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Managerial Capabilities Development of Local Chinese Firms
Through Forming IJVs with Foreign MNC Partners

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**Managerial Capabilities Development of Local Chinese Firms Through Forming
IJVs with Foreign MNC Partners**

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Executive summary

The objective of this study is to advance an empirical framework pertaining to interorganizational learning mechanisms through international joint ventures (IJVs) in emerging markets, particularly in China. This study sheds light upon “*under which circumstances local Chinese firms can upgrade their managerial capabilities through forming IJVs with foreign multinational corporations (MNCs)*”. Traditionally, the alliance literature has primarily focused on technological knowledge acquisition and exchange, this study however contributes to the literature by examining the less developed area in managerial capabilities under the context of emerging market. By examining data from 348 Chinese firms involving 297 international joint ventures (IJVs) in China, we found that age and number of subsidiaries of foreign MNC partners, cultural distance, and educational distance between partners are positively associated with the development of Chinese firms’ managerial capabilities. On the contrary, technological distance and number of partners in IJVs have a negative relationship to Chinese firms’ managerial capabilities development. Additionally, we found that the local Chinese firms should allow time to grasp and assimilate the acquired managerial knowledge. These findings lend support to the interfirm learning through alliance perspective and provide theoretical and managerial implications for local firms aiming at learning through IJVs in emerging economies. The results underscore the importance of partner selection and IJVs configuration. Foreign partners’ characteristics, experiences, and complementarity can influence knowledge acquisition and learning of local partner firms. As well as, the efficiency of IJVs’ configuration can enhance learning and capabilities development of local partners.

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Introduction

Alliances have gotten and maintained a foothold amongst the most popular growth strategies for organizations through the last decades, manifested clearly both in the literature and in practice, through various forms. The intent is that firms can focus on own core competencies (Prahalad, 1990) and turn to the alliance to obtain complementarities (Fuller & Porter, 1986), providing agility and flexibility (Gulati, Nohria, & Zaheer, 2000). Other strategic intentions have been using alliances to obtain competitive advantages such as portfolio diversification, risks and costs sharing (Faems, Janssens, Madhok, & Looy, 2008; Kogut, 1988), resource acquisition (Das & Teng, 2000; Gulati et al., 2000; Hardy, Phillips, & Lawrence, 2003), information and knowledge exchange, (Kogut, 1988), flexibility (Larsson, Bengtsson, Henriksson, & Sparks, 1998), legitimacy (Baum & Oliver, 1991; Dacin, Oliver, & Roy, 2007; Miner, Amburgey, & Stearns, 1990; Stuart, Hoang, & Hybels, 1999) and other social factors (Hardy et al., 2003). Hence, utilizing alliances and interfirm collaborations is a good strategy for firms to take into account (Hennart, 1988; Hennart & Reddy, 1997, 2000) as no firms are self-sufficient (Baum, Calabrese, & Silverman, 2000; Powell, Kogut, & Smith-Doerr, 1996). Entering alliances implies the need to enter an interorganizational relationship through collaborations (Baum et al., 2000; Doz & Hamel, 1998). There has been a notion that collaborations enhance and facilitate organizational learning (Dodgson, 1993; Hamel, 1991). Amongst the advantages, the locus of learning and knowledge has received a lot of attention in the literature. Different contributions include unveiling how knowledge is transferred (Appleyard, 1996) acquired, and created through collaboration, which ultimately affects performance (Doz, 1996; Simonin, 1999b). Due to the role of technology and innovation in today's environment, there has been predominantly paid attention to the transfer of technological capabilities and knowledge (Baum et al., 2000; Lichtenthaler & Lichtenthaler, 2010; Mowery, Oxley, & Silverman, 1996; Nagarajan & Mitchell, 1998; Stuart, 2000; Yli-Renko, Autio, & Sapienza, 2001). On the contrary, empirical studies looking into the development and transfer of managerial knowledge and capabilities are scarce, despite its important role. Furthermore, the majority of alliance studies focus on developed markets, and have to some extents ignored the emerging markets, which are becoming more influential in today's business environment.

Emerging markets refer to countries whose economies have expeditiously grown by using economic liberalization as primary growth driver, despite unstable and weak legal systems (Hoskisson, Eden, Lau, & Wright, 2000). Therefore, they are seen by foreign investors as strategic locations to grasp market opportunities (Luo, 2001; Luo & Tung, 2007). Hoskisson et al. (2000) pointed out the need for more research examining strategy differences based on the resource-based view (RBV) in the social context of emerging economies. It is also argued that management capabilities and decision making skills are less developed in emerging market firms (Hitt, Dacin, Levitas, Arregle, & Borza, 2000; Lyles & Baird, 1994) due to scarce managerial experiences (McDonald, 1993). At the initial stage of institutional transition, resources, knowledge, and capabilities that are valuable in the market context are likely to be sparse. Restricted rules and systems deter previous management experience development and financial resources flows, thus results in the scarcity of managerial capabilities, technological knowledge, and financial resources of firms in an emerging economy environment (Hoskisson et al., 2000; Lyles & Baird, 1994). So, once the markets and economies develop, the acquisition of capabilities and resources become more crucial. Firms operating in emerging markets need managerial capabilities to effectively and efficiently compete locally in the domestic markets, but also internationally (Hitt et al., 2000) in today's globalized environment. Hence, using alliances to acquire resources and knowledge to gain competitive advantage could be a good option for firms in emerging markets, because alliances could be the best way to acquire managerial capabilities (Mowery et al., 1996) compensating for the local firms' deficits which otherwise could take years to build up (Ahuja, 2000; Nohria & Garcia-Pont, 1991). Therefore, investigating capabilities development of firms through collaborations will become more important in the study of emerging markets (Lei, Hitt, & Bettis, 1996). This, thus, triggers the interest of this study in examining managerial capabilities learning of firms in emerging economies.

In the light of the fact that China is now the biggest emerging economy and the second largest foreign direct investment (FDI) host in the world, beaten only by the United States (UNCTAD, 2018), and has experienced a rapid economic growth due to its economic and political transitions (Luo & Tan, 1998). We opt for China as the representative of emerging markets and main focus of our analytic setting since China

may need managerial knowledge and may desire to develop their managerial capabilities so as to survive and grow in highly competitive environments, as well as adapting to its transitions (Luo & Tan, 1998). Moreover, International joint ventures (IJVs) is one of the prevailing forms of alliances and collaborative entry modes in emerging economies. Therefore, IJV is also selected as a focal point of this study. IJVs in China thus become the empirical context of this study since IJVs are one of the predominant economic phenomena that are a timely concern for managers. Consequently, our research purpose is to analyze “*under which circumstances local Chinese firms can upgrade their managerial capabilities through participating in IJVs with foreign Multinational Corporations (MNCs)*”.

In the following sections, we start off with a theoretical foundation by reviewing literatures on learning in alliances, how it plays out in the emerging market, and managerial capabilities. Then, we introduce a set of hypotheses regarding managerial capabilities development mechanisms. Next, we present the research setting, results of our empirical analysis and then discuss the results, implications, and outline contributions. We round off with limitations of this study, and viable veins of future research.

Theoretical Foundation

Knowledge, knowledge transfer and learning in alliances

RBV and the knowledge based view (KBV) propose that knowledge, in particular tacit knowledge, is competitive valuable (Grant, 1996b). Further, in the literature of dynamic capabilities, it is necessary to acquire, develop and retain capabilities through organizational learning (Teece, Pisano, & Shuen, 1997; Teece & Pisano, 1994). A crucial strategy in the dynamic capability literature has been looking towards alliances in order to build new capabilities (Teece & Pisano, 1994) and acquire knowledge (Gulati, Lavie, & Singh, 2009; Heimeriks, Klijn, & Reuer, 2009; Powell et al., 1996). In the literature of strategic management there has been the notion that alliances are necessary in competitive environment (Dyer & Singh, 1998) because the single firm is not sufficient (Baum et al., 2000) to create or obtain information, resources and skills (Dyer & Singh, 1998; Gulati et al., 2000; Hardy et al., 2003; Powell et al., 1996). Throughout the alliance literature, there has been showing consistent

empirical support for the notion that alliances outperform other alternatives in interfirm learning on the continuum of “hierarchy” and “market” (Oxley, 1997). This is due to the complementarity (Pisano, 1990) and collaborative effort (Chung, Singh, & Lee, 2000; Lin, Yang, & Arya, 2009; Mitsuhashi & Greve, 2009), translating into greater collective benefit (Simonin, 1997). Collaborating behaviors are viewed as the flexible means to access and complement each other (Mody, 1993) as well as an opportunity to exchange, learn, and acquire knowledge and capabilities (Hamel, 1991; Kale, Singh, & Perlmutter, 2000; Khanna, Gulati, & Nohria, 1998).

