



# Organizational integration mechanisms and knowledge transfer effectiveness in MNCs: The moderating role of cross-national distance

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## ABSTRACT

Building on the knowledge-based view of the firm, this study investigates the usefulness of two organizational integration mechanisms (i.e., formal inter-unit communication and informal connectedness and shared values) to effectively transfer knowledge between MNC units and explores how their effectiveness is affected by different dimensions of cross-national distance. Data on 131 knowledge transfer relationships between units of five Spanish MNCs were used to test the hypotheses. Results reveal that, although both mechanisms are positively associated with knowledge transfer effectiveness, the effect of formal inter-unit communication is comparatively higher. Moreover, this 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. Adopting a contingent perspective, and taking into account the multidimensional character of cross-national distance, this article contributes to the literature on knowledge management in international firms by showing which organizational integration mechanisms are more useful to transfer knowledge within MNCs depending on the type of distance that separate their units.

## 1. Introduction

According to the knowledge-based view (KBV), the competitive advantage of multinational corporations (MNCs) lies in their ability to transfer knowledge effectively through their intra-organizational networks (e.g., Gupta and Govindarajan, 2000; Kogut and Zander, 1993; Michailova and Mustaffa, 2012). In this sense, having a network of globally dispersed subsidiaries provides access to a greater amount and variety of knowledge, which results in a higher recombinant potential of MNCs (Kogut and Zander, 1992). However, a key assumption of the KBV is that “the critical source of competitive advantage is knowledge integration rather than knowledge itself” (Grant, 1996: 380). Thus, to realize such potential, it is essential that the internal knowledge will be effectively transferred between different units (Fernandes-Crespo et al., 2014; Jiménez-Jiménez et al., 2014; Minbaeva et al., 2014; Zhang et al., 2019). Interunit

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knowledge transfer allows headquarters (HQ) and sister subsidiaries to learn from each other, so that the knowledge created in a given unit can be applied in different contexts and combined with that of other units (Claver-Cortés et al., 2018). Hence, internal knowledge transfer not only increases the overall knowledge base of the MNC, but also improves its capabilities (Kogut and Zander, 1993; Peltoniemi and Yamao, 2017), constituting a key determinant of its competitive advantage (Del Giudice and Maggioni, 2014).

Yet, knowledge transfer within MNCs is no mean feat (Hansen, 1999; Martin and Salomon, 2003), as it requires mobilizing, coordinating, integrating, and applying knowledge residing in organizational units separated by time, space, culture, language and so on (Gaur et al., 2019). In this context, the role of the firm as an institution for the integration of specialized knowledge emphasized by proponents of the KBV (e.g., Grant, 1996) becomes crucial. Consequently, international management research has examined the usefulness of various organizational integration mechanisms for transferring knowledge between MNC units. To date, many of these efforts have been devoted to investigating traditional mechanisms associated with the efficiency of integration (Grant, 1996), such as centralization of decision-making or formalization and standardization of organizational processes, resulting in inconsistent findings regarding their effectiveness as knowledge transfer facilitators (for a review, see the meta-analysis by Zeng et al., 2018). In the light of this evidence, scholars are increasingly emphasizing that, in order to institutionalize learning and information transfer, rather than centralized coordination or programmed patterns of organizational action, “MNCs need to create an encouraging climate to effectively share knowledge between headquarters and subsidiaries as well as between subsidiaries themselves” (Kotabe and Kothari, 2016: 735). This argument points to organizational mechanisms associated with the flexibility of integration (Grant, 1996), i.e., “that actively encourage the exchange of information across boundaries within the firm” (Henderson and Cockburn, 1994: 67). However, these mechanisms have been less studied in the context of intra-MNC knowledge transfer (Ambos and Ambos, 2009). Specifically, we identify two important gaps in our understanding of how this kind of organizational integration mechanisms influence knowledge transfer effectiveness in MNCs.

On the one hand, although knowledge management (KM) scholars have highlighted the importance of distinguishing between formal and informal integration mechanisms (Awazu, 2004; Jansen et al., 2009), prior studies in the field of international management that have investigated the influence of this kind of communication-intensive mechanisms on intra-MNC knowledge transfer tend to bundle formal and informal mechanisms together in a unique construct (e.g., Gölgeci et al., 2019; Oh et al., 2016; Williams and Lee, 2016), or consider either formal or informal integration mechanisms, but not both (e.g., Ambos and Ambos, 2009; Björkman et al., 2004; Zeng et al., 2018). This approach does not allow to assess which type of organizational integration mechanisms is more effective for transferring knowledge within MNCs. To the best of our knowledge, the differing effect of formal and informal organizational integration mechanisms on intra-MNC knowledge transfer has only been addressed in case studies (Schleimer and Riege, 2009). Thus, their relative influence is still unclear. In order to understand the tradeoffs of implementing alternative integration mechanisms, quantitative evidence on their comparative effectiveness is required (Nambisan et al., 1999).

On the other hand, since MNC units are embedded in different national contexts, the distance that separates two units may affect the effectiveness of organizational integration mechanisms (Gaur et al., 2019). Unfortunately, we know little about how cross-country differences affect knowledge transfer in MNCs (Driffield et al., 2016). In this vein, most empirical works on the topic have analyzed the concept of distance from a one-dimensional lens, reducing all cross-national differences to the dimension of culture –mostly measured through Hofstede's (1980) approach. Only a few scholars have investigated how different dimensions of distance affect interunit knowledge transfer (Ambos and Ambos, 2009; Li et al., 2016). Given that MNC units are not equidistant in all dimensions (Ghemawat, 2001) and that “different types of distance can affect firm, managerial or individual decisions in different ways” (Berry et al., 2010: 1461), it is essential to know how different dimensions of cross-national distance influence the effectiveness of organizational integration mechanisms for transferring knowledge between MNC units.

The present paper addresses these gaps. Firstly, we focus on organizational mechanisms that enable firms to integrate knowledge flexibly across intra-organizational boundaries and investigate their impact on knowledge transfer effectiveness between MNC units. Specifically, we consider two distinct organizational integration mechanisms that have been associated with knowledge exchange and combination: formal inter-unit communication (e.g., Gupta and Govindarajan, 2000; Henderson and Cockburn, 1994; Jansen et al., 2009) and informal connectedness and shared values (e.g., Björkman et al., 2004; Jansen et al., 2009; Zeng et al., 2018). Secondly, we examine whether and how the usefulness of these mechanisms is influenced by six types of cross-country differences (cultural, economic, geographic, administrative, knowledge, and global connectedness). To do so, we collected data on 131 knowledge transfer relationships between units of five Spanish MNCs. Based on the notion of the MNC as a “differentiated network”, where knowledge is created in various parts of the organization and then transferred to other units (Minbaeva et al., 2014), any unit of the MNC (HQ or subsidiaries) can be a source or recipient of knowledge. Accordingly, forward (from HQ to subsidiaries), reverse (from subsidiaries to HQ) and lateral (between sister subsidiaries) knowledge transfers were considered in the study (e.g., Ambos and Ambos, 2009; Williams and Lee, 2016; Zhang et al., 2019).

The paper aims at making three main contributions to the literature. First, by distinguishing between formal and informal organizational integration mechanisms and examining their individual influence on intra-MNC knowledge transfer, it provides new insights about the KM tools that are more useful to effectively transfer the knowledge that resides in globally dispersed units. Second, the study relies on the perceived assessment of the sender and recipient units in each knowledge transfer, which enables to capture the micro-foundations of organizational integration mechanisms at the dyad-level (Foss, 2007). Third, and in our view the most important contribution, by exploring the moderating role of different dimensions of cross-national distance on the relationship between organizational integration mechanisms and knowledge transfer effectiveness, the paper helps to clarify under what conditions formal and informal integration mechanisms are more effective for transferring knowledge within MNCs.

The two following sections outline the theoretical grounds and elaborate the hypotheses. Then, empirical methods and measures are explained. After that, findings are reported. Finally, the main results, their implications and the limitations of the study are

discussed.

## 2. Theoretical background

MNCs are knowledge-intensive enterprises (Del Giudice et al., 2017) in which the HQ and subsidiaries act as unique repositories of non-overlapping knowledge (Mudambi et al., 2014; Zeng et al., 2018). In order to leverage these knowledge stocks to obtain a competitive advantage, MNCs rely on their ability to transfer knowledge across units, so that it can be applied in different contexts (Claver-Cortés et al., 2018; Peltokorpi and Yamao, 2017). However, transferring knowledge between geographically separated and relatively autonomous units is challenging, especially in the case of tacit knowledge (Gaur et al., 2019; Oliva, 2014).

Organizational integration mechanisms play a crucial role in this process. Following Kogut and Zander's (1992) seminal work, knowledge is "embedded in the organizing principles by which people cooperate within organizations" (p. 383). Hence, the transfer of know-how between different areas of the firm depends on the higher order organizing principles by which relationships among their individuals are structured. Such principles are determined by the organizational integration mechanisms that establish how different parts of the organization are linked and coordinated (Kogut and Zander, 1992; Jansen et al., 2006).

