimator in Mplus for non-normal continuous dependent variables, not available for missing data.

¹MLR is estimator in Mplus for non-normal continuous dependent variables, available for missing variables. Possible to run with both MI and FIML, but it is uncertainty about robustness for non-normal data.

FIML N =1273 (1 case has missing on all variables, therefore not estimated)

Notes (values are reported on MLR and FIML):

1. The initial measurement model has not sufficient fit measures. E.g., CFI (0.943) is right below recommended threshold. Further modification is therefore necessary.
2. **Deleting KS_5:** AVE for KSB in model 1 is right below the threshold of .5 (0.493). KS_5 has the lowest factor loading/ R^2 of the five items in construct KSB, additionally does the modification indices suggest to that KA loads on KS_5, where the modification indices indicates 33.184 in improvement of chi-square value. Theoretically it is justifiable to delete KS_5. This is the only item for KSB which is directly connected to knowledge sharing behavior in own unit. The four other items are connected to knowledge sharing in the discipline network. KS_5 is therefore deleted. This does not improve the fit statistics in the model, but the AVE for KSB is now satisfactory in model 4 (AVE increased from 0.493 to 0.540). The deletion of KS_5 is therefore maintained.
3. **Deleting MN_7:** After deleting KS_5, the model does still not have satisfactory fit measures. CFI is still right below the threshold of .95. RMSEA is satisfactory only when adjusting for non-normality and with FIML. The modification indices indicates that NM_7 correlates with with NM_6 loads on suggesting the highest improvement in chi-square: 59.893. MN_7 has the second lowest factor loading of the 7 items for network management (.615, NM_2 has .592). Additionally is this the only item which is not directly asking about the network management performance. It is therefore assessed to be theoretically justified to delete this item. All constructs are still satisfactory after the deleting NM_7 on reliability/validity measures.

When using FIML/MLR for non-normal data, the MM has a good fit, including the RMSEA. MM is therefore not further respecified.

Comments on possible further improvements in model fit:

The indication of highest improvement in chi-square is suggested by the modification indices is to let NM_5 correlate with KA_3 (43.783). Modification indices also suggest that NM_5 correlates with NM_6 (15.950) and cross-loads with KA (21.764). Removing NM_5 gives a relatively better fit of the model (Chi Square 418.508, DF 121, RMSEA 0.044 (0.039-0.048), CFI .961, SRMR 0.037). However, to remove NM_5 is not theoretically justifiable, this is a central element in the Network Management measure. The model has sufficient fit when including NM_5 and the item is therefore not removed. The modification indices suggest several cross- between items and constructs loadings with improvements in Chi-square around 15.000 and above. Especially KS_4 is cross-loading to IAM and EAM. NM_1 cross-loads with EAM, IAM, KA, KSB.

KA_4 has a very low factor loading (.445). However, removing KA_4 does not influence the model fit significantly, it makes the RMSEA worse (.050). Additionally, the reliability and validity estimates are good when including KA_4. Taking a cautious approach, KA_4 is not removed from the model.

Respecification MM – Group 1 – Step 1 (MLR/FIML)									
Constructs	Factor loadings				R ²	CR	AVE/MSV	Correlations	
	B	SE B	β	SE β					
NM						0.882	0.560/0.441	NM ↔ EAM	0.404
NM_1	1.000	0.000	0.738	0.019	0.545			NM ↔ IAM	0.225
NM_2	0.698	0.042	0.592	0.026	0.350			NM ↔ KSB	0.412
NM_3	1.115	0.042	0.816	0.014	0.665			NM ↔ KA	0.664
NM_4	1.225	0.049	0.850	0.013	0.722			EAM ↔ IAM	0.604
NM_5	1.187	0.044	0.831	0.014	0.691			EAM ↔ KSB	0.331
NM_6	1.159	0.052	0.742	0.017	0.550			EAM ↔ KA	0.513
NM_7	0.890	0.046	0.615	0.023	0.378			IAM ↔ KSB	0.358
EAM						0.734	0.580/0.365	IAM ↔ KA	0.310
AM_1	1.000	0.000	0.767	0.027	0.588			KSB ↔ KA	0.609
AM_2	0.806	0.055	0.756	0.030	0.572			NM ↔ SSC	0.300
IAM						0.703	0.542/0.365	EAM ↔ SSC	0.156
AM_3	1.000	0.000	0.734	0.038	0.539			IAM ↔ SSC	0.147
AM_4	1.114	0.093	0.739	0.032	0.546			KSB ↔ SSC	0.414
KSB						0.827	0.493/0.371	KA ↔ SSC	0.365
KS_1	1.000	0.000	0.811	0.015	0.657				
KS_2	0.968	0.032	0.713	0.021	0.508				
KS_3	0.930	0.033	0.743	0.018	0.553				
KS_4	0.735	0.036	0.676	0.021	0.457				
KS_5	0.673	0.039	0.540	0.027	0.292				
KA						0.824	0.554/0.441		
KA_1	1.000	0.000	0.885	0.011	0.782				
KA_2	1.013	0.021	0.872	0.012	0.761				
KA_3	0.797	0.031	0.690	0.021	0.477				
KA_4	0.483	0.037	0.445	0.031	0.198				