Alliances are also seen as a better means of knowledge transfer than the market (Kogut & Zander, 1993) because it fails to transfer knowledge, capabilities and information (Baum, Cowan, & Jonard, 2010; Pisano, 1990; Rugman, 1980; Teece, 1982). Furthermore, Powell (2003) noted that alliances help exchange tacit knowledge and knowledge intensive capabilities better due to cooperative sharing. These interorganizational relationships can take a horizontal form as well as vertical, arranged through dyadic spontaneous communication and exchange. Alliances are neither classified “market” nor “hierarchy” (Chung et al., 2000; Lin et al., 2009; Mitsuhashi & Greve, 2009). Lei and Slocum Jr (1992) proposed that knowledge creation effects of alliances emerge from the fact that alliances are used as a platform for learning and sharing of knowledge between partners.

The strategic management and international joint venture literatures affirm that learning and knowledge acquisition are amidst one of the main rationales for forming IJVs (Doz & Hamel, 1998; Hamel, 1991; Inkpen & Beamish, 1997; Lyles & Baird, 1994). IJV is defined as a separated legal enterprise formed by two or more parent firms, in which the headquarters of at least one parents are from other locations outside the country of operation of the JV (Shenkar & Zeira, 1987). According to its definition, the hybrid nature of IJVs (Borys & Jemison, 1989) and the mix of corporate and national cultures in IJVs (Shenkar & Zeira, 1987), IJVs allow partnering firms to gain multinational expertise and to transfer knowledge among partners. The knowledge acquired from foreign firms can be explicit or tacit and can be transferred to IJVs or among partners through socialization and internalization (Nonaka, 1994). The results of studies thus far support the notion that IJVs enhance learning (Child & Yan, 2003). There are three main streams of learning that are specific relevant for IJVs. First,

learning from experience is the transfer of previous experience in managing old IJVs and international business knowledge acquired by the parents to a new context (Cohen & Levinthal, 1990). Second, *formation learning* arises in partner seeking and negotiating process. The more extensive and comprehensive the process is, the more learning opportunity will occur (Tallman & Shenkar, 1994). Lastly, *operational learning* is learning how to effectively collaborate with single or multi partners in the subsequent operation of an IJV (Luo & Peng, 1999). Thus, IJVs can serve as a vehicle to global diffusion of tacit and explicit knowledge (Almeida & Kogut, 1999) supporting its creation, transfer and integration (Kogut & Zander, 1992).

Managerial capabilities

Managerial capabilities are widely considered crucial for a firm's decision making and competitive advantage, in particular during turnarounds, the orchestration of resources by managers might be even more pivotal (Penrose, 1959; Trahms, Ndofor, & Sirmon, 2013). Organizational performance decline is also often a consequence of resource base deterioration (Bruton, Oviatt, & White, 1994; Weitzel & Jonsson, 1989) and ineffective operational and resource management (Morrow Jr, Sirmon, Hitt, & Holcomb, 2007). In this paper, we focus on how IJVs can contribute to managerial capability development. However, there has been an ambiguous, vague and somewhat prescriptive definition and understanding of managerial capabilities. In the strategic management literature, there has been limited effort defining managerial capabilities, whereas many studies have overlooked the importance of defining it before conducting the measurements, giving it the ambiguous and vague characteristics. In a review article by Helfat and Martin (2015), the authors mentioned to papers and literatures that does not explicitly use the word managerial capabilities, but still contribute to our understanding of managerial capabilities, these literature include “*entrepreneurship, upper echelons, the resource-based view, strategic renewal, ambidexterity, diversification, international business, innovation, competitive dynamics, managerial cognition, managerial social capital, and managerial human capital*” (Helfat & Martin, 2015, p. 1283). Managerial knowledge has also been seen as the capability to perform and handle managerial tasks (Simonin, 1999a) as strategic and operational decisions (Adner & Helfat, 2003), embedded in the organizations and its routines (Winter, 1995) being un-tradeable, but transferrable (Lin, 2005).

To define managerial capabilities, we turn to the RBV and the dynamic capability literature. Addressing managerial capabilities, we intend to bridge the theories sewing the concepts as well as patching the weaknesses and limitations by combining the two approaches. The core of RBV argues that firms obtain and retain competitive advantage by possessing valuable, rare, imperfectly imitable and non-substitutable (VRIN) resources (Barney, 1991), however, this neglects the managerial flexibilities in the firm. Hence, scholars have later argued that it is not enough to only possess it, but the resources have to be managed properly as well (Mahoney & Pandian, 1992; Sirmon & Hitt, 2003; Sirmon, Hitt, & Ireland, 2007; Sirmon, Hitt, Ireland, & Gilbert, 2011; Winter, 1995). The dynamic capability literature also answer slightly to the short-comings of RBV by emphasizing that capabilities are distinct processes (Teece et al., 1997), and that competitive advantage is embedded in these processes (Wang & Ahmed, 2007).

Examining managerial capabilities helps explain the differences of managerial decisions, change and performance (Penrose, 1959) which represent the organization's purpose to organize its resources (Penrose, 1959). Diving into this concept and building on earlier work on dynamic capabilities (Teece et al., 1997), the notion of dynamic managerial capabilities has emerged (Adner & Helfat, 2003). The dynamic managerial capabilities literature provides two frameworks of managing resources; 1) asset orchestration (Helfat et al., 2009) and 2) the resource management framework (Sirmon et al., 2007).

First, Sirmon and Hitt (2009) proposed the concept of asset orchestration by highlighting the importance of managers' decision making to "*build, integrate, and reconfigure organizational resources and competences*" (Adner & Helfat, 2003, p. 1012). They also argued that resource investment and deployment are important determining the firm's success, emphasizing the interdependence amongst these decisions (Helfat et al., 2009). However, the framework of asset orchestration in dynamic managerial capabilities where managers aim to obtain fit between resource management decisions, have received scarce attention (Helfat et al., 2009). Building on this, Helfat et al. (2009) further developed this by adding two dimensions; search and selection, and configuration and deployment, arguing for the importance of fit between the dimensions in order to achieve effectiveness in management.

Second, the resource management framework concurrently emerged, underpinning the importance of aligning and synchronizing decisions of investment, bundling and deployment, which are crucial in effective management (Sirmon et al., 2007). The resource management framework includes structuring the portfolio of resources (i.e., acquiring, accumulating, and divesting), bundling resources to build capabilities (i.e., stabilizing, enriching, and pioneering), and leveraging capabilities in the marketplace (i.e., mobilizing, coordinating, and deploying) to create value (Sirmon et al., 2007).

It has been said that managers serve as a means creating congruence between the internal resources and capabilities of the firm and external environmental conditions (Adner & Helfat, 2003; Sirmon & Hitt, 2009). Managers play this role based on the combination (Adner & Helfat, 2003) of their managerial human capital (i.e., age, education, experience, industry-specific human capital etc.) (Castanias & Helfat, 1991, 2001; Hitt, Bierman, Shimizu, & Kochhar, 2001), managerial social capital (i.e., ties, network, information source, access, etc.) (Adler & Kwon, 2002; Burt, 2009; Geletkanycz, Boyd, & Finkelstein, 2001; Harris & Helfat, 1997; Kor, 2003) and managerial cognition (beliefs, mental models, cognitive base, knowledge, assumptions, emotions etc.) (Hambrick & Mason, 1984; Hodgkinson & Healey, 2011; Johnson & Hoopes, 2003).

Building on RBV and dynamic managerial capability literature, in this study, managerial capabilities could thus be seen as the ability to efficiently and effectively create, acquire, manage, configure and deploy resources in order to achieve competitive advantage (Henderson & Cockburn, 1994; Peteraf, 1993). As Mahoney and Pandian (1992) suggested that firms who allocate resources in such a way that the productivity is maximized will achieve rents rather than by possessing better resources. Scholars have proposed that learning and transfer of managerial knowledge is a function of the relations of trust (Lane, Salk, & Lyles, 2001) and compatibility (Lane & Lubatkin, 1998) including culture, objectives and business background compatibility between firms (Lane et al., 2001; Lyles & Salk, 1996; Mowery et al., 1996), resulting in the efficiency and effectiveness of absorptive capacity (Kale et al., 2000). Unlike much of technical knowledge, managerial capabilities are characterized as tacit knowledge (Hitt et al., 2001; Tan & Libby, 1997) which is rare, largely unarticulated,

context dependent, imperfectly transferable and costly and hard to imitate, and thus serve as a basis of superior performance (Barney, 1991, 1995; Spender, 1993). Managerial knowledge is also presumably learned from experience by observations of others' behavior and others' reactions to one's own behavior (Schön, 2017). Nevertheless, due to dynamic environments, values of managerial knowledge will erode eventually as substitutes arise and novel competitive factors emerge. Firms tend to respond by adapting existing capabilities or develop new capabilities based on preexisting organizational knowledge (Leonard-Barton, 1992; Walsh & Ungson, 1991). Hence, turning to alliances provides a swift means to sustain the strategic values and superior performance of capabilities. This line of reasoning is similar to the "Penrose effect" of Penrose (1959), stating that the fixed internal managerial capabilities of firms limit the rate at which the firm can grow in a given period of time, managers thus need novel managerial knowledge from outside of the firm and from personal experience. The Penrose effect also emphasizes the importance of managerial capabilities, as well as proposing the idea of acquiring managerial capabilities from external sources. We hereby combine the RBV alongside with the alliance literature to shed light upon the less contemplated topic of managerial capabilities in an IJV context.