Companies may choose a range of organizational mechanisms for coordinating their activities (e.g., Grant, 1996; Jansen et al., 2005, 2006; Michailova and Mustaffa, 2012; Zeng et al., 2018). In the context of intra-MNC knowledge transfer, KM scholars have recently emphasized the importance of implementing practices that foster knowledge sharing and dissemination through the entire network composed by the HQ and subsidiaries (Ferraris et al., 2017; Kotabe and Kothari, 2016). Accordingly, this study focuses on organizational integration mechanisms that permeabilize boundaries by encouraging communication and knowledge exchange between individuals from different units (Henderson and Cockburn, 1994). In detail, we distinguish between formal and informal integration mechanisms, as they are based on different processes and may differ in the information-processing capacity they provide (Awazu, 2004; Schleimer and Riege, 2009). In this regard, "formal integration mechanisms are a means to coordinate and integrate differentiated activities through pre-established mechanisms and interfaces. Informal integration mechanisms, on the other hand, refer to emergent social properties and have been found to be of influence on boundary spanning across different units" (Jansen et al., 2009: 800).

Based on this distinction, we consider two organizational integration mechanisms that have been associated with knowledge exchange and combination: *formal inter-unit communication* (e.g., Gupta and Govindarajan, 2000; Henderson and Cockburn, 1994; Jansen et al., 2009) and *informal connectedness and shared values* (e.g., Björkman et al., 2004; Jansen et al., 2009; Zeng et al., 2018).<sup>1</sup> Our aim is to compare "how the same higher-level mechanism works in different cases" (i.e., in different transfer relationships) (Pajunen, 2008: 1453). In this vein, we argue that the presence of formal communication devices and informal connectedness and shared values (two abstract and collective aspects) between individuals from two different units will orchestrate the recursive actions needed to effectively transfer knowledge from one unit to the other.<sup>2</sup>

Within international management literature, some prior studies have explored how these mechanisms influence knowledge transfer in MNCs. However, sometimes both types of mechanisms are bundled together in a unique construct. In other cases, only one of them is considered. We also identify the presence of the jingle-jangle problem, i.e., that different authors use the same term to mean different concepts or use various terms to mean similar concepts (Zeng et al., 2018). For example, Gupta and Govindarajan (2000) distinguished two mechanisms, one formal (formal integrative mechanisms) and one informal (corporate socialization mechanisms). Formal integrative mechanisms were captured with the use of liaison personnel, temporary task forces, and permanent teams to coordinate decisions and actions between units. This fits neatly with the conceptualization of formal integration as 'pre-established mechanisms and interfaces'. However, corporate socialization mechanisms were measured with the use of job transfers between units and participation in executive programs involving participants from several units. While these aspects may enhance communication between different units, it is unclear if they fit with the concept of informal mechanisms understood as 'emergent social properties'. Björkman et al. (2004) only considered corporate socialization mechanisms and measured them through three indicators: (i) interunit trips and visits, (ii) international committees, teams, and task forces, and (iii) training involving participants from multiple units. As we can see, the second indicator is the same that Gupta and Govindarajan (2000) used for measuring formal integrative mechanisms. For their part, Ambos and Ambos (2009) only considered formal mechanisms. However, although using the same measure than Gupta and Govindarajan (2000), they employ the label personal coordination mechanisms. Williams and Lee (2016) only considered an informal mechanism, labelled socialization between subsidiaries, that was measured through four items capturing how frequently employees of the subsidiary (i) use email to communicate with other unit's members, (ii) join workshops with other unit's members, (iii) use conference calls with other unit's members, and (iv) join corporation-wide committees. It can be appreciated that this scale includes indicators of both formal and informal aspects. This is also the case for Oh et al.'s (2016) study. These authors also considered socialization mechanisms, but relied on a different scale: (i) use of efficient communication channels, (ii) frequent interfaces (e.g., visits and meetings), (iii) dispatch of employees and co-working, and (iv) managerial collaborative support.

As we have shown, prior studies in international management research tend to focus on only one type of organizational integration

<sup>1</sup> Traditional integration mechanisms, such as centralization of decision-making, formalization, or routinization, are beyond the scope of this article because they coordinate activities by establishing patterns of organizational action that program behaviors in advance of their execution. While this kind of mechanisms make integration more efficient, they narrow communication channels (Grant, 1996; Jansen et al., 2005, 2006; Zeng et al., 2018).

<sup>2</sup> Authors acknowledge an anonymous reviewer for making this point.

mechanisms and significantly differ in how formal and (especially) informal mechanisms are operationalized. In order to know which integration mechanism is more effective for transferring knowledge between MNC units, it is necessary to clearly distinguish both mechanisms and compare their effects. In addition, since “it is not likely that one mechanism can work in all conditions” (Liu, 2019: 817), it is also crucial to understand under what circumstances they are more or less effective. Some works have begun to explore the contingent factors that influence the effectiveness of these mechanisms, such as unit size (Oh et al., 2016), HRM practices of the subsidiary (Williams and Lee, 2016), where did the sender obtain the transferred knowledge (Foss and Pedersen, 2002), the type of knowledge being transferred (Zeng et al., 2018), or the phases of new product development (Liu, 2019). We focus on cross-national distance because MNCs must deal with the challenge of managing organizational units embedded in different national contexts, which results in higher levels of complexity (Morgulis-Yakushev et al., 2018). In this regard, the differences between the countries in which MNC units are located “affect the effectiveness of communication channels, which are critical for knowledge transfer” (Gaur et al., 2019: 1888). Specifically, we recognize the multifaceted nature of cross-national distance by considering six different dimensions along which countries differ from one another (Ghemawat, 2001; Berry et al., 2010). Fig. 1 outlines the research model and hypotheses of the study.

Importantly, although knowledge transfer and knowledge sharing are usually used interchangeably, they are not exactly the same (Paulin and Suneson, 2012). Knowledge transfer can be defined as “the acquisition of knowledge by accessing the skills and competencies of a partner” (Ado et al., 2017: 4). This concept is based on the consideration of knowledge as an object that can be transferred from an entity to another, i.e., unidirectionally. By contrast, knowledge sharing refers to the exchange of knowledge between two individuals. This exchange is multidirectional and considers knowledge as a subjective contextual construction that is created in a social context. Paulin and Suneson (2012) highlighted that “in order to explore knowledge transfer, knowledge sharing should not be ignored” (p. 81). The first part of our model (i.e., the direct effect of both organizational integration mechanisms) connects knowledge sharing with knowledge transfer. The rationale is that the exchange of knowledge between individuals from different units (i.e., knowledge sharing) that is encouraged by both integration mechanisms will enhance mutual understanding, so facilitating the transfer of knowledge from one unit to another (Kotabe and Kothari, 2016). The second part of the model (i.e., the negative moderating role of cross-national distance) integrates the notion of knowledge barriers, another blurry concept in KM research (Paulin and Suneson, 2012).

### 3. Hypotheses development

#### 3.1. Organizational integration mechanisms and knowledge transfer effectiveness in MNCs

Formal inter-unit communication is a formal organizational integration mechanism that brings together employees from different units. This mechanism can be associated with the structural dimension of social capital, as it provides structured communication channels that support learning and knowledge transfer (Ado et al., 2017).

MNCs use formal inter-unit communication in the form of liaison personnel, task forces, teams and committees to increase the density of communication interfaces between units (Gupta and Govindarajan, 2000). These formal interactions encourage knowledge exchange among individuals from different units and strengthen structural ties, which has been identified as a key driver of intra-MNC knowledge transfer (Hansen, 1999; Schleimer and Riege, 2009). Specifically, teams and task forces enable to cut across the boundaries that separate different learning modes (Jansen et al., 2009). For its part, liaison personnel help to solve disagreements and to reduce causal ambiguity (Simonin, 1999). By facilitating that members from distinct units overcome differences and interpret issues, formal

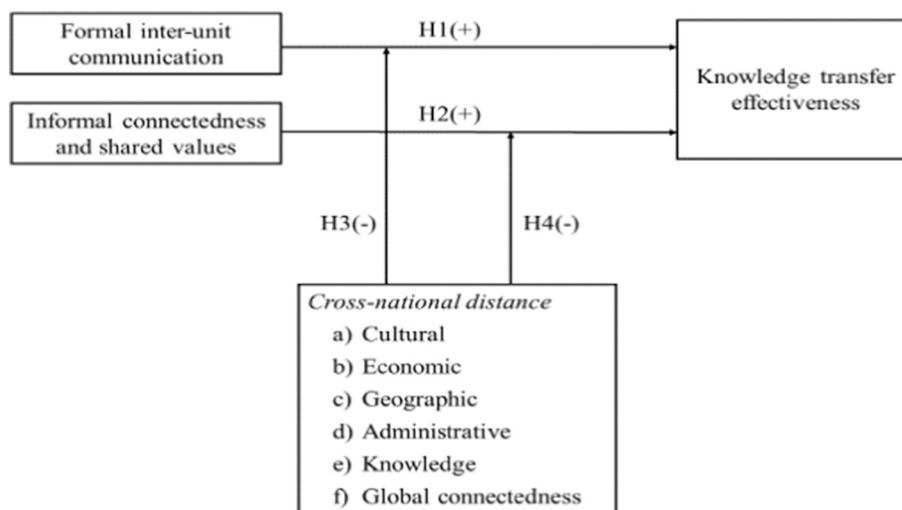


Fig. 1. Research model.

inter-unit communication contributes to reach a common frame of reference and to build understanding about the other's knowledge (Jansen et al., 2009). This favors the identification of relevant knowledge located in other units and enhances the understanding of how to use it, making interunit knowledge transfer more plausible (Claver-Cortés et al., 2018).