STDXY standardization

CR=Composite reliability. AVE=average variance extracted. MSV=maximum shared variance.

Appendix 2E

	CR	AVE	MSV	MaxR(H)	KSB	NM	IAM	EAM	KA
KSB	0,827	0,493	0,371	0,845	0,702				
NM	0,882	0,560	0,441	0,902	0,412	0,748			
IAM	0,703	0,542	0,365	0,703	0,358	0,225	0,736		
EAM	0,734	0,580	0,365	0,734	0,331	0,404	0,604	0,762	
KA	0,824	0,554	0,441	0,888	0,609	0,664	0,310	0,513	0,744
SSC					0,413	0,299	0,299	0,299	0,368

CR, AVE, MSV (Fornell & Larcker, 1981)

Max R (H) MAX reliability – more robust than the CR (McDonald, 1981)

Factor loading R^2 value, construct reliability and AVE is not available for the single item construct SSC long as estimated reliability is set to 1.

Respecification MM – Group 1 – Step 2 (MLR/FIML)									
Constructs	Factor loadings				R ²	CR	AVE/MSV	Correlations	
	B	SE B	β	SE β					
NM						0.882	0.560/0.442	NM \leftrightarrow EAM	0,404
NM_1	1.000	0.000	0.738	0.019	0.545			NM \leftrightarrow IAM	0,226
NM_2	0.698	0.042	0.592	0.026	0.350			NM \leftrightarrow KSB	0,398
NM_3	1.115	0.042	0.816	0.014	0.665			NM \leftrightarrow KA	0,664
NM_4	1.224	0.049	0.850	0.013	0.722			EAM \leftrightarrow IAM	0,604
NM_5	1.187	0.044	0.831	0.014	0.691			EAM \leftrightarrow KSB	0,319
NM_6	1.160	0.052	0.742	0.017	0.550			EAM \leftrightarrow KA	0,513
NM_7	0.890	0.046	0.615	0.023	0.379			IAM \leftrightarrow KSB	0,355
EAM						0.734	0.580/0.365	IAM \leftrightarrow KA	0,311
AM_1	1.000	0.000	0.767	0.027	0.588			KSB \leftrightarrow KA	0,582
AM_2	0.806	0.055	0.756	0.030	0.572			NM \leftrightarrow SSC	0,299
IAM						0.703	0.542/0.365	EAM \leftrightarrow SSC	0,156
AM_3	1.000	0.000	0.731	0.038	0.534			IAM \leftrightarrow SSC	0,147
AM_4	1.123	0.093	0.742	0.032	0.551			KSB \leftrightarrow SSC	0,400
KSB						0.829	0.549/0.343	KA \leftrightarrow SSC	0,365
KS_1	1.000	0.000	0.819	0.015	0.671				
KS_2	0.986	0.032	0.734	0.020	0.538				
KS_3	0.919	0.035	0.743	0.019	0.552				
KS_4	0.709	0.036	0.660	0.021	0.435				
KA						0.824	0.554/0.441		
KA_1	1.000	0.000	0.884	0.011	0.781				
KA_2	1.014	0.021	0.873	0.012	0.762				
KA_3	0.797	0.031	0.690	0.021	0.477				
KA_4	0.483	0.037	0.445	0.031	0.198				

STDXY standardization

Appendix 2E

	CR	AVE	MSV	MaxR(H)	KSB	NM	EAM	IAM	KA
KSB	0,829	0,549	0,343	0,839	0,741				
NM	0,882	0,560	0,441	0,902	0,398	0,748			
EAM	0,734	0,580	0,365	0,734	0,319	0,404	0,762		
IAM	0,703	0,542	0,365	0,703	0,355	0,226	0,604	0,736	
KA	0,824	0,554	0,441	0,888	0,586	0,664	0,513	0,311	0,744
SSC					0,400	0,299	0,156	0,147	0,365