Learning and knowledge transfer through IJVs in emerging markets

Collaboration through IJVs has emerged amongst the most popular strategic methods in learning and knowledge exchange (Powell et al., 1996) of firms in emerging markets, and this is particularly so in China. Over the past decades the literature has witnessed an increased focus on emerging economies. It is argued that emerging economies is not merely an integral part of the literature, but it has also led the edge in advancing theories providing augmented focus and debate (Xu & Meyer, 2013). In a review article by Xu and Meyer (2013), it was unveiled that amongst papers published in recognized top journals since 2001, China tops as the most popular research context in emerging markets with 122 articles, way above the second place with 19 articles. Albeit vast advances, there remain untapped areas of research. In the same article, the authors found that only 13 papers were published adopting the learning perspectives addressing MNEs in emerging economies. Therefore, learning through IJVs is still a relatively new phenomenon in emerging markets (Lewin, Long, & Carroll, 1999) with limited research (Lee & Beamish, 1995).

Knowledge transfer and learning through IJV and partnering with foreign MNCs is a vital course of gaining knowledge which is crucial for emerging economies to develop and upgrade their knowledge base (Khan, Shenkar, & Lew, 2015). This is because IJV allows partnering firms to get access to competencies that foreign partners brings in (Baum et al., 2000; Kogut, 1988; Zhang, Li, Hitt, & Cui, 2007) as well as valuable insight to understand the tacit components of the capabilities which often results in competitive advantage (Lane & Lubatkin, 1998). Svetličič and Rojec (1994) proposed that emerging market firms are trying to fill the gap of distance between emerging market firms and developed market firms by acquiring technologies and knowledge that can make them more competitive with developed market firms, through collaboration with selected partners (Hitt et al., 2000). Similarly, Hitt et al. (2000) noted that financial capital, reputation, technical capabilities and managerial capabilities are specifically critical in emerging markets, leading firms to form IJVs. In IJVs, partners pool resources to obtain their goals, which enables their counterparts to observe their practices (Zhang et al., 2007) such as managerial skills. In a study by Osland and Cavusgil (1998), they found that Chinese managers perceive IJVs as a means of exchanging cultural-, technological-, and managerial-skills.

Recent studies on IJVs in emerging markets highlight that inter-partner learning is endogenous to the IJV relationship (Fang & Zou, 2010; Khan et al., 2015; Luo, 2002; Sun & Lee, 2013). Foreign MNC commonly use IJVs as a strategic entry mode to avoid liabilities of foreignness (Kostova & Zaheer, 1999; Makino & Delios, 1996). In an emerging economy context of which institutional environments are often diverse, forming IJVs with local firms in emerging markets can promote foreign MNCs to acquire local required information for the conduct of business e.g., local market information, local business practices, local laws and regulations etc (Lu & Xu, 2006). The outlook of host country locations are no longer solitary for low cost labor and market expansion, increasingly host country regions, in particular in emerging economies are seen as a potential source of knowledge (Dunning, 1994). Investigating IJVs in emerging economies of Mexico, Poland, and Romania, Hitt et al. (2000) argued that local partners' unique competencies and local market knowledge can help foreign MNC partners gain competitive advantage. Fang and Zou (2010) also stated in their

study that foreign firms seek local market knowledge, as well as local customer relationship from local Chinese firms by forming IJVs.

IJV is also seen as an important platform for local partners to absorb foreign partners' expertise in technology and management. Nam (2011)'s study demonstrated that Chinese firms are able to strengthen their production capabilities through forming IJV with foreign MNCs. Similarly, Sun and Lee (2013) proposed that emerging economy firm's innovation improves when structural hole positions in its IJV portfolio increase. Hence, IJV has been seen as a strategic tool providing potential opportunities for both emerging economy firms and foreign firms in IJVs to explore new and different but complementary knowledge (Das & Teng, 2000; Fang & Zou, 2009; Yao, Yang, Fisher, Ma, & Fang, 2013).

Even though the joint learning concept of IJVs is prevalent, and many factors have been proposed as mechanisms for R&D learning, technological or marketing knowledge sharing in IJVs (e.g., Khan et al., 2015; Nam, 2011; Sun & Lee, 2013), the focus of this study is on unveiling mechanisms that help local Chinese firms improve and obtain managerial capabilities from foreign MNC partners through IJVs. Subsequently, by building on literatures and empirical studies, potential factors are introduced in the next section as drivers enhancing managerial capabilities development of local Chinese firms in IJVs.

Hypotheses Development

Propensity of local partners to learn from MNCs through vertical IJVs

Interorganizational collaborations can occur in various forms, a simple classification is either vertical or horizontal. Different types of collaboration have different natures (Rindfleisch, 2000). The distinctions between vertical and horizontal alliances are noted in several literatures (e.g., Achrol, 1991; Galaskiewicz, 1985; George, Zahra, Wheatley, & Khan, 2001; Park & Russo, 1996; Pennings, 1981). Pennings (1981) defined *horizontal interdependent firms* as, firms who compete with each other in acquiring similar resources and selling similar outputs. On the other hand, the author defined vertical collaboration as two types of relations. The first one is *symbiotically interfirm relation*, in which firms complement each other in such a way of rendering services, but not controlling resources the others need. The second vertical form is *vertical interdependent relation* in which some firms control resources needed by others. George et al. (2001) differentiated between vertical and horizontal alliances by looking at whether an alliance comprises of firms at the same level (horizontal) or at the different level of value chain (vertical). Therefore, in this research context we identify vertical IJVs as IJVs where partners occupy different positions along the value chains, whereas, horizontal IJVs are IJVs where partners require similar resources and have similar position in the value chain.

Since horizontal strategic alliances are formed by firms at the same position in the value chain in order to perform business activities, collaborating firms are more or less direct or indirect competitors. This can lead to competition in horizontal alliances which is mentioned in many literatures (e.g., George et al., 2001; Pennings, 1981; Perry, Sengupta, & Krapfel, 2004; Rindfleisch, 2000). According to Hirsch (2005), trust is related to the willingness of cooperation with respect to its benefits. Moreover, trust in relationships is fortified by mutually decent problem-solving approach and the way in which individuals interact to each other (Achrol, 1991). Rindfleisch (2000) examined the effect of alliance structure on trust. The result showed that firms participating in horizontal alliances display lower level of trust than those who participate in vertical alliances. Additionally, the lower level of trust in horizontal

alliance than vertical alliance results from higher opportunistic behavior and lower interdependency. Considering opportunism in horizontal alliance, it is said that it can cause the risk of learning races in alliances (Hamel, 1991; Kale et al., 2000; Khanna et al., 1998). Kale et al. (2000) posited that opportunism triggers firms' hidden agenda to access, acquire, and adopt partners' proprietary knowledge faster than partners do. At the same time, firms try to protect their valuable knowledge from being reached by their partners. Thus, low degree of trust and high opportunism in horizontal alliances generate competition on learning, which in turn, hinders knowledge transfer in alliances. The idea that competition in horizontal alliances is more harmful to learning and knowledge transfer than vertical alliances are supported by many studies. Grindley, Mowery, and Silverman (1994)'s study showed that the U.S semiconductor manufacturers participating in research consortium were unable to achieve their initial joint research agenda due to a fear of information leakage and learning races. Subsequently, Mowery et al. (1996)'s research further supported Grindley et al. (1994) by showing that alliances of which partners were competing in the same primary SIC display lower level of knowledge transfer than non-competing partner alliances do.

On the contrary, many studies have provided evidences regarding competitive advantage of vertical alliance within the context of learning and knowledge transfer (Dyer & Hatch, 2006; Dyer & Nobeoka, 2000; Kotabe, Martin, & Domoto, 2003; Mesquita, Anand, & Brush, 2008). Vertical learning cooperation and alliances between suppliers and buyers are seen to be essential for many industries, such as automobile and semiconductor, where quality, innovation and efficiency of suppliers become more salient. Due to the importance of product from suppliers, the interdependence between suppliers and buyers, and the impact of quality of suppliers on buyers' operations, it is sensible that buyers are willing to share knowledge to their suppliers and get their suppliers involved in knowledge development process such as joint training programs ,which in turn, benefit the buyers once their suppliers become more efficient and perform better, and vice versa. Automotive vertical network is one of the classical representatives which illustrates the willingness of buyers to share their knowledge to suppliers in vertical learning alliances. Dyer and Nobeoka (2000) examined the knowledge transfer in Toyota's production network. They proposed that knowledge diffusion was quicker and larger in Toyota's vertical network than in horizontal

automaker network. Additionally, Toyota's suppliers learned more quickly after participating in Toyota's vertically knowledge-sharing network because of strong tie network and trust. Relatedly, Dyer and Hatch (2006) investigated the U.S automotive suppliers selling to both Toyota and other U.S automakers. Their empirical evidence supported that a buyer who provides a great knowledge transfer to its suppliers through vertical network will improve the supplier's quality and efficiency resulting in increased productivity in operations for the respective buyer.