Some prior studies support this reasoning. For example, Gupta and Govindarajan (2000) found that the use of these formal liaison devices is positively associated with subsidiaries' inflows and outflows of knowledge. Jansen et al. (2009) revealed that cross-functional interfaces have a positive effect on ambidexterity in organizations that structurally separate exploratory and exploitative units. Ambos and Ambos' (2009) findings show that this formal integration mechanism positively impacts knowledge transfer in MNCs. Based on this theory and evidence, the first hypothesis is stated as follows:

**Hypothesis 1.** The higher the formal communication among MNC units, the higher the effectiveness of knowledge transfer between them.

Regardless of the formal integration mechanisms that an organization deploys, informal social relations also play an important role in how activities are coordinated. Informal connectedness and shared values allude to personal linkages between people, involving a more voluntary mode of coordination than formal structures (Claver-Cortés et al., 2018). This informal integration mechanism encompasses two dimensions of social capital: the relational dimension, i.e., personal relationships and friendships developed through a history of interactions, and the cognitive dimension, i.e., shared codes, representations, and languages (Nahapiet and Ghoshal, 1998). In order to have a holistic understanding of how knowledge is transferred, both dimensions should be considered, particularly in multicultural contexts (Ado et al., 2017), as it the case of the present research.

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). "From a knowledge-sharing perspective, the underlying rationale is that the more different units share long-term visions and goals, the more likely they are to transfer resources and exchange complementary knowledge". From this point of view, "the existence of close interpersonal networks facilitates the diffusion and creation of new knowledge across units within a corporation" (Björkman et al., 2004: 447).

Interpersonal relationships provide opportunities for informal talks that connect unit members with the knowledge located in other units. Hence, interpersonal familiarity and affinity favor knowledge transfer by enriching the communication channels between different units (Gupta and Govindarajan, 2000). For its part, shared values and identity generate cohesion among members from different units of the MNC, resulting in an increased willingness to share knowledge between them (Zeng et al., 2018). Moreover, informal social relationships and shared values contribute to build trust (Peltokorpi and Yamao, 2017) and to develop tight coordination between individuals from different units (Tsai and Ghoshal, 1998), two key drivers of tacit knowledge transfer (Gölgeci et al., 2019; Kostova and Roth, 2003). In sum, informal connectedness and shared values foster collaboration between members from different units and enhance the likelihood of creating win-win situations (Jansen et al., 2009). This provides a common base of understanding and facilitates developing the knowledge sharing climate that Kotabe and Kothari (2016) suggest as vehicle to institutionalize information transfer within MNCs.

Some prior findings support this logic. For example, Williams and Lee (2016) revealed that the extent to which employees of a subsidiary socialize with members from other units is positively related to knowledge flows into and out of the subsidiary. Gölgeci et al. (2019) found a positive effect of subsidiaries' embeddedness on knowledge transfer from other units. For their part, Oh et al.'s (2016) results indicate that socialization mechanisms and trust between subsidiaries and HQ have a positive influence on reverse knowledge transfer. In their meta-analysis, Zeng et al. (2018) showed that socialization through shared values and common organizational cultures facilitates knowledge transfer in MNCs. Accordingly, we propose:

**Hypothesis 2.** The higher the informal connectedness and shared values among MNC units, the higher the effectiveness of knowledge transfer between them.

### 3.2. The moderating effect of cross-national distance

Cross-national distance is a key concept in international management research. Specifically, it has been a central theme in topics such as country choice, sequence of market entry, or entry mode (Berry et al., 2010; Beugelsdijk et al., 2018). However, the question of how distance affects intra-MNC knowledge transfer has received much less attention (Contractor et al., 2016; Driffield et al., 2016).

Different streams of research, including signaling theory (Ismail et al., 2018), transaction costs (Sharma, 2019) and knowledge management (Gaur et al., 2019) provide arguments suggesting that distance is associated with increased difficulties. The general argument is that differences, distances, and diversity may cause incompatibility, friction and conflict (Stahl et al., 2016), which make the communication, coordination and application of knowledge more difficult (Kostova, 1999; Oldroyd et al., 2019). Thus, cross-national distance can be considered a knowledge barrier that hinders its effective transfer (Paulin and Suneson, 2012).

To date, Hofstede's (1980) indicator of differences in cultural values and norms has been the most widely used approach to investigate cross-national distance. Despite the usefulness of this contribution, the great tendency in prior empirical research to rely on this approach has virtually reduced all cross-country differences to the dimension of culture. Yet, cross-national distance is a multi-dimensional construct, and countries are not equidistant on all dimensions (Ghemawat, 2001). Accordingly, the present study approaches cross-country differences by considering six types of distance: a) cultural, b) economic, c) geographic, d) administrative, e) knowledge, and f) global connectedness.

Although we argue that the six dimensions of cross-national distance negatively moderate the relationship between the two organizational integration mechanisms and knowledge transfer effectiveness, the underlying mechanisms differ. In this regard,



national culture, defined as the dominant values, beliefs and assumptions of a society, shapes how people interact and interpret messages and meanings (Hofstede, 1980). In their review of research published over a 24-years period, Stahl and Tung (2015) found a 17:1 imbalance of negative over positive theoretical assumptions when addressing the role of culture in international business. Hence, “cultural differences are implicitly associated with negative outcomes” (Morgulis-Yakushev et al., 2018: 151). Specifically, Gaur et al. (2019) argue that the national cultural distance that separates the sender and recipient units negatively affects the effectiveness of communication channels that are critical for knowledge transfer. Cultural distance hinders comprehension of key capabilities that need to be transferred and constrains communication between units (Reus and Lamont, 2009). If the cultural context in which the sender and recipient units operate do not have sufficient commonality, the people involved in formal-interunit communication devices have to bridge diverse backgrounds, which may lead to misunderstandings and prevent the joint solution of problems (Ambos and Ambos, 2009). Similarly, being embedded in too different cultural contexts makes it harder to maintain informal social relations, as well as to align the goals and values of individuals from different units (Del Giudice et al., 2012).

Economic distance between two countries refers to differences in their economic development and macroeconomic characteristics (Ghemawat, 2001). This kind of distance is important for intra-MNC knowledge transfer because it not only reflects differences in macroeconomic stability, but also in consumer purchasing power, customer preferences, and degree of openness of the economy to external influences (Berry et al., 2010). In the face of such differences, it is unlikely that the knowledge created by the sender can be directly applied by the recipient. For example, in the context of forward knowledge transfer, it has been argued that similarity in economic levels facilitates the replication of the MNC capabilities in a foreign setting, while dissimilarity increases the liability of foreignness and the foreign market entry threshold (Contractor et al., 2016). Moreover, economic differences may exacerbate the NIH syndrome between subsidiaries (Colakoglu et al., 2014). Consequently, it is expected that economic distance will limit the effectiveness of the two organizational integration mechanisms.

Geographic distance increases travel time, as well as transportation and communication costs (Beugelsdijk et al., 2018). Spatial distance makes it more difficult to create collaborative environments and to build close relationships, whereas proximity facilitates face-to-face and other means of contact for the emergence of cooperative environments (Choi and Contractor, 2016). Thus, members from different units are less likely to interact when geographic distance between them is high. Moreover, obstacles such as different time zones and long transmission channels may reduce the effectiveness of both formal and informal integration mechanisms, as the costs and complexity of knowledge search and communication increase with geographic distance (Ambos and Ambos, 2009). Following Gaur et al. (2019), when focal units are “in proximate locations, it is easier to establish both formal and informal communication channels that facilitate knowledge flows. On the other hand, when teams are located in faraway places, coordination becomes challenging, which in turn hinders the smooth flow of knowledge” (p. 1888–9).

Administrative distance refers to differences in the rules of the game that guide and structure human actions (North, 1990). These rules are established by both formal (i.e., regulative) institutions and informal (normative and cognitive) institutions (Scott, 1995). Berry et al. (2010) included colonizer-colonized links, common language, and legal and religious institutions as part of administrative distance. Differences in formal and informal institutions make the knowledge generated in one context not to be directly transferable and useful in another context, so it must be adapted. This may reduce the motivation of the individuals involved in the relationship, especially in the case of the recipient unit (Gaur et al., 2019). Moreover, differences in legal systems may also cause uncertainties about the recipient unit's market and fear of misappropriation by the partner or its employees (Contractor et al., 2016). For its part, if informal institutions of two countries are very dissimilar, normative and cognitive barriers may emerge that hinder communication and identity formation (Peltokorpi and Yamao, 2017). As a result, the effectiveness of formal and informal integration mechanisms is expected to be lower as administrative distance increases.

Knowledge distance refers to differences in scientific and technological knowledge bases between countries (Berry et al., 2010). This dimension of distance connects with the concept of absorptive capacity. In this vein, an organization's level of prior related knowledge determines its ability to understand and apply new external information (Cohen and Levinthal, 1990). Therefore, the recipient must possess some amount of prior basic knowledge that is closely related to the knowledge of the sender. If there is not enough overlap between the knowledge bases of both units, the recipient will be unable to recognize the value and to assimilate the knowledge provided by the sender. Lane and Lubatkin's (1998) findings confirmed this reasoning, revealing that interorganizational learning is largely determined by the relative relationship between the student firm's basic knowledge and the teacher firm's knowledge base. We argue that knowledge differences between the countries of the sender and recipient unit limit relative absorptive capacity, so diminishing the effectiveness of formal and informal integration mechanisms for transferring knowledge between them.