CR, AVE, MSV (Fornell & Larcker, 1981)

Max R (H) MAX reliability – more robust than the CR (McDonald, 1981)

Factor loading R² value, construct reliability and AVE is not available for the single item construct SSC long as estimated reliability is set to 1

Respecification MM – Group 1 – Step 3 (MLR/FIML)									
Constructs	Factor loadings				R ²	CR	AVE/MSV	Correlations	
	B	SE B	β	SE β					
NM						0.879	0.595/0.440	NM ↔ EAM	0,398
NM_1	1.000	0.000	0.741	0.019	0.550			NM ↔ IAM	0,222
NM_2	0.696	0.042	0.593	0.026	0.352			NM ↔ KSB	0,401
NM_3	1.119	0.043	0.822	0.014	0.675			NM ↔ KA	0,663
NM_4	1.219	0.050	0.850	0.014	0.722			EAM ↔ IAM	0,604
NM_5	1.187	0.044	0.835	0.014	0.697			EAM ↔ KSB	0,319
NM_6	1.132	0.051	0.727	0.019	0.529			EAM ↔ KA	0,513
EAM						0.734	0.580/0.365	IAM ↔ KSB	0,355
AM_1	1.000	0.000	0.767	0.027	0.589			IAM ↔ KA	0,311
AM_2	0.805	0.055	0.756	0.030	0.571			KSB ↔ KA	0,587
IAM						0.703	0.542/0.365	NM ↔ SSC	0,292
AM_3	1.000	0.000	0.731	0.038	0.534			EAM ↔ SSC	0,157
AM_4	1.123	0.093	0.742	0.032	0.551			IAM ↔ SSC	0,147
KSB						0.829	0.549/0.345	KSB ↔ SSC	0,400
KS_1	1.000	0.000	0.819	0.015	0.670			KA ↔ SSC	0,365
KS_2	0.986	0.032	0.734	0.020	0.539				
KS_3	0.919	0.035	0.743	0.019	0.551				
KS_4	0.710	0.036	0.660	0.021	0.435				
KA						0.824	0.554/0.440		
KA_1	1.000	0.000	0.884	0.011	0.782				
KA_2	1.013	0.021	0.872	0.012	0.761				
KA_3	0.797	0.031	0.691	0.021	0.477				
KA_4	0.483	0.037	0.445	0.031	0.198				

STDXY standardization

Appendix 2E

	CR	AVE	MSV	MaxR(H)	KSB	NM	EAM	IAM	KA
KSB	0,829	0,549	0,345	0,839	0,741				
NM	0,879	0,595	0,440	0,896	0,401	0,771			
EAM	0,734	0,580	0,365	0,734	0,319	0,398	0,761		
IAM	0,703	0,542	0,365	0,703	0,355	0,222	0,604	0,736	
KA	0,824	0,554	0,440	0,888	0,587	0,663	0,513	0,311	0,744
SSC					0,400	0,292	0,157	0,147	0,365

CR, AVE, MSV (Fornell & Larcker, 1981)

Max R (H) MAX reliability – more robust than the CR (McDonald, 1981)

Factor loading R² value, construct reliability and AVE is not available for the single item construct SSC long as estimated reliability is set to 1

Group2 and Full dataset

Model	Data	Significance estimates	N	X ²	DF (CMIN / DF)	CFI	RMSEA (C.I.) p_close	SRMR	AIC/ BIC/ SABIC	Missing	Estimator
Final MM	Group 2	All***	1241	488.905 ***	138	0.958	0.045 (.041-.050) 0.962	0.043	57058.643 57422.424 57196.896	FIML	MLR
Final MM	Full data	All***	2515	867.367 ***	138	0.956	0.046 (.043-.049) 0.990	0.038	115238.464 115652.396 115426.810	FIML	MLR
Final MM	Full data	All***	2515	1056.421 ***	138	0.957	0.051 (.049-.054) 0.202	0.038	115238.464 115652.396 115426.810	FIML	ML
Final MM	Full data	All***	1954	734.589 ***	138	0.957	0.047 (.044-.050) 0.925	0.039	92370.337 92766.349 92540.780	Listwise	MLM
Final MM	Full data	All***	1954	896.369 ***	138	0.956	0.053 (.050-.056) 0.064	0.039	92370.337 92766.349 92540.780	Listwise	ML
Final MM	Full data	All***	2517	1025.438 ***	138	0.957	0.051 (.048-.053) 0.372	0.038	119860.307 120274.295 120048.710	MI	ML
Final MM	Full data Mean values (10 replications)	All***	2517	928.103 (Std 12.423)	138	0.965 (std = 0.001)	0.048 (Std 0.001)	0.038 (std= 0.000)	119860.307 120274.295 120048.710	MI	MLR ²