Building on the literatures, we consider vertical IJVs between downstream and upstream firms in the value chain as a better facilitator of managerial knowledge transfer and development than horizontal IJVs due to 1) higher interdependence among partners, 2) higher level of trust, which is necessary to enhance tacit knowledge transfer, 3) higher collaboration and less competition in vertical IJVs, and 4) higher willingness to educate partnering firms to be more efficient and productivity in order to achieve supply chain competitiveness. Therefore, we assume that local Chinese firms who vertically form IJVs with their foreign MNC partners will be able to develop their managerial capabilities better than those who participate in horizontal IJVs. Since foreign MNCs in vertical IJVs will be more dependent on their local partner's operation, then they will be more likely to help local partners develop their managerial capabilities. Thus, we propose:

Hypothesis 1: When Chinese firms are collaborating through vertical IJVs with foreign MNC partners, the managerial capabilities development of Chinese partners will be greater.

The value of foreign partner's experience

According to the KBV and the organizational learning perspective, knowledge and capabilities are created through cumulative (Cohen & Levinthal, 1990), additive, and repetitive processes (March, 1991). Also, the ability to exploit and implement knowledge and capabilities is crucial for further development of capabilities (Cohen & Levinthal, 1990; Levitt & March, 1988). Organizational learning and capabilities development are conceptualized as a function of experience (Argote & Miron-Spektor, 2011; Fiol & Lyles, 1985). Experience can be acquired through new tasks or repetitive

tasks that have been performed regularly over time (Katila & Ahuja, 2002; March, 1991). This provides better understanding of links amidst actions and outcomes (Bingham, Heimeriks, Schijven, & Gates, 2015). Argote and Miron-Spektor (2011) provided a theoretical framework for organizational learning which showed that interaction between context and experience led to knowledge creation. Learning by doing is an example of learning through direct experience (Anand, Mulotte, & Ren, 2016; Levitt & March, 1988; March, 1991). Many studies have stated the positive effects of cumulated task performing and worker experience on capabilities to carry on the task, as well as, efficiency (Argote, Beckman, & Epple, 1990; Dutton, Thomas, & Butler, 1984; Epple, Argote, & Murphy, 1996; Wright, 1936). Wright (1936) reported the diminishing cost of airplane with the increasing production quantity. Dutton et al. (1984) provided an empirical evidence, which supported Wright (1936)'s learning curve concept, that firms can continuously increase capabilities to reduce production cost with cumulative output over time. Therefore, performance and productivity improvement are realized as firms gain more experience in operating with an increase of experience due to increase of knowledge and capabilities. Henceforward, the experience of a firm performing a task, subsequently transforms into its idiosyncratic capabilities and competitive advantage.

In terms of acquiring knowledge and developing firm's capabilities, firms can develop their capabilities not only by learning from their own experience, but also from experiences of other firms (Argote & Epple, 1990; Argote, Ingram, Levine, & Moreland, 2000; Levitt & March, 1988). For example, a manufacturing plant may increase its performance by implementing best practices of its headquarter. A hotel may improve its customer service knowledge and capabilities by applying experiences of other hotels in the MNC. Furthermore, Hitt et al. (2001, p. 17) also suggested that "*partners with significant experience may be needed to provide critical managerial skills necessary to manage these resources*". The extent of knowledge obtained from other partners in the alliance is then contingent to the richness of partners' knowledge base (Wang, Tong, & Koh, 2004). Along the same line of reasoning, Hitt et al. (2001) elaborated that managing diverse resources require managerial acumen, which is often gained through experience. Almeida and Phene (2004) also proposed that the richness of MNC's knowledge and experience has a positive impact on subsidiaries' innovation.

Thus, firms enduring multinational experience may occupy valuable knowledge and capabilities and will be seen as potential partners by other firms who need those knowledge and capabilities (Chung et al., 2000; Eisenhardt & Schoonhoven, 1996; Gulati, 1995b, 1999; Mellewigt, Thomas, Weller, & Zajac, 2017). Additionally, the ability of firms to transfer knowledge affects the amount of knowledge spreading in the alliance. This ability depends on the skills of firms who are already involved in the process of knowledge transfer across different units (Wang, Tong, & Koh, 2004). By this, it means partnering firms who have been part of an MNC network for many years will be capable to transfer and share knowledge with other partnering firms in the alliances.

This paper focuses on how local Chinese firms through IJVs can acquire managerial capabilities and know-how without internally developing them, we thus conceptualize that foreign MNC partners who have longitudinally operated have sufficiently accumulated their capabilities of managing resources and business since they have gained a lot of experience in managing and operating MNCs, have created routines, and have developed their knowledge and capabilities from doing and through their experiences. Thus, they may occupy valuable managerial knowledge which is beneficial for Chinese local partners. Besides, due to the nature of MNCs, long operating MNCs need to possess the ability to leverage, manage, and share knowledge and competencies across space and borders (Mudambi & Swift, 2011). Therefore, foreign MNC partners with more operating and managing experience could serve as a potential source of managerial knowledge for local Chinese firms. Hence, we assume that when local Chinese firms partner with more experienced foreign MNC firms, are likely to better develop their managerial capabilities.

Hypothesis 2: When foreign IJV partners have more experience, the managerial capabilities development of Chinese partners will be greater.

The value of foreign partner's subsidiaries

MNCs are composed of geographically dispersed subsidiary units that possess diversified resources in different environmental conditions (e.g., Ambos, Andersson, & Birkinshaw, 2010; Ghoshal & Bartlett, 1990; Gupta & Govindarajan, 1991; Nohria

& Ghoshal, 1994). They are considered as a network of transactions such as capital, product and knowledge (Gupta & Govindarajan, 1991). The ability of MNCs to integrate, combine, and create new valuable resources and knowledge is essential (Ghoshal & Bartlett, 1988; Ghoshal & Nohria, 1993; Nohria & Ghoshal, 1994). Relatedly, Foss and Pedersen (2002) perceived headquarters as a resources and knowledge orchestrator and facilitator. The main idea is that it is critical to efficiently allocate and manage resources among subsidiaries in MNCs in order to exploit local opportunities, simultaneously, maintain a global focus (Ambos et al., 2010; Nohria & Ghoshal, 1994).

While MNCs can gain many advantages from pursuing international strategies such as local responsiveness, synergies creation, market expansion etc., challenges of doing international business exist. Due to unfamiliarity of host countries' environment and diversity of subsidiaries' characteristics, multinational firms must retain some firms-specific advantage such as market power, technical competence, as well as, managerial capabilities which are necessary for gaining competitive advantage and operating overseas (Chng & Pangarkar, 2000). Furthermore, capabilities to manage and allocate resources among business units in MNCs are also indispensable so that MNCs can acquire resource-based synergies which in turn increase overall values of the corporation (Goold & Campbell, 1998). Andersson, Forsgren, and Holm (2015) pointed out the importance of balancing subsidiaries influence in federative MNCs, where headquarters and subsidiaries are involved in continuous bargaining process. Power and influence of subsidiaries in MNCs are determined by the extent to which subsidiaries control information and resources needed by other units in the MNCs. However, headquarters can balance or moderate the influence powerful subsidiaries by acquiring a sound knowledge of subsidiaries' business network which allow headquarters to identify sources of subsidiaries' resources and to assess the value of those (Andersson et al., 2015; Ghoshal & Bartlett, 1990).

Ambos et al. (2010) pioneered the concept of subsidiaries' influence and subsidiaries initiative by arguing that two fundamental goal of subsidiaries are to gain autonomy on their own operation and to influence over other units in MNCs. Building on the perspective that subsidiaries control differentiated resources, they view subsidiary units as the entities who are influenced by headquarters but can also make

their own strategic decision. Thus, headquarters should properly respond to subsidiaries' initiative, i.e., support and pay attention to an initiative, such that they can maximize the best results for overall MNCs. This implies the necessity of headquarters' abilities to manage and balance the power of units in MNCs. Additionally, since headquarters' attention in MNCs is seen as a corporate allocation tool resulting in resources commitment, budget and resources allocation, and power diffusion in MNCs, the ability to efficiently manage, configurate, and distribute resources within MNCs are considerably needed. Consistently, the recombination of existing resources and knowledge from diverse sources to enhance technological innovation and improve managerial practices is defined as one of the elemental function of MNCs (Almeida & Phene, 2004; Kogut & Zander, 1992). Further, Ghoshal and Bartlett (1990) introduced power distribution and resource configurations among various business units as attributes of multinational firms. The proposition was built on the reason that invaluable resources such as tangible assets, finance, technology, marketing skills, and management capabilities may be possessed by any one or more of the different subsidiary units. The decisions of resources allocation in MNCs are based on consideration of needs for driving profitability, gaining access to new market, minimizing cost, potential for economies of scales etc. (Buckley & Casson, 1985; Ghoshal & Bartlett, 1990; Hennart, 1982).