Finally, global connectedness refers to the degree of connectedness of a country with the rest of the world (Oxley and Yeung, 2001). To the extent that it “captures the ability of resident individuals and companies to interact with other parts of the world, obtain information, and diffuse their own activities” (Berry et al., 2010: 1468), it seems reasonable to assume that the effectiveness of formal and informal integration mechanisms will be lower as global connectedness distance increases. When the sender and recipient units' countries are similar in terms of their global connectedness, both parties face similar communication advantages (if both countries are globally well connected) or disadvantages (if both countries are poorly connected with the rest of the world), which favors mutual understanding and comprehension. By contrast, when both countries are very different in terms of their degree of global connectedness, the unit located in the well-connected country will find it frustrating to interact with the unit located in the poorly connected country, thus lowering the effectiveness of organizational integration mechanisms.

Based on the previous discussion, the following hypotheses are proposed:

**Hypothesis 3.** Cross-national distance – (a) cultural, (b) economic, (c) geographic, (d) administrative, (e) knowledge, and (f) global connectedness – negatively moderates the impact of formal inter-unit communication on knowledge transfer effectiveness.

**Hypothesis 4.** Cross-national distance – (a) cultural, (b) economic, (c) geographic, (d) administrative, (e) knowledge, and (f) global connectedness – negatively moderates the impact of informal connectedness and shared values on knowledge transfer effectiveness.

## 4. Methods

### 4.1. Sample and data collection

Our unit of analysis is the transfer relationship between MNC units. The study addressed Spanish MNCs with at least 50% of sales abroad and a wide network of foreign subsidiaries. Specifically, the empirical research was conducted on units of five MNCs (including HQs and subsidiaries). These five companies were chosen due to the existence of contacts that allowed the research team to access their senior corporate executives, so their support for the study could be gained. The five MNCs are listed in Ibex-35 stock index and occupy leading positions in stainless steel manufacturing, telecommunications, energy/utility, toll roads, and banking services. All of them were highly internationalized, with a percentage of sales abroad ranging from 50% to 90% (average 70%) and have subsidiaries in several countries. Numerous studies on intra-MNC knowledge transfer have relied on a reduced number of MNCs (e.g., Beletskiy and Fey, *in press*; Gölgeci et al., 2019; Jensen and Szulanski, 2004; Mäkelä et al., 2013; Monteiro et al., 2008; Zellmer-Bruhn and Gibson, 2006). The size and international dimension of these five MNCs guarantee a satisfactory number of units for carrying out the quantitative techniques described below.

As detailed in the next section, measures of cross-national distance are based on secondary data sources, whereas effectiveness of knowledge transfer and the two organizational integration mechanisms were captured through a questionnaire specifically designed for this study. Survey data were collected following three steps: (i) identification of the knowledge transfer relationships and the units involved in each of them, (ii) questionnaire design and pretest, and (iii) questionnaire send to top managers of the units identified in the first step.

The first step was conducted between July and October 2009. During this period, senior corporate executives of the five MNCs with responsibilities in international business were interviewed. In these face-to-face interviews, the research team explained the objective of the study and asked corporate executives to identify the knowledge transfer relationships that had taken place between different units of their MNC in the last three years, i.e., during the period 2007–2009. A knowledge transfer relationship was defined as the intent to transfer an identifiable piece of knowledge from one MNC unit to another (Foss, 2007). Since the study's dependent variable is the effectiveness of knowledge transfer, we explained corporate executives that they should not restrict the list to successful transfers. They were also informed that any unit of the MNC (HQ or subsidiary) could be a potential sender or receiver, so that we were interested in knowledge transfers that took place in any direction, i.e., from HQ to a subsidiary, from a subsidiary to HQ, or between two subsidiaries. Moreover, the term 'identifiable piece of knowledge' was clarified. Specifically, following Gupta and Govindarajan (2000), we indicated corporate executives that our interest was on the transfer of largely procedural types of knowledge possessed by the sender unit (e.g., product and process designs, marketing know-how, management systems and practices, etc.) but not on the transfer of largely declarative types of knowledge (e.g., monthly financial results). For each identified knowledge transfer, the interviewee was asked to describe it in order to be unequivocally be recognized by the involved units and to facilitate the contact details of the responsible of the transfer, both in the sender and recipient unit. Senior corporate executives of the five MNCs identified 207 knowledge transfers between pairs of units from 27 different countries.<sup>3</sup> These transfers involved 124 units (5 HQs and 119 subsidiaries). Thus, on average, each identified unit was involved in 3.34 transfer relationships (either as sender or as recipient). These 207 knowledge transfer relationships constitute the population of the study.

The second step consisted in questionnaire design and pretesting. To design the questionnaire, previous research was reviewed in order to find measures that would appropriately capture the variables under study (see next subsection). The questionnaire was pretested through face-to-face interviews with the five senior corporate executives and video calls with top managers of five subsidiaries (one of each MNC). This process led to slightly modify some items to ensure they were clearly understood by managers.

The last step consisted in sending an online version of the questionnaire to the top managers of the units identified by senior corporate executives. In order to minimize common method bias and increase the robustness of the measures, the questionnaire was addressed to the 'two sides of the coin', i.e., in each knowledge transfer relationship, the questionnaire had to be filled by the responsible of the sender unit and the responsible of the recipient unit. For the analysis, the responses obtained from both informants in each knowledge transfer were averaged. Integrating the perception of the two actors involved in a relationship allows to get a more precise measure of knowledge transfer effectiveness. Li et al. (2016) followed the same procedure to measure the quality of the HQ-subsidiary relationship. Even more important, prior studies on intra-MNC knowledge transfer are conducted at the unit-level (e.g., Ambos and Ambos, 2009; Gölgeci et al., 2019; Gupta and Govindarajan, 2000). This implies that knowledge transfer and organizational mechanisms are measured in general terms (i.e., knowledge transfer from/to the *rest* of the MNC and use of mechanisms that connect the unit with *other units*). This is especially problematic when lateral transfers between sister subsidiaries are considered. Our approach enabled to capture how effective was a *particular knowledge transfer relationship* and to proxy the extent to which organizational integration mechanisms are used by the two units involved in that relationship. In this regard, knowledge transaction (i.e., the

<sup>3</sup> Some examples of knowledge transfers identified by the senior corporate executives were (XXX have been included in some cases for confidentiality reasons): Cloud computing definition techniques, XXX low end smartphone device, Broadband service development, Optimization of XXX network, Electronic meter implementation, Hidro optimization, New spare parts management model, Technical implementation process of XXX, Improvement of online customer satisfaction, Services quality program, Talent program.

transfer relationship) is a more adequate unit of analysis for the research question addressed in this study (Foss, 2007).

In May 2010, 414 online questionnaires referred to the 207 knowledge transfers identified in the first step were sent to the responsible in the involved units. Together with the questionnaire, the research team sent a letter summarizing the objectives of the study and explaining that he/she was identified by Mr./Ms. senior corporate executive as the responsible of the knowledge transfer 'X' in which his/her unit acted as knowledge sender/recipient. Two reminders were sent to non-responders in July and September in order to improve the response rate. In October 2010, a total of 296 questionnaires were completed. However, in some cases, one of the two parts involved in the transfer relationship did not complete the survey (34 questionnaires had no matched pair). The final sample was shaped by 131 knowledge transfers for which completed information was received from the sourcing and the recipient unit (i.e., 262 valid questionnaires), which implies a response rate of 63.28%. The response rate was similar in the five MNCs, ranging from 58.6% to 65.2%. The final sample included 82 units (5 HQs and 77 subsidiaries). On average, each participating unit was involved in 3.20 transfer relationships (either as sender or as recipient), which is similar to the figure observed in the population. Moreover, of the 27 countries initially identified, 21 were represented in the final sample. Together, these data seem to indicate that the final sample of transfer relationships is representative of the population.

## 4.2. Measures

### 4.2.1. Dependent variable: knowledge transfer effectiveness

Given the difficulty of capturing the performance of the transfer event through objective indicators, researchers commonly measure it by using subjective measures about the satisfaction with the process or the transfer outcome (Martin and Salomon, 2003). Accordingly, this study relied on survey items available in the literature for measuring *knowledge transfer effectiveness* as perceived by the units involved in the transfer. The scale comprises the following five items posed in a 5-points Likert-type scale (1 = completely disagree; 5 = completely agree): 'the transferred knowledge has been fully understood by the recipient unit', 'the transferred knowledge has been put into practice by the recipient unit', 'the recipient unit is satisfied with the quality of the transferred knowledge', 'the recipient unit considers it important for organizational success to continue working with the transferred knowledge', and 'the transfer was successfully completed' (Minbaeva et al., 2014; Pérez-Nordtvedt et al., 2008; Szulanski, 1996). As introduced above, for each knowledge transfer, the final score of each item was obtained by averaging the responses of the sourcing and recipient units.

An exploratory factor analysis was conducted on these five items (determinant of correlation matrix = 0.008; KMO = 0.834; Bartlett's test = 609.89,  $p < 0.000$ ) and a single-factor solution was obtained with no confusing loadings (lowest factor loading = 0.759). The scale reliability coefficient indicated quite good internal consistency ( $\alpha = 0.907$ ).