¹MLM is estimator in Mplus for non-normal continuous dependent variables, not available for missing data.

²MLR is estimator in Mplus for non-normal continuous dependent variables, available for missing variables. Possible to run with both MI and FIML, but it is uncertainty about robustness for non-normal data.

MI=multiple imputation, FIML=full information maximum likelihood

Correlation matrix including NM_7 and KS_5:

	Mean	Std.dev.	N	NM_1	NM_2	NM_3	NM_4	NM_5	NM_6	NM_7	IM_1	IM_2	IM_3	IM_4	KS_1	KS_2	KS_3	KS_4	KS_5	KA_1	KA_2	KA_3	KA_4
NM_1	4,41	1,04	2430	1																			
NM_2	4,98	0,88	2457	,457**	1																		
NM_3	4,44	1,04	2440	,639**	,533**	1																	
NM_4	4,22	1,11	2440	,606**	,471**	,739**	1																
NM_5	4,32	1,09	2437	,609**	,471**	,671**	,734**	1															
NM_6	4,15	1,19	2453	,494**	,397**	,564**	,657**	,648**	1														
NM_7	4,33	1,10	2484	,418**	,336**	,453**	,492**	,478**	,539**	1													
IM_1	5,03	0,92	2490	,273**	,173**	,262**	,266**	,283**	,212**	,237**	1												
IM_2	5,30	0,76	2502	,258**	,206**	,235**	,218**	,243**	,195**	,253**	,574**	1											
IM_3	5,47	0,67	2495	,180**	,175**	,151**	,109**	,125**	,081**	,121**	,306**	,393**	1										
IM_4	5,43	0,71	2492	,160**	,123**	,133**	,113**	,113**	,055**	,122**	,293**	,365**	,557**	1									
KS_1	3,73	1,31	2379	,301**	,124**	,253**	,250**	,240**	,170**	,159**	,245**	,153**	,237**	,192**	1								
KS_2	3,77	1,46	2347	,276**	,138**	,214**	,205**	,198**	,157**	,128**	,180**	,139**	,186**	,163**	,650**	1							
KS_3	3,28	1,32	2377	,274**	,065**	,236**	,254**	,239**	,212**	,171**	,202**	,129**	,181**	,162**	,610**	,553**	1						
KS_4	4,29	1,15	2450	,291**	,160**	,242**	,241**	,240**	,205**	,179**	,231**	,211**	,288**	,212**	,526**	,463**	,525**	1					
KS_5	3,62	1,30	2351	,278**	,119**	,249**	,245**	,239**	,220**	,177**	,210**	,157**	,163**	,119**	,425**	,321**	,408**	,410**	1				
KA_1	4,14	1,11	2399	,474**	,251**	,419**	,426**	,469**	,352**	,332**	,381**	,315**	,215**	,206**	,424**	,338**	,372**	,382**	,392**	1			
KA_2	3,93	1,12	2379	,468**	,230**	,433**	,448**	,491**	,387**	,359**	,362**	,289**	,186**	,182**	,407**	,328**	,388**	,337**	,389**	,781**	1		
KA_3	4,25	1,12	2383	,449**	,242**	,402**	,415**	,504**	,343**	,314**	,337**	,261**	,205**	,186**	,373**	,285**	,351**	,327**	,338**	,595**	,600**	1	
KA_4	4,35	1,07	2345	,292**	,209**	,282**	,276**	,328**	,213**	,208**	,243**	,219**	,142**	,108**	,177**	,149**	,173**	,206**	,207**	,346**	,352**	,316**	1
SSC	3,12	1,46	2352	,299**	,082**	,268**	,291**	,268**	,302**	,255**	,158**	,119**	,107**	,106**	,314**	,289**	,342**	,279**	,303**	,341**	,362**	,314**	,226**

** . Correlation is significant at the 0.01 level (2-tailed).