Applying concepts mentioned above to this research context, we argue that foreign MNCs with a greater number of subsidiaries are better able to enhance local Chinese firms in IJVs to learn, obtain, and develop their managerial capabilities and knowledge due to the following reasons. First, foreign partners with a number of subsidiaries in MNCs can serve as a source of managerial knowledge for local Chinese firms. They are considered to have well-developed strategic orientation, proficient resource management and managerial capabilities, since specific decision to invest in different foreign locations, shift in resource allocation choices, and task coordination across business units are inevitable for successful international and global strategy implementation. (Doz & Prahalad, 1981; Ghoshal & Bartlett, 1990). Second, they possess valuable knowledge obtained from various number of subsidiaries (Kumar, 2013; Lupton & Beamish, 2014). Third, foreign partners with a number of subsidiaries also occupy high level of knowledge management capabilities in order to share and

manage knowledge across borders in MNCs (Lupton & Beamish, 2014). Thus, foreign MNC partners would be able to transfer their managerial capabilities by applying their knowledge sharing capabilities across borders to local Chinese firms in the IJV context. Therefore, we hypothesize that the more subsidiaries that foreign MNC partners have, the better managing capabilities they possess. Consequently, local firms who ally with MNC partners with many subsidiaries in various locations will be able to develop their managerial capabilities better than those who ally with MNCs partners with few subsidiaries.

Hypothesis 3: When foreign IJV partners have more subsidiaries, the managerial capabilities development of Chinese partners will be greater.

Value of distances and differences amongst IJV partners

As global economic growth is highly dependent on cross-country diffusion of knowledge (Grossman & Helpman, 1993; Romer, 1990), implying the need for different complementary knowledge, the interest for knowledge and learning has caught a lot of attention from researchers and practitioners throughout different disciplines. International business scholars have argued that the cost of doing business increases as cross-national differences increases, impeding information and knowledge exchange amongst foreign partners due to differences in culture (Barkema, Bell, & Pennings, 1996), market characteristics (Kogut, 1988), language, practices (Johanson & Vahlne, 1977) and so on. However, empirical evidence towards the contribution of knowledge diffusion remains deficient and inconclusive (Caves & Caves, 1996; Keller, 2004). While some authors have shown that country differences impede knowledge transfer (Barkema et al., 1996), others have shown a positive relationship between differences and knowledge transfer, arguing that these differences provide learning opportunities (Vaara, Sarala, Stahl, & Björkman, 2012). Lastly, some authors find no relations between differences and knowledge transfer (Ambos, Ambos, & Schlegelmilch, 2006; Frost & Zhou, 2005).

Country differences and distances have been mentioned to hinder interfirm learning and knowledge sharing (Gulati, 1995b; Mowery et al., 1996; B. L. Simonin, 1999). They can serve as a natural obnoxious factor of knowledge transfer and learning as their prompt to exist challenges. National, organizational and cultural distances

between firms have the potential to cause difficulties in many aspects of collaboration, including learning and knowledge sharing. Distances may cause the firms more time and effort on communication, misunderstanding, and eventually conflicts.

Supported by the view of Lyles and Salk (1996), the authors reported that cultural misunderstanding resulting from cultural difference will lessen the information flow and hamper learning, as well as knowledge sharing between firms. Mowery et al. (1996) found lower degree of knowledge transfer in U.S. firms' international alliances than domestic alliances. This led to the argument that national distance and cultural difference between partnering firms serve as an obstacle to interfirm knowledge transfer. Similarly, Simonin (1999a) proposed that cultural distance and organizational distance leads to ambiguity which further impede knowledge transfer. Studies often argue that problems and constraints stem from miscommunication (Grant, 1996b; Kiesler & Cummings, 2002; Szulanski, 1996) and conflicts (Armstrong & Cole, 2002), which in turn do not allow for creation of a good environment for knowledge transfer to take place inhibiting interaction, collaborations, exchange and observation (Armstrong & Cole, 2002).

However, overcoming and managing barriers of differences (Krug & Hegarty, 1997; Weber, Shenkar, & Raveh, 1996) has been suggested to lead to value creation and development of capabilities (Morosini, Shane, & Singh, 1998). Amongst the most pivotal value creation vehicles is knowledge (Bresman, Birkinshaw, & Nobel, 2010). Organizational and national differences are by nature potential sources of complementary knowledge and capabilities. Geographically dispersed partners can help specialize local knowledge (Zander, 1997) resulting in higher competitive advantage. It is also argued that country differences should be accounted for because relative development level of countries represents relative attractiveness (Holburn & Zelner, 2010; Martin & Salomon, 2003). This gap could facilitate learning because firms can exploit complementarities and synergies. Supporting this, Mudambi and Venzin (2010) noted that country differences create fruitful arbitrage possibilities for firms to exploit. Shan and Song (1997) unveiled that foreign MNCs conducting investment in American biotechnology companies benefited with significant technological advantages. Malnight (1995) alluded that foreign subsidiaries gradually modulate from using home country's knowledge and capabilities to explore, exploit

and capitalize on host country's knowledge and capabilities. On the same vein, one could also argue that host country firms also could benefit from knowledge and capabilities foreign partnering firms bring with them, in particular from developed economies. However, it is well-established that firms tend to favor proximity by turning to the closest neighborhood in relation with existing knowledge base and societal conditions. Subsequently, this action might be punitive as it inhibits novelty resulting in competence traps (Levitt & March, 1988). Additionally to local knowledge, firms must be able to breach the nestle to search for international technology and knowledge in order to gain competitive advantage (McGrath, 2001).

Nakamura, Shaver, and Yeung (1996) posited that partners who intend to learn intangible competitive capabilities must be different, yet complementary and relevant. Similarity and proximity of knowledge base facilitate the acquisition and integration of novel knowledge (Grant, 1996a; Kogut & Zander, 1992). Other authors have also argued that the greater differences and distances, the more potential and opportunities there are to learn (Harrison, Hitt, Hoskisson, & Ireland, 2001; Inkpen & Pien, 2006; Lane & Lubatkin, 1998; Parkhe, 1991; Zaheer, 1995) as close partners might have access to same knowledge or developed knowledge in a same way. Moreover, the existence of knowledge complementarity is required, especially when learning and knowledge acquiring is the goal for an alliance. Sufficient distances between partners could increase the probability that they will gain complementary knowledge and develop their capabilities. In other words, one can capitalize on difference in capabilities and knowledge across different countries in order to develop their own knowledge and capabilities (Argote et al., 2000). Following the conceptualization of Morosini et al. (1998) and Kogut and Zander (1993) we contend that the greater differences between the partnering firms, the more knowledge and capabilities there are to grasp, vice versa. Differences between home and host countries of the respective IJV partners will affect the potential for learning as the difference between the countries directly affect the access to knowledge because the potential of knowledge and capability complementarity resides in differences in organizational practices and home and host country differences (Bresman et al., 2010; Ranft & Lord, 2002).

In the area of interorganizational learning within an international context, firms are exposed to many differences of the environment which affect interorganizational

learning between partners. Cultural difference has emerged as one of the most prevailing proxies for country differences in the international business literature (Shenkar, 2001). Further, it has also been said that the differences between less developed countries and more developed countries, provide firms with opportunities for knowledge exploitation and exploration. It is less likely that similar level of economic development between countries will provide such opportunities (Tsang & Yip, 2007). So, relative economic differences can also be argued to impact the relation of learning and knowledge transfer. Moreover, Tsang and Yip (2007) mentioned in their study that using more sophisticated measures of distances, such as educational distance and technological distance, other than economic distance may reveal interesting results of the benefits from foreign investment. We therefore consider culture, economic, education, and technology as crucial country distances for our analysis.

Cultural difference results in knowledge gaps that is worth examining (Johanson & Vahlne, 1977; Lyles, Pedersen, & Petersen, 2003), because in culturally dispersed countries there underly difference in institutions, organizational structures, business procedures and practices, and management styles (Lubatkin, Calori, Very, & Veiga, 1998; Zeng, Shenkar, Lee, & Song, 2013). Vaara et al. (2012) argued that cultural difference is closely linked to value creation, because they enable firms to maintain their competitive position by exchanging complementary capabilities. This is because greater cultural difference makes it more probable that the partnering firms are exposed to, and possess different set of knowledge and practices, thus complementary benefits are more likely to exist (Morosini et al., 1998). Given the concerns raised related to challenges and barriers of cultural difference, Child and Rodrigues (1996) argued that implications raised by cultural difference call for more managerial involvement. More managerial involvement will in turn facilitate knowledge exchange better due to the desire to succeed. Furthermore, authors have also argued that the complementary benefits will impact knowledge transfer stronger than the potential barriers of its stickiness (Cho & Lee, 2004; Vaara et al., 2012). Cultural difference is therefore necessary because it affects knowledge transfer (Kedia & Bhagat, 1988; Lyles & Salk, 1996). Supporting this, Vaara et al. (2012) found that national, and cultural differences had a positive effect on knowledge transfer. IJVs, in particular, serve as a valuable means for learning in a cross-national context (Inkpen & Tsang,

2007) because IJVs expose partners to each other's knowledge and cultures (Parkhe, 1991). IJVs benefit from cultural difference because partners adopt the international context continuously by learning novel knowledge and practices, while unlearning previous knowledge (Holan & Phillips, 2004; Tsang & Zahra, 2008). Thus, partnering with firms from more diverse cultures, better enables Chinese firms to develop managerial capabilities.