### 4.2.2. Independent variables: organizational mechanisms for knowledge transfer

The two identified organizational mechanisms were also measured through survey items. Based on prior studies, five items were included for capturing *formal inter-unit communication* (Bresman et al., 1999; Gupta and Govindarajan, 2000; Jansen et al., 2009), whereas other five items were used for measuring *informal connectedness and shared values* (Harzing and Noorderhaven, 2006; Szulanski, 1996; Jansen et al., 2009). In both cases, a 5-points Likert-type scale (1 = completely disagree; 5 = completely agree) was applied. As in the previous case, the final score of each item was calculated by averaging the responses given by the sourcing and recipient subsidiaries.

As expected, exploratory factor analysis on the ten items revealed a two-factor solution with eigenvalues greater than one (determinant of correlation matrix = 0.005; KMO = 0.820; Bartlett's test = 657.83,  $p < 0.000$ ). Table 1 shows the rotated solution. Together, the two identified factors explain 63.2% of total variance. With the only exception of item #4 ('expatriation of managers among units'), all items loaded on the expected factor. Furthermore, item #7 shows confusing loadings among the two factors. However, any modification on the items included in the analysis resulted in a fuzzier factor structure and a poorer internal consistency of the second factor. As loadings of confusing items were close to 0.6, we decided to maintain the two factors with the structure that resulted from the rotated solution. The good internal consistency of both scales ( $\alpha = 0.876$  and 0.813, respectively) supports this decision. Notwithstanding, to deal with this issue, factor scores were used in the subsequent regression analysis. By giving more weight to items presenting lower levels of measurement errors, factor scores provide a partial implicit control for measurement errors, making them a stronger alternative than scale scores (Morin et al., 2016). Specifically, factor scores were computed using the regression estimates method.

### 4.2.3. Moderator variables: dimensions of cross-national distance

For measuring cross-national distance, we relied on Berry et al.'s (2010) institutional approach and disaggregated the construct in a set of dimensions including cultural, economic, geographic, knowledge, global connectedness, and administrative distance. These authors calculated dyadic distances across countries for each dimension using the Mahalanobis method. The entire cross-national distance dataset developed by Berry et al. (2010) is freely available to scholars.<sup>4</sup> Based on this information, for each knowledge transfer, we took the value of the cross-national distance among the pair of countries in which the sender and recipient units were located. We did this for each dimension of cross-national distance. The indicators used by Berry et al. (2010) are summarized below.

<sup>4</sup> Matrices with the distances among pairs of countries are available at: [http://lauder.wharton.upenn.edu/ciber/faculty\\_research.asp](http://lauder.wharton.upenn.edu/ciber/faculty_research.asp).



**Table 1**  
Results of exploratory factor analysis.

Items	Factor 1	Factor 2
	Formal inter-unit communication	Informal connectedness and shared values
Org_2. Our unit takes part in committees and interdisciplinary teams to coordinate decisions and actions with other units	0.873	
Org_5. Our company organizes meeting sessions and events aimed at enhancing the affinity between employees from different units	0.849	
Org_1. Employees of our unit usually participate in training programs with staff from other units (seminars, courses, workshops)	0.836	
Org_3. Employees of our unit usually meet with staff from other units for addressing technical issues	0.765	
Org_9. Despite our differences, the distinct units of our company can always learn from each other		0.815
Org_8. In our company it is easy to justify the time and money invested in visiting other units		0.797
Org_10. For improved performance, our company considers equally legitimate adopting knowledge from other units than our own creativity		0.751
Org_6. Our unit maintains a fluid informal communication with the rest of the units (through contacts and personal relationships)		0.582
Org_7. The objectives and values of the executives of our unit are consistent with those of the company's top management	0.521	0.561
Org_4. The expatriation of managers among units is a common practice in our company		0.511
Explained variance	34.05%	29.12%
Accumulated	34.05%	63.17%
Cronbach's alpha	0.876	0.813

Notes:  $n = 131$ . Extraction method: principal-component analysis. Rotation method: varimax with Kaiser normalization. Factor loadings smaller than 0.5 are omitted for better readability. Items appear ordered by their loadings.

For measuring *cultural distance*, they used different waves of the World Values Survey (WVS) to replicate the Hofstede's (1980) widely-used indicator of differences in cultural values and norms across countries. Specifically, the measure of cultural distance is constructed based on Hofstede's uncertainty avoidance, power distance, individualism, and masculinity. *Economic distance* was calculated based on four macroeconomic indicators: income level (GDP per capita), inflation rate, exports intensity, and imports intensity. This data comes from the World Development Indicators (WDI) provided by the World Bank. *Geographic distance* was calculated using the great circle method based on the CIA World Factbook. This data source was also used for measuring *administrative distance*. Indicators on colonizer-colonized link, shared language, and common religion were obtained from this source. In addition, Berry et al. (2010) use a fourth indicator for capturing this dimension of cross-national distance, i.e., the similarity of legal systems. *Knowledge distance* captures the different capacity of countries to create knowledge and to innovate. This dimension is measured based on two indicators: number of patents (USPTO) and number of scientific articles (WDI and ISI), per million population in both cases. Finally, *global connectedness distance*, was measured based on indicators of international tourism expenditures, international tourism receipts, and Internet users (WDI).

#### 4.2.4. Control variables

Five variables were included in the empirical analysis for controlling the potential effect that corporate, sender, receiver, and transferred knowledge characteristics may have on the effectiveness of knowledge transfer. Specifically, we controlled for *company size*, measured in terms of the natural logarithm of number of full-time employees of the MNC. Similarly, the natural logarithm of the percentage of MNC sales in foreign markets was used to capture the *degree of internationalization*.

In addition, knowledge transfer within MNCs may be influenced by the characteristics of the sender and receiver units, as well as the knowledge being transferred (Nadayama, 2019; Zeng et al., 2018). Regarding the sourcing unit, it is expected that its experience as a 'teacher' in prior knowledge transfer activities will increase its 'source transfer capacity' (Martin and Salomon, 2003). Thus, we relied on three items (Pérez-Nordtvedt et al., 2008; Szulanski, 1996) that capture the *sourcing unit experience* ( $\alpha = 0.865$ ). We also included five items (Jensen and Szulanski, 2004; Simonin, 2004) that capture the *recipient unit commitment* ( $\alpha = 0.878$ ) to control for the efforts and resources it devoted to effectively 'learn' from its counterpart. Finally, knowledge characteristics may substantially affect its ease of explanation and comprehension. Three items (Simonin, 1999; Szulanski et al., 2004) were used to control for the lack of ambiguity through the *knowledge unambiguity* variable ( $\alpha = 0.794$ ).

#### 4.3. Common method bias

We followed a series of procedures to minimize the potential existence of common method variance in our dataset. In dealing with this issue, we opted for the preferred method in the data collection stage, that is, we relied on two different informants per transference, one from the sender and another one from the recipient unit, which enabled us to capture information from different sources (Podsakoff et al., 2003). In addition, it was clearly indicated in the questionnaires that there were no correct or incorrect answers. Anonymity and confidentiality were guaranteed, and informants were encouraged to answer as honestly as possible, so less biased answers

**Table 2**

Descriptive statistics, Pearson's correlations, and variance inflation factors.

Variable	Min.	Max.	Mean	S.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Effectiveness of knowledge transfer	−3.67	1.68	0.00	1.00	1													
2. Company size (Log)	8.92	12.43	11.36	1.36	0.038	1												
3. International sales (Log %)	3.91	4.51	4.28	0.21	0.110	0.117	1											
4. Sourcing unit experience	1.63	5.00	4.11	0.59	0.609	0.072	0.291	1										
5. Recipient unit commitment	1.30	5.00	3.85	0.64	0.468	−0.252	0.369	0.635	1									
6. Knowledge unambiguity	1.00	4.83	3.31	0.72	0.151	0.469	0.064	0.245	−0.096	1								
7. Cultural distance	0.00	20.18	7.22	5.38	−0.173	−0.084	0.321	−0.045	0.126	−0.086	1							
8. Economic distance	0.00	12.59	1.86	2.39	−0.167	−0.299	0.226	0.029	0.149	−0.046	0.521	1						
9. Geographic distance	0.00	12,053	3664	3791	0.112	−0.215	−0.016	0.113	0.145	−0.077	0.001	0.584	1					
10. Administrative distance	0.00	234.2	86.33	56.83	−0.148	−0.189	0.063	0.005	−0.017	−0.121	0.396	0.490	0.222	1				
11. Knowledge distance	0.00	26.69	1.79	3.99	−0.015	0.081	0.164	0.019	0.042	0.062	0.186	0.354	0.268	0.031	1			
12. Global connectedness distance	0.00	5.99	1.66	1.37	−0.114	−0.134	0.240	0.088	0.135	0.016	0.661	0.404	0.297	0.283	0.042	1		
13. Formal inter-unit communication	−2.52	1.65	0.00	1.00	0.257	0.650	−0.057	0.177	−0.016	0.412	−0.152	−0.175	0.079	−0.183	−0.008	−0.023	1	
14. Informal connect. & shared values	−3.86	2.24	0.00	1.00	0.331	−0.124	0.548	0.362	0.485	−0.070	0.135	0.154	0.102	0.028	0.058	0.144	0.000	1
VIF						3.121	2.032	2.234	2.600	1.601	3.834	3.646	2.843	1.500	1.327	2.613	2.372	1.763

 $n = 131$ .All correlations above  $|0.173|$  are significant at  $p < 0.05$  (bilateral).

may be expected (Chang et al., 2010). Third, as knowledge transfer effectiveness, formal inter-unit communication, informal connectedness and shared values, sourcing unit experience, recipient unit commitment, and knowledge unambiguity were captured through a large number of items, and the contents of these constructs are quite dissimilar, the probability of this bias is also reduced. Fourth, we checked for common method bias by performing Harman's single factor test. When dependent, independent, and control variables obtained from the survey were included, the un-rotated factor solution revealed five factors with eigenvalues greater than one, with the first extracted factor explaining 33.6% of total variance, quite far from the cutting edge of 50%. These results indicate that common method bias is not a concern in the data (Podsakoff and Organ, 1986). Finally, the likelihood of common method variance is further diminished when the model specification increases its complexity because it makes it harder to be anticipated by informants' cognitive maps (Chang et al., 2010). In our case, model complexity relies on the interaction effect of the six dimensions of cross-country distance, which are captured through archival data, further reducing the likelihood of anticipation by respondents.