Due to the disparity of economic advancement amidst host and home countries, one can make the assumption that developed economies, to a greater extent than less developed economies, have access to more innovative, technological and management related knowledge and knowhow. As Gupta and Govindarajan (2000, p. 478) proposed "*a focal unit is likely to view the knowledge stock of another unit located in an economically more advanced country relative to itself as more valuable than that of a unit located in a relatively less advanced country*". Lastly, Lu, Liu, Wright, and Filatotchev (2014) found that economic distance amongst actors created more value when choosing entry modes and better facilitated how much one could learn about a market. Thus, Chinese firms might perceive the knowledge base and managerial knowhow of foreign partners, from more advanced economies, as valuable in order to differentiate themselves to compete with other local actors. Therefore, it would be beneficial for Chinese firms to learn and acquire managerial knowledge through IJVs, if there exist economic differences between Chinese and foreign partnering firms.

The educational systems which are mostly regulated on a national basis are important. Local educational institutions and systems constitute knowledge and competencies of human resources in the nation, also reflect the national skilled labor supply, development and innovation (Monaghan, Gunnigle, & Lavelle, 2014). Staff and management are shown to have strong effect on ideas, practices, learning, and knowledge base of organizations (Shrivastava, 1983). This implies that firms from different countries with different educational systems possess different level of knowledge and capabilities. Firms operating in countries with good educational systems are likely to have better knowledge and capabilities since their staff possess higher level of capabilities (Boeker, 1997) which may be beneficial for firms from lower educational level countries. Difference in educational systems between partnering firms' countries of origin may result in room for interorganizational learning

and knowledge sharing. Partnering with foreign firms from countries with better educational systems can better provide local Chinese firms with opportunities to learn best practices and acquire knowledge from their foreign partners.

Lin, Wu, Chang, Wang, and Lee (2012) proposed that if information transfer and learning are main benefits of R&D alliances, technological distance are needed in some certain level in order to be successful. Similarly, Furman, Porter, and Stern (2002) and Nelson and Rosenberg (1993) argued that technological capabilities and capacity are highly important to a country's knowledge stock, and the resulting technological superiority could also lead to knowledge spillover and access to human capital. Supporting this, Oxley and Yeung (2001) found a positive relation with technology readiness with institutional environment and international competitiveness, which is argued to facilitate knowledge exchange. In the same vein, Zhang, Li, Li, and Zhou (2010) also argued that technological and managerial diversities of foreign firms, create a big potential for learning. The authors stated that both small and big gap are not good for learning, because local firms would not benefit from small gaps due to the bare amount of potential, while in a big gap, local firms would suffer from not having sufficient internal knowledge to recognize the value and content of knowledge elements. Thus they argued that the strongest influence of gap is when it is intermediate (Zhang et al., 2010). Notwithstanding, the authors found a negative relation with technological gap and knowledge spillover. On the other hand, Sampson (2007) found that firms improve their knowledge when technological diversity between partners in alliances is moderate. Additionally, the author found that knowledge acquisition from alliances with high levels of technological difference is greater when alliances are in the form of equity joint ventures. We conceptualize that firms operating in the countries with high technological readiness may possess the knowledge and capabilities to fully capitalize technologies in order to facilitate their resource management and business operation. These firms, in turn, have accumulated well-developed managerial capabilities and knowledge and may be serve as a valuable source of managerial knowledge. Therefore, local Chinese firms partnering with foreign MNC partners from technological advanced countries better improve their managerial capabilities.

Hypothesis 4: When there are greater cultural, economic, educational, and technological distances between foreign IJV partners and Chinese partners, the greater managerial capabilities development of Chinese partners.

The value of number of foreign IJV partners

Firms can speed up their capability development as well as minimizing exposure of uncertainty and costs through learning alliances by assimilating and exploiting capabilities and knowledge developed by partners (Grant & Baden-Fuller, 1995). The pervasiveness and fundamental concern of knowledge access is also reflected in the reliance of collaborations in knowledge intensive industries (Powell et al., 1996). Studies suggest that complexity of task, involvement and connectivity amongst partners affect learning outcomes (Lazer & Friedman, 2007; Soda, Usai, & Zaheer, 2004).

In the alliance portfolio literature, there has been extensive research on the quantity versus the quality of alliance portfolio size. However, in the alliance portfolio literature there has been limited attention to an important dimension, i.e., examining the number of partners the focal firm have (Wassmer, 2010) which could be very important affecting different outcomes (Hoehn-Weiss & Karim, 2014).

Network and social capital theory also look into the value of the quantity of partners and their ties which the alliance literature could benefit from. Similarly to Sarkar, Aulakh, and Madhok (2009), we draw on the network theory (Gulati, 1999) and social capital (Burt, 2009) to develop our notion of the value of number of alliance partners. Empirically, there has been showing support for benefits of both big and small alliances. Similarly to network theory, Phelps (2010) argued that alliances are analogous, where bigger alliances and diversity increase the novelty of knowledge the partners can access. In a study by Powell et al. (1996), it was shown that firms in more resource and information rich positions by having more diverse partners also grew faster. However, pursuing diverse and novel knowledge pose several challenges related to existing cognitive systems, premises and beliefs. This could lead to information overload, information misinterpretation, confusion and increased costs of information acquisition (Ahuja & Morris Lampert, 2001) due to cognitive limitation. Consequently,

greater size of alliance with a larger number of partners is argued to increase the costs of knowledge absorption (Phelps, 2010). Albeit providing actors with more access to resources, too big number of foreign partners in the alliances will result in devotion of significant resources on managing and maintain the relationships. The configuration will also be influenced by partner redundancies (Burt, 2009), complementary capabilities (Gomes-Casseres, 1994), conflicts and other types of complexities (Baum et al., 2000). Subsequently, increased number of foreign partners without devoting attention to the configuration of the portfolio might act as a barrier resulting in inefficiencies, less diverse and new information (McEvily & Zaheer, 1999) as it limits connections (Gulati, 1995a) to innovations in the alliance (Uzzi, 1996, 1997).

According to the notion that learning is a social construction process (Brown & Duguid, 2000; Gulati, 1999) where learning is contextual and linked to the condition and context under which it is learned and developed, it is shown that alliances with a small number of parties better facilitate the transfer of tacit knowledge because it is easier for firms to have intensive interaction and create tight relationship with few partners in the alliances. Coleman (1988) argued that cohesive relationships between partners increase the value of knowledge, enabling mutual access and increased reliability of information (Echols & Tsai, 2005). A small number of parties with dense relationship have shown to exchange more in-depth knowledge and know-how facilitating the development of more sophisticated capabilities and knowledge such as tacit knowledge and know-how as they enable high interaction and exchange. Nelson (2009) also pointed out that tacit knowledge is hard to grasp and requires a lot of time to transfer. Despite the difficulties of tacit knowledge transfer, Cohen and Levinthal (1990) argued that the development is cumulative which emphasizes the importance of time-based learning (Martin & Salomon, 2003). Lastly, studies have also shown that with collaborative experience, small groups and networks improve their performance by sharing and acquiring both tacit and explicit knowledge. (Liang, Moreland, & Argote, 1995). However, in small and dense alliances the same kind of knowledge and information tend to flow within the alliances which may prevent partners from the newest information and innovation, also reduce alternative ways of operating and results in collective blindness (Nahapiet & Ghoshal, 1998).

Thus far, there has been inconclusive empirical evidences in this respect. While some papers have shown the positive relation of having a dense relationship with the alliance partners (Ahuja, 2000), others have shown a negative relation (Bae & Insead, 2004). However, within our research context, due to the tacit nature of managerial capabilities (Lane et al., 2001; Shenkar & Li, 1999), we contend that IJVs, with a small number of foreign partners, better facilitate local Chinese firms’ learning and managerial capabilities development since they enable more frequent involvement, interaction, and tighter ties between partners. They also reduce the chance of conflicts and partner redundancies, and lessen difficulties in managing and maintaining relationship. Consequently, they help local Chinese firms devote less resources in governing relationship and better focus on learning from foreign partners. This may result in increased managerial capabilities of local Chinese firms.

Hypothesis 5: When there are a smaller number of foreign IJV partners in the collaboration, the managerial capabilities development of Chinese partners will be greater.