## 5. Results

Table 2 reports descriptive statistics, Pearson's correlations, and variance inflation factors (VIFs). Only three pair-wise correlations among independent variables are higher than 0.6, with the higher coefficient being 0.661 between cultural and global connectedness distances. Although not excessive, this correlation can be considered as relatively high. To further check for multicollinearity, VIFs were examined. The maximum VIF is 3.834, which is well below the recommended ceiling of 10 (Kutner et al., 2004). Thus, it can be concluded that multicollinearity is not a serious concern in this study. Notwithstanding, regression models were estimated based on the standardized value of all dependent and independent variables. This procedure helps to minimize potential multicollinearity and allows for a meaningful comparison among variables measured with different scales. Furthermore, variables that shape the interaction terms were standardized before creating the respective cross products (Cohen et al., 2003).

Moderated hierarchical regression analysis estimated by ordinary least squares (OLS) was used for hypotheses testing. Regression analysis is an adequate technique for testing moderation effects (Baron and Kenny, 1986) and has been widely employed in social sciences (Dawson, 2014). To test moderation using this technique, the dependent variable is regressed on the independent variable, the moderator variable, and their interaction (product) term (Baron and Kenny, 1986). The significance of the interaction term determines

**Table 3**  
Results of hierarchical regression analyses.

	Dependent variable: knowledge transfer effectiveness			
	Model 1	Model 2	Model 3	Model 4
Constant	0.000	0.000	0.052	0.026
Company size (Log)	−0.095	−0.222**	−0.194*	−0.275**
International sales (Log %)	0.009	−0.025	−0.022	−0.007
Sourcing unit experience	0.495***	0.486***	0.485***	0.500***
Recipient unit commitment	0.154 <sup>†</sup>	0.073	0.078	0.093
Knowledge unambiguity	0.124 <sup>†</sup>	0.106	0.110	0.128*
Cultural distance	0.295**	0.305**	0.252*	0.253**
Economic distance	−0.466***	−0.453***	−0.270**	−0.230*
Geographic distance	0.399***	0.338***	0.262**	0.317***
Administrative distance	−0.040	−0.027	0.026	−0.046
Knowledge distance	−0.015	0.008	−0.026	−0.053
Global connectedness distance	−0.308***	−0.321***	−0.315**	−0.362***
Formal inter-unit communication		0.199**	0.183*	0.192**
Informal connectedness and shared values		0.154*	0.170**	0.125 <sup>†</sup>
Formal i-u communication * cultural dist.			−0.067	
Formal i-u communication * economic dist.			0.196 <sup>†</sup>	
Formal i-u communication * geographic dist.			−0.096	
Formal i-u communication * administrative dist.			0.108	
Formal i-u communication * knowledge dist.			−0.005	
Formal i-u communication * global connect. dist.			0.018	
Informal connect. & shared values * cultural dist.				0.101
Informal connect. & shared values * economic dist.				−0.353***
Informal connect. & shared values * geographic dist.				0.165*
Informal connect. & shared values * administrative dist.				−0.186**
Informal connect. & shared values * knowledge dist.				0.098
Informal connect. & shared values * global connect. dist.				−0.022
R <sup>2</sup>	0.502	0.538	0.574	0.630
Δ R <sup>2</sup>		0.036**	0.036	0.092***
F-statistic	10.891***	10.485***	7.868***	9.965***
Durbin-Watson statistic			1.883	1.885

*n* = 131.

\*\*\* *p* < 0.01.

\*\* *p* < 0.05.

\* *p* < 0.1.

<sup>†</sup> *p* < 0.15.

if a moderation effect exists. Hierarchical regression consists in adding control variables, independent variables and interaction terms in separate steps. This procedure has two important advantages. On the one hand, it is useful when there is a theoretical basis for describing the sequence of variables to be added into the regression equation (Cohen et al., 2003). Here, the primary test is for the extra variance being explained by the new entered variables. In our case, we want to know if, given the distance that separate two units of the MNC (included in step 1), the use of the two organizational integration mechanisms (included in step 2) explains additional variance of knowledge transfer effectiveness. On the other, entering the interaction term in a separate step (step 3) allows to compute the increment in R2 due to the interaction terms (Dawson, 2014).

Table 3 presents the regression results. Model 1 is the baseline in which only the control variables and the six dimensions of cross-national distance (moderating variables) are included. Model 2 adds the direct effects of the two organizational mechanisms. Finally, in view of our moderating hypotheses, Models 3 and 4 add the interaction terms between formal inter-unit communication and informal connectedness and shared values, respectively, and the six dimensions of cross-national distance.

Regarding the effect of the five control variables, as expected, findings show a strong and significant positive effect of the experience of the sourcing unit on knowledge transfer effectiveness. The coefficients of commitment of the recipient unit and knowledge unambiguity also have the expected positive signs, but the results are less robust, especially in the case of the recipient unit commitment, which is only marginally significant in Model 1 ( $\beta = 0.154$ ;  $p = 0.129$ ). With respect to the two corporate controls, the size of the multinational seems to harm the effectiveness of knowledge transfer among its units, as the coefficient is negative and statistically significant in three of the four models. Finally, the degree of internationalization of the MNC does not show any effect on knowledge transfer effectiveness.

When examining the direct effect of the six dimensions of cross-national distance, differing results are found for each dimension. Whereas economic ( $\beta = -0.466$ ;  $p = 0.000$ ) and global connectedness ( $\beta = -0.308$ ;  $p = 0.004$ ) distances show a negative effect, cultural ( $\beta = 0.295$ ;  $p = 0.022$ ) and geographical ( $\beta = 0.399$ ;  $p = 0.000$ ) distances seem to positively affect the effectiveness of knowledge transfer. Finally, no significant effect was found in the case of administrative ( $\beta = -0.040$ ;  $p = 0.614$ ) and knowledge ( $\beta = 0.015$ ;  $p = 0.838$ ) distances.

We next examined the hypothesized effect of formal inter-unit communication and informal connectedness and shared values. Inclusion of the two organizational mechanisms significantly increases the explanatory power in Model 2 ( $\Delta R^2 = 0.036$ ;  $p = 0.012$ ). Both the coefficient of formal inter-unit communication ( $\beta = 0.199$ ;  $p = 0.041$ ) and informal connectedness and shared values ( $\beta = 0.154$ ;  $p = 0.068$ ) are positive and statistically significant, which supports hypotheses 1 and 2.

Hypothesis 3 predicted that the six dimensions of cross-national distance will negatively moderate the impact of formal inter-unit communication on knowledge transfer effectiveness. Results shown by Model 3 do not support this assumption, as none of the coefficients of the interaction between formal inter-unit communication and the six dimensions of cross-national distance show statistical significance. Only the interaction with economic distance shows a marginally significant positive effect ( $\beta = 0.196$ ;  $p = 0.103$ ). In addition, inclusion of the six interaction terms in Model 3 does not lead to a statistically significant increase of explained variance ( $\Delta R^2 = 0.036$ ;  $p = 0.168$ ). Thus, hypothesis 3 is not supported.

On the other hand, hypothesis 4 is partially supported. As shown in Model 4, coefficients of three of the six interactions between informal connectedness and shared values and the distance dimensions have a statistically significant coefficient. However, only the interaction with economic ( $\beta = -0.353$ ;  $p = 0.006$ ) and administrative distances ( $\beta = -0.186$ ;  $p = 0.022$ ) have the expected negative sign, which is consistent with sub-hypotheses 4b and d. Contrary to our expectations, the coefficient of the interaction term with geographic distance is positive and significant ( $\beta = 0.165$ ;  $p = 0.098$ ). Importantly, as it should be the case for confirming moderating effects, inclusion of the interaction terms in Model 4 leads to an increase in explanatory power and model fit ( $\Delta R^2 = 0.092$ ;  $p = 0.000$ ).

To ease visual interpretation, significant interaction terms were plotted following Aiken and West (1991). In the graphs, low (high) values of both the independent and moderator variables are given by one standard deviation below (above) their standardized value. As shown in Fig. 2, the usefulness of informal connectedness and shared values to effectively transfer knowledge between units decreases as economic distance is higher (Fig. 2a). A similar pattern is observed in the case of administrative distance (Fig. 2c). Surprisingly, just the opposite occurs in the case of geographic distance (Fig. 2b), i.e., the higher the geographic distance that separates two units, the higher the effectiveness of this informal mechanism for transferring knowledge between them.

## 6. Discussion

### 6.1. Discussion of results

Our findings show that the two organizational mechanisms considered, i.e., *formal inter-unit communication* and *informal connectedness and shared values*, have a positive effect on knowledge transfer effectiveness between MNC units. These results are aligned with the argument that richer communication channels between the sender and recipient units favors knowledge transfer (Ferraris et al., 2017; Kotabe and Kothari, 2016). Interestingly, the effect of formal mechanisms is comparatively higher. This result is consistent with those of Schleimer and Riege (2009). In their case study on knowledge transfer between international units at BMW, these authors found that, although both formal and informal network ties are important drivers of knowledge transfer between units, formally structured ones were considered more important by managers. In this vein, Oliva and Kotabe (2019) have argued that effective knowledge transfer requires the implementation of structured practices to disseminate knowledge throughout the organization. Our findings reveal that this is particularly true for MNCs. Therefore, although “informalities have the potential to become the rule for gaining knowledge rather than the exception” (Ado et al., 2017: 12), their comparatively lower effect highlights the difficulties of leveraging interpersonal relationships between individuals from globally dispersed units.

Regarding the direct effect of the six dimensions of cross-national distance, we found mixed results. As it was expected, economic and global connectedness differences are negatively related to knowledge transfer effectiveness. By contrast, administrative and knowledge distances were found to have no direct effect. Surprisingly, cultural and geographical differences seem to facilitate interunit knowledge transfer. These differing effects support our approach of considering the multidimensional nature cross-national distance and corroborates the argument that different types of distance may have different effects (Berry et al., 2010; Ghemawat, 2001). Specifically, administrative and knowledge distances may be not relevant to knowledge transfer by themselves, but rather become noticeable only when other conditions and variables are present, as it will be discussed below. Concerning the unexpected results of cultural and geographical distances, they may be explained because MNCs are especially aware of these two types of distance, so they tend to devote additional efforts to the transfer process when they realize that cultural and/or geographical distance are high (Ahmad et al., 2016; Li et al., 2016). Thus, although there is certain agreement on the fact that distance is an obstacle for knowledge transfer, in some cases, it may be a 'double-edge sword' (Reus and Lamont, 2009).

Contrary to our expectations, no dimension of cross-national distance was found to affect the positive influence of formal inter-unit communication on knowledge transfer effectiveness. This denotes that formal integration mechanisms are useful whatever the type of distance that separates the countries of the units involved in the transfer relationship. It seems that the structured and more systematic nature of formal mechanisms make them to work relatively context-free. The notion of swift trust developed by Zakaria and Yusof (2020) for analyzing global virtual teams can also help to explain this finding. Unlike trust, swift trust does not require building close interpersonal relationships, but skips the interpersonal dimension and raises from broad categories of social structures and actions. Committees and interdisciplinary teams, meeting sessions and events, joint training programs, and inter-unit technical meetings, as component parts of formal inter-unit communication, seem to provide the structures required for developing swift trust, making this mechanism less vulnerable to the effect of cross-national differences.

On the other hand, we found partial support for the hypothesized interaction of cross-national distance with the informal integration mechanism. As expected, findings reveal that economic and administrative distances reduce the effectiveness of informal connectedness and shared values, whereas cultural, knowledge and global connectedness dimensions do not affect its influence on interunit knowledge transfer. Surprisingly, geographical distance was found to strengthen the effectiveness of this informal mechanism. Thus, economic differences between countries not only hinder knowledge transfer by themselves. Besides, they also diminish the effectiveness of informal social relations for transferring knowledge between MNC units. This points to economic distance as an important knowledge barrier that impedes knowledge transfer in MNCs (Paulin and Suneson, 2012). In this regard, great economic differences imply that the sender and recipient units are embedded in very different contexts in terms of consumer purchasing power and customer needs and preferences (Berry et al., 2010). This not only makes it harder for the recipient to adopt the new knowledge (direct effect), but also reduces its interest and motivation, which in turn, make the use of informal mechanisms less effective for the transfer process. For its part, while administrative distance does not impede knowledge transfer by itself, it reduces the effectiveness of informal connectedness and shared values. This may be due mainly to differences in informal institutions and language differences, as they are determinant for the formation of social identity (Peltokorpi and Yamao, 2017).

The unexpected positive moderating role of geographic distance can be explained by the nature of our sample, i.e., Spanish MNCs with a strong presence in Latin America. As argued by Morris et al. (2008), Spanish culture fosters sociability, which results in personal, close relationships with co-workers. These authors also demonstrated that Spanish employees show higher non-job-required communication and more long-lived friendships than other cultural groups (i.e., North American, Chinese and German). The fact that Spain is geographically distant from Latin American countries but share with them a culture characterized by sociability and close personal interactions could explain this effect.

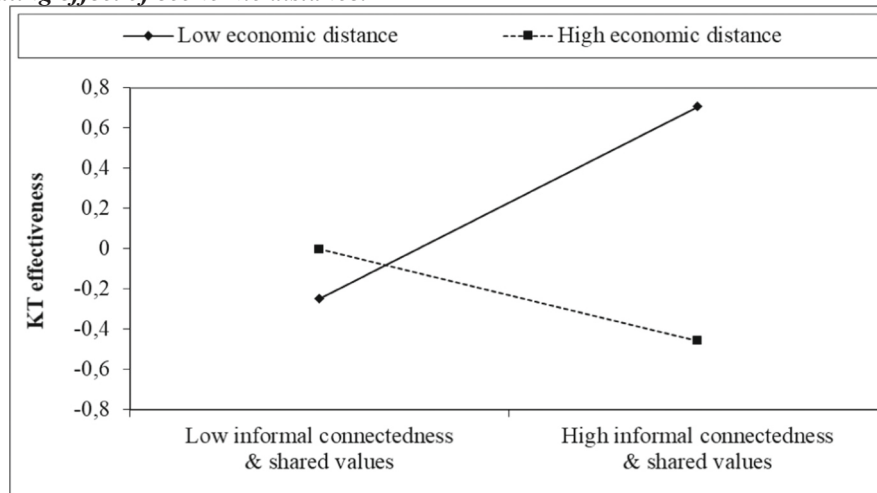
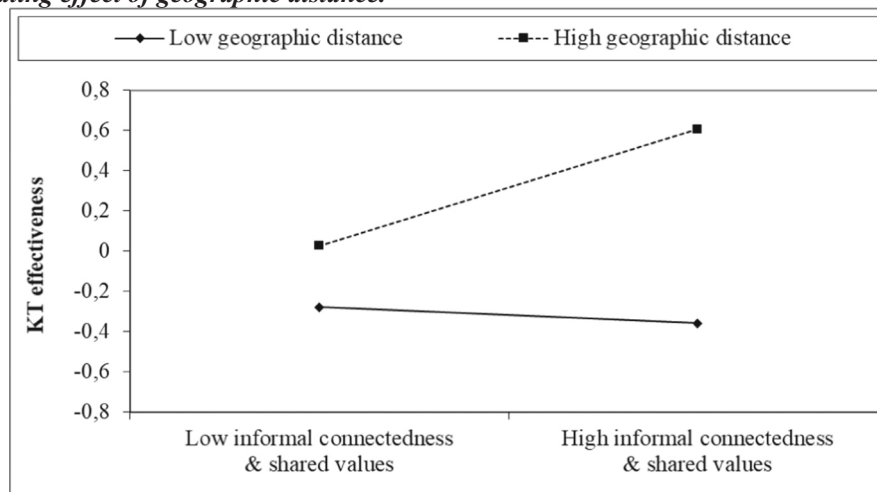
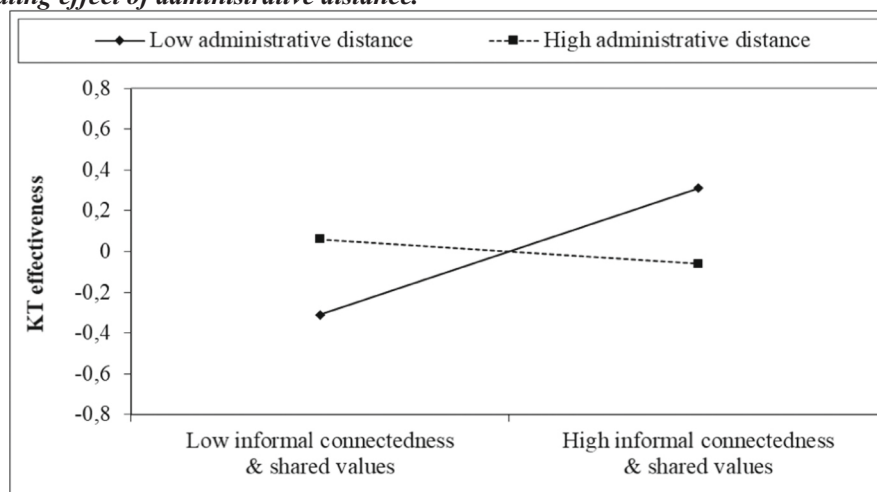
For its part, global connectedness distance does not affect the effectiveness of informal connectedness and shared values, indicating that differences in global connectedness does not erode the usefulness of personal linkages for transferring knowledge. This dimension of distance may be relevant to explain the effectiveness of other types of integration mechanisms not considered in this study. This may be the case of technology-based coordination mechanisms, as they rely on the use of technical infrastructure such as business intelligence, collaboration software or distributed learning (Ambos and Ambos, 2009).