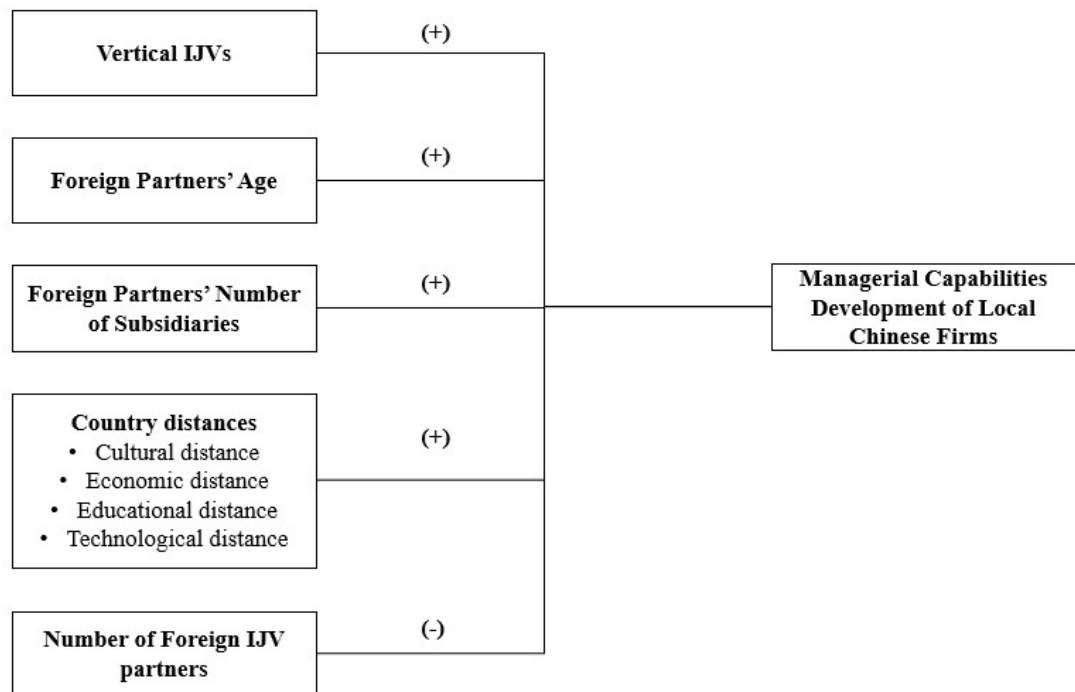


Figure 1. Managerial Capabilities Development of Local Chinese Firms Through IJVs

Methodology

Research Setting

China, an emerging economy and one of the fastest growing economies in the world (Si & Bruton, 1999), has reformed its economy by changing from an orthodox communist system towards a socialist market economy (China Internet Information Center, 2018). The market system plays an important role in the sphere of resources allocation. China has also surpassed the experimental phase (Shaw & Meier, 1993) making collaborations appealing as it thrones the list of FDI recipient (Beamish, 1993b). China's market reformation and expeditious economic growth have excessively accelerated business activities and investment by multinational companies, especially through the form of IJVs, becoming the most active joint venture market (Si & Bruton, 1999). In 2001, China joined World Trade Organization (WTO) and it became one of the world's largest recipient of foreign capital in the early 2000s. It was ranked as the largest FDI recipient among developing countries and the second largest in the world, behind the United States in 2016 and 2017 (UNCTAD, 2018). IJVs have also been extensively used by foreign MNCs as an opportunity to gain market shares (Luo, 2005; Ministry of Commerce of China, 2016). Additionally, this revolution triggers the need of Chinese firms for knowledge about new technologies and management skills. Establishing IJVs in China is used as a means to fulfill Chinese firms' hunger for knowledge and managerial skills development. According to the Foreign Investment Department of the Ministry of Commerce (2018), the major nations investing in China are Hongkong, Republic of Korea, U.K, Singapore, Japan, the U.S., and Germany. While foreign companies and multinational corporations are willing to enter into joint ventures in China because of the desire for access to the local market, Chinese firms may aim at learning and acquiring knowledge about foreign business practices since local firms often have insufficient knowledge and know-how necessary to compete in a global environment (Si & Bruton, 1999). Thus, knowledge acquisition and learning are among the main goals of international joint ventures in China (Si & Bruton, 1999; Von Glinow & Teagarden, 1988). However, the alliance literature has provided insight into learning in alliances with the main focus on technological knowledge (e.g., Baum et al., 2000; Isobe, Makino, & Montgomery, 2000; Zhao, Anand, & Mitchell, 2005), while managerial knowledge and capabilities development

in alliances has remained unexplored, especially in an emerging country context like China. Therefore, it is beneficial to uncover factors which facilitate managerial knowledge development of Chinese partnering firms through IJVs.

Sample

The unit of analysis for this study is firm-level. Chinese firms partnering up with at least one foreign MNC in completed IJVs from 2000 to 2016 are sample of the study. Similar to Boone, Lokshin, Guenter, and Belderbos (2019) and Chatterji and Patro (2014), the list of Chinese firms participating in IJVs was obtained from the Zephyr database (Bureau Van Dijk), recognized as the most comprehensive database of deal information on M&A, IPO, private equity and venture capital deals and joint ventures. Each IJV in our sample contains at least one local Chinese firm and one foreign MNC firm. The countries of firms in IJVs were identified based on the International Standard for country codes (ISO Country code). We chose to set the timeframe from the period 2000 to 2016 due to the following reasons. First, there are a number of IJVs formed since China joined WTO in the early of 2000s which allows for the possibility to obtain a substantial number of IJVs in China for statistical analysis. Second, we wanted to avoid going too much back in time as the data might not be representative, and it is hard to get data. Lastly, we intended to use as new and complete data as possible in order to unveil the phenomenon. From the database, 2016 provides the newest updated and most complete data compared to data from 2017 and 2018¹.

Applying the search criteria for joint ventures with targets in China from the period 2000-2016, it resulted in 8,038 IJVs. However, we ended up with a final sample of 348 Chinese firms from 297 IJVs resulting from removing several missing data entries and applying meticulous screening procedures as follow. First, we excluded all JVs with only Chinese firms, and all JVs with only foreign firms which are recorded in the database. Secondly, IJVs with partnering firms from Hong Kong, Taiwan and Macau were also excluded from the sample since they are claimed as a part of Mainland

¹ We started the data gathering late 2018/early 2019, at the point of time, limited data was available for the year 2018. As for 2017, we observed that the database did not update financial information as complete compared to 2016. Further, due to that we measured a lagged relationship of managerial capabilities development, 2017 would not be applicable.

China by the Chinese government². This classification is similar to other scholars such as Zhang et al. (2007) where they argued that these three regions have highly proximate history, culture and language. Moreover, IJVs with foreign partners from Cayman Island, Bermuda, and Virgin Islands were also removed, as companies often register undertakings in these tax havens and could disturb the results. Third, we excluded IJVs participated by individual investors because for these cases we cannot access their information in order to evaluate the capability development. Fourth, we turned to other publicly available sources such as annual reports, company websites, and other databases i.e., Bloomberg, Orbis (Bureau Van Dijk), Factiva and LexisNexis to fill missing data and to maximize the number of observations. As these online databases may have different methods of collection, criteria, and measurements, we performed a crosscheck by comparing data that were available in these databases. In addition, we compared the data collected from these databases with those reported in the companies' annual reports or company websites, when available, in order to further control on the accuracy of the data. Consequently, there was no significant deviations. Fifth, IJVs with non-multinational foreign partners were also taken away, as IJVs with MNCs are the main focus of this study. Lastly, we then took out the observations with missing data which we could not obtain. Therefore, these 348 Chinese companies from 297 deals with completed data are our sample to measure managerial capabilities.

Dependent variable

As managerial capabilities are tacit and to some degree contextual dependent (Morosini et al., 1998) and resources abundantly divisible, firms are not able to allocate physical and tangible assets without reducing the effectiveness (Holcomb, Holmes Jr, & Connelly, 2009). Thus, scholars tend to link managerial capabilities directly to performance or other outcome measurements. Hayes and Schaefer (1999) , supporting this argument, found a positive effect of managerial capabilities on shareholder return.

Furthermore, as managerial capabilities are highly tacit and unobservable, financial indicators can serve as a valid proxy for the phenomenon (Stadler, Helfat, &

² According to Article 1 of the Hong Kong Basic Law , it states that “*The Hong Kong Special Administrative Region is an inalienable part of the People’s Republic of China*”. Furthermore Annex 3 of the Hong Kong Basic Law also states that any reference to Taiwan, Hong Kong and Macau should be referenced to China. Further in the Macao Basic Law it also states that the Macao SAR “*is an inalienable part of the People’s republic of China*”. Thus, we consider these three regions as a part of China in this study.

Verona, 2013; Tang & Liou, 2010). An indicator of managerial capabilities could be the efficiency of resource utilization. The net benefit by possessing managerial capabilities is the realization of potential value that firms can create and realize from resource management and productivity. Resource management efficiency increases when managerial capabilities are improved, resulting in a greater utility given the same amount of input of resources (Peteraf & Barney, 2003). Thus, managerial capabilities could be indicated in asset turnover, reflecting how efficiently and effectively the assets and resources are utilized to their potential. This indicator would reflect the capabilities to extract value from both the tangible and intangible resources. While low asset turnover would indicate inefficient use of asset and low managerial capabilities, high asset turnover would be likely to indicate high capabilities to manage assets and resources (Dietrich & Sorensen, 1984; Pan & David, 2000). We adopted this quantifiable measure in order to avoid the widespread reliance on anecdotes and assertions within the alliance and knowledge literature (Mowery et al., 1996). To capture the development of managerial capabilities, investigating the development along the collaboration period with time series analysis is preferable. However, due to the limitation of data, particularly data of small firms, we did not have access to financial information throughout all years of collaboration. Thus, we measured the development of managerial capabilities by measuring the change of asset turnover (sales to assets ratio) of the Chinese firms prior to IJV collaboration and after IJV dissolution. The formula below shows how this was calculated.

Managerial capabilities of Chinese firms prior to engaging in IJV ($MC\alpha$):

$$MC\alpha = \frac{\text{Total sales in year } \alpha}{\text{Average assets as of year } \alpha}$$

Managerial capabilities of Chinese firms after IJV dissolution ($MC\beta_t$):

$$MC\beta_t = \frac{\text{Total sales in year } \beta_t}{\text{Average assets as of year } \beta_t}$$

Development of Managerial capabilities of Chinese firms ($MCA\Delta$):

$$MCA\Delta = MC\beta_t - MC\alpha$$

Where MCA denotes the development of managerial capabilities, α denotes a year before IJV incorporation, β_t means the year with t years after IJV dissolution, and $t \in [1, n]$. However, If the IJV is still operating and has not dissolved, 2018 is used as the post formation year for managerial capabilities development calculation. Total sales and assets of targeted years were obtained from various reliable sources i.e., Company's annual report, Bloomberg, Orbis, Factiva, and LexisNexis.

Independent variables

Vertical IJVs

In order to test hypothesis 1, we measured the vertical IJVs by implementing a dummy variable (0,1), coded as 1 if partners in IJVs operate in different function of the value chain, and 0 otherwise. Following previous research, the IJV partner's primary SIC code was used to classify the nature of IJV collaboration (Mowery et al., 1996; Park & Russo, 1996). If primary SIC code of IJV partners is identical, the IJV was classified as horizontal, otherwise vertical. Moreover, we also cross checked the nature of partners' operation stated in Zephyr to companies' websites in order to better identify if the IJV is vertical or horizontal alliance. Since hypothesis 1 predicts greater amount of managerial capabilities development of Chinese firms in vertical IJVs than in horizontal ones, we expect to see a positive effect of vertical IJVs on Chinese partners' managerial capabilities development.

Foreign partners' age

In order to test hypothesis 2, foreign partner's experience was measured as foreign partner's age which is the number of years the foreign MNC firms have been established (Zeng et al., 2013). Firm age was used to present experience in managing and operating the foreign MNC partners' business as the period of operating can reflect the cumulated knowledge and experiences (Zeng et al., 2013). For multi-partner IJVs where there are more than one MNC partners in the IJVs, we implemented the highest value method to obtain the best representative of foreign partner's experience. Empirical results have also shown that technological age (Teece, 1977), and experience (Zander & Kogut, 1995) have a positive impact of knowledge transfer due to familiarity of procedures and critical factors enabling the transfer. Thus, we expect a positive

effect of foreign partners' age on managerial capabilities development of Chinese firms.

Foreign partners' number of subsidiaries

To test hypothesis 3, we obtained the number of subsidiaries MNC partners had at the time of establishing IJV. Similar to alliance foreign partner age, the highest value of partner's subsidiaries was selected for multi-partner IJVs. Even though there may be capacity constraints that could actually reduce learning, Hypothesis 3 proposed that the greater number of subsidiaries MNC partners have, the more managerial capabilities local Chinese firms can develop. Consequently, we expect these subsidiaries counts to have a positive effect on managerial capabilities development of local Chinese firms.

Country differences

We set several indicators to measure distances and differences between China and the home country of foreign partnering firms, which are considerably related to interorganizational learning, specifically resource management capabilities development. In order to capture the multidimensional nature of distances we identified in this study; 1) Culture, 2) Macroeconomic environment, 3) Higher Education, 4) Technological readiness.

1) Cultural distance

Following previous studies, (Morosini et al., 1998; Vaara et al., 2012; Zeng et al., 2013), the first indicator of distance is national cultural distance basing on the GLOBE study's cultural dimensions (House, Hanges, Javidan, Dorfman, & Gupta, 2004). Due to the wide criticism on Hofstede (1980)'s study (Haspeslagh & Jemison, 1991; Schwartz, 1994; Shenkar, 2001), the GLOBE study attempted to create more elaborate and reliable national cultural differences scores by further capturing more dimension of cultural differences than Hofstede (1980). In the GLOBE study, national cultural differences were measured as the deviation across each of the nine dimensions; uncertainty avoidance, power distance, institutional collectivism, in-group collectivism, gender egalitarianism, assertiveness, future orientation, performance orientation, and humane orientation. Even though the GLOBE study reports scores on

both organizational practices and values (House et al., 2004), the nine dimension scores on organizational practices were used in this study. We also applied the technique proposed by Kogut and Singh (1988)³ to build an indicator for cultural distance between Chinese firms and foreign firms. The formula for calculating cultural difference is $CD_{jc} = \sum_{i=1}^9 |I_{ij} - I_{ic}| / 9$, where CD_{jc} denotes the cultural difference between the China and j country, I_{ij} refers to GLOBE score for i :th cultural dimensions of j country, and C indicates China. For multi-partner IJVs, average value method was applied in the calculation. These dimensions are associated with differences in procedures, norms, regulations and cognitive environments (Jensen & Szulanski, 2004), language, practices and values (Barkema et al., 1996; Dow & Karunaratna, 2006; Johanson & Vahlne, 1977; Kirkman, Lowe, & Gibson, 2006) or other sociological factors related to cultural difference will both directly and indirectly impact on the knowledge transfer, communication and cooperation of alliance partners.

While GLOBE study's scores were used for measuring cultural distance between partners in IJVs, we adopted the Global Competitiveness Index 2016 (GCI) from the Global Competitiveness Report 2017 – 2018 published by the World Economic Forum (2017) (WEF) for identifying economic, educational, and technological distances. Because GCI measures national competitiveness, defined as the set of factors that determine the level of productivity driving long-term prosperity of the country, a country with high GCI score is considered as a high productivity country with ability to efficiently utilize available resources and create values. Furthermore, GCI also provides a comprehensive indication of different dimensions since it takes various factors in relation to the different measurements into account. The GCI index also adopts both quantitative and qualitative measures to triangulate the data controlling for its validity and reliability.

2) *Economic distance*

To measure economic distance, we obtained score on the 3rd pillar - Macroeconomic environment - of GCI. Macroeconomic environment captures the level

³ Despite not widely recognized, Kogut and Singh (1988)'s proposal has been frequently adapted by authors (e.g., Morosini et al., 1998; Vaara et al., 2012; Zeng et al., 2013). Interestingly this approach has been proven to work both using the GLOBE data (Vaara et al., 2012; Zeng et al., 2013) and the Hofstede data (Morosini et al., 1998).

of inflation and sustainability of fiscal policy including government budget balance, gross national savings, and country credit rating. Countries with higher score on macroeconomic environment aspect are perceived as the countries with better economic development and stability. Firms operating in these countries will experience less uncertainties and gain more business confidence in investment, which in turn better enhance their capabilities to manage and utilize resources productively comparing to firms in the countries with low macroeconomic environment score (World Economic Forum, 2017). Economic distance between foreign partners and local Chinese firms in IJVs was calculated by taking the difference of the score on microeconomic environment dimension between China and foreign partner's country of origin. Hypothesis 4 assumes that the more the economic distance between Chinese firms and foreign partners is, the more managerial capabilities Chinese firms develop. Therefore, we suppose to see a positive impact of economic distance on the dependent variable.

3) Educational distance

To measure the educational distance, we used the score on the 5th pillar – Higher education - of GCI and calculated the difference of the score between China and foreign partner's country of origin. Higher education dimension of GCI captures the quantity and quality of education in each country. Globalizing business environment requires countries to nourish pools of well-educated workers with competencies to perform complicated tasks and adapt quickly to their changing environment and the evolving needs for productivity (Boeker, 1997; World Economic Forum, 2017). Educated individuals are likely to engage in boundary spanning, a tolerance for ambiguity, and possess an ability for “integrative complexity” (Dollinger, 1984). Greater level of education implies more knowledge and better competencies held by labor force. A country with a highly educated population can create more productivity since its human resources possess greater cumulative managerial capabilities to perform tasks, manage resources, transfer knowledge quickly, and create new knowledge and applications (Boeker, 1997; Kimberly & Evanisko, 1981). Partnering with firms from high educational level countries, local Chinese firms may have more opportunities to learn the way they manage resources and to adopt their managerial systems. Hypothesis 4 proposes that the greater the educational distance between Chinese firms and foreign

MNC firms, the more managerial development can be. Consequently, we expect a positive effect of educational distance on Chinese firm's managerial development.

4) Technological distance

While some studies used number of patents registered in the country to identify technological distance (Vasudeva & Anand, 2011), we used the score on the 9th pillar – Technological readiness – of GCI and took the difference of the score between China and foreign partner's country of origin to measure technological distance. We considered technological readiness score from Global Competitiveness Report 2017-2018 as a fit variable for our study since it captures the relevant factors that are essentially applicable to managerial capabilities. Technological readiness