Finally, knowledge distance neither was found to interact with informal connectedness and shared values. In fact, this is the only dimension of distance that did not show any effect (neither direct nor indirect) on knowledge transfer effectiveness. This lack of influence may be due to the differences between knowledge transfer and technology transfer (Ismail et al., 2018). In this vein, differences in scientific and technological knowledge bases between countries may be particularly relevant for explaining technology transfer. However, in line with prior research on knowledge transfer in MNCs, this study did not differentiate between knowledge transfer and technology transfer, which may obscure the effect of knowledge distance.

## 6.2. Theoretical implications

This study makes three main contributions to the literature on knowledge management in MNCs. First, it reveals which organizational mechanisms associated with flexibility of knowledge integration are more effective for transferring knowledge between MNC units. Based on the argument that interaction and communication among different units facilitate intra-MNC knowledge transfer, international management scholars have begun to explore different integration mechanisms that actively encourage the exchange of information across intraorganizational boundaries. Existing evidence indicates that the use of this kind of mechanisms enhances knowledge transfer in MNCs. However, prior studies have bundled formal and informal integration mechanisms together in a unique construct (e.g., Gölgeci et al., 2019; Oh et al., 2016; Williams and Lee, 2016), or have addressed either formal or informal mechanisms, but not both (e.g., Ambos and Ambos, 2009; Björkman et al., 2004; Zeng et al., 2018), which impedes assessing which type of



*(a) The moderating effect of economic distance.**(b) The moderating effect of geographic distance.**(c) The moderating effect of administrative distance.*

**Fig. 2.** The effect of informal connectedness and shared values on knowledge transfer effectiveness under different dimensions of distance.

integration mechanisms is more effective for transferring knowledge between MNC units. Our study extends this line of research by considering two organizational mechanisms associated with flexible integration, one formal (i.e., formal inter-unit communication) and one informal (i.e., informal connectedness and shared values), and comparing their influence on knowledge transfer effectiveness. Findings reveal that, although both mechanisms enhance intra-MNC knowledge transfer, the impact of formal mechanisms is comparatively higher. Therefore, this study provides new insights about the KM tools that are more useful to effectively transfer the knowledge that resides in globally dispersed units.

Second, the study also makes a methodological contribution at this point. In this vein, prior studies capture knowledge transfer and organizational mechanisms at the unit level. Operationally, these variables are measured by asking unit managers to indicate “to which extent your unit has received (provided)<sup>5</sup> knowledge from (to) other units of the MNC” and “to which extent your unit uses the mechanism X to coordinate with other units”, respectively. This approach provides an overview of the knowledge that the unit receives (provides) from (to) the rest of the MNC, as well as the organizational mechanisms that connect it to the rest of the MNC. However, it does not inform about how things work in a particular transfer relationship between two units. Our study extends this approach by identifying concrete knowledge transfers that took place between pairs of units, thus shifting the level of analysis from the unit to the transfer relationship. Moreover, for each knowledge transfer, variables were measured based on the information provided by the sender and recipient units involved. This procedure not only improves the validity of the measures, but more importantly, it enables to capture how effective was a particular knowledge transfer relationship and provides a better proxy of how organizational integration mechanisms were deployed at the dyad-level (Foss, 2007).

Finally, and in our view the most important contribution, adopting a contingent perspective, this study reveals which organizational integration mechanisms are more effective for transferring knowledge between MNC units depending on the type of distance that separate them. Although some scholars have stressed that cross-country differences may affect the effectiveness of communication channels that are critical for knowledge transfer (Gaur et al., 2019), and that different types of distance may have different effects (Berry et al., 2010), to the best of our knowledge, only Ambos and Ambos (2009) have investigated how different dimensions of cross-national distance moderate the relationship between organizational mechanisms associated with flexible integration and intra-MNC knowledge transfer. These authors focused on formal integration mechanisms and considered three dimensions of distance (i.e., cultural, geographic and linguistic). The present study extends their work by including informal integration mechanisms into the analysis and broadening the study of distance with three additional dimensions.

### 6.3. Managerial implications

As stated by Michailova and Mustaffa (2012: 392), “managers have an array of mechanisms, harder (e.g., structural, coordination, infrastructure, etc.) as well as softer (trust, socialization, motivation, etc.) and numerous combinations between them which they can employ to influence the knowledge flows in order to achieve the results they desire”. This work compared two organizational mechanisms that actively encourage the exchange of information among MNC units and examined how they work under different dimensions of cross-national distance.

Top managers of MNCs can extract two important lessons from this study. First, if formal inter-unit communication is appropriately designed, to the extent to be perceived as important by the managers of the units involved in a transfer relationship, the effectiveness of knowledge transfer among them will be enhanced, with no adverse effects from cross-country distance.

Second, informal connectedness and shared values are also a powerful weapon for effective knowledge transfer between units separated by low administrative and economic distance. Notwithstanding, when these types of distance are great, this informal integration mechanism becomes ineffective. Thus, although MNC managers can be tempted to focus mainly on formal inter-unit communication, they must resist this temptation by a careful consideration of the type of distance that separate different units.

This is especially relevant if we take into account the costs of both mechanisms. In this regard, the costs related to setting or realigning informal connectedness and shared values could be significantly high, and they entail a slow process. Nevertheless, once set and internalized by the organizational members, further investments or maintenance costs are quite dim in comparison to formal inter-unit communication (Cheng and Fu, 2013). Maintaining formal structures for inter-unit communication within a MNC is an effective way to transfer knowledge, but it is also constrained by high costs (Buckley and Carter, 2002). If there are certain conditions, such as low economic and administrative distances, under which informal mechanisms are more effective, managers should emphasize them instead of the formal ones.

### 6.4. Limitations and future research directions

This paper has some limitations that constitute a window for future studies. Most remarkably, the empirical frame is limited to knowledge transfers between units of five listed Spanish MNCs. This calls for additional research in different empirical contexts, such as companies headquartered in other countries and/or operating in other industries. Moreover, the fact that our sample was shaped by five MNCs impeded the inclusion of additional controls at the corporate level (beyond size and degree of internationalization) due to multicollinearity problems.<sup>6</sup> A broader sample of MNCs would enable the simultaneous inclusion of different variables for controlling

<sup>5</sup> Depending on whether the study in question investigates knowledge inflows or outflows.

<sup>6</sup> Additional regressions were estimated including industry dummies instead of size and degree of internationalization and results remained similar in qualitative terms.

corporate effects, such as the international strategy, i.e., transnational vs. multidomestic orientation (Buckley and Carter, 2002).

Besides these methodological issues, two important avenues for future research can be derived from this paper. On the one hand, given the study's objectives, only linear and interaction effects have been considered. However, it would be interesting to investigate non-linear effects. For example, it may be the case that organizational integration mechanisms will be subject to saturation effects, that is to say, once the company reaches certain level of formal inter-unit communication, additional efforts may be ineffective, or even counterproductive (inverted U-shape effect). Something similar may occur in the case of distance, as Morgulis-Yakushev et al. (2018) have shown for the case of cultural distance.

On the other hand, although it can be argued that the two investigated mechanisms may have a positive interaction effect on knowledge transfer effectiveness, firms face resource and time constraints that would also explain a negative interaction. The meta-analysis by Zeng et al. (2018) examines the interrelatedness and interactions between centralization, formalization and socialization. While centralization and formalization are formal integration mechanisms, they are associated with efficient integration, i.e., they do not encourage the exchange of information among units. We thus encourage scholars to investigate whether formal and informal mechanisms associated with flexible integration are complementary or substitutive, as well as the conditions that may affect their interactive effect.

## 7. Conclusion

The objective of this study was to improve our understanding of how organizational integration mechanisms that actively encourage the exchange of information across intraorganizational boundaries affect knowledge transfer in MNCs. The fact that prior studies on this topic have bundled formal and informal integration mechanisms in a unique construct (e.g., Gölgeci et al., 2019; Oh et al., 2016; Williams and Lee, 2016), or considered either formal or informal mechanisms, but not both (e.g., Ambos and Ambos, 2009; Björkman et al., 2004; Zeng et al., 2018) impedes assessing their relative influence. As a result, we know little about what type of organizational integration mechanisms is more effective for transferring knowledge between MNC units. In addition, the effectiveness of these organizational integration mechanisms may be affected by the national context in which different units are embedded (Gaur et al., 2019). However, research into knowledge transfer in MNCs has only begun to consider the multidimensional nature of cross-country differences. This study distinguished between formal and informal integration mechanisms and examined if their relationship with knowledge transfer effectiveness is moderated by six dimensions of cross-national distance. Our results support the idea that organizational integration mechanisms that encourage knowledge sharing and communication improve knowledge transfer in MNCs (Kotabe and Kothari, 2016; Ferraris et al., 2017). More specifically, we found that, *ceteris paribus*, formal mechanisms are more effective than informal ones. Moreover, their effectiveness is not affected by cross-national distance. By contrast, different types of distance were found to affect the effectiveness of informal integration mechanisms in different ways. Thus, our findings reveal which organizational integration mechanisms MNCs should emphasize depending on the type of distance that separate their units in order to achieve the most effective knowledge transfer between them.

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## Declaration of competing interest

None.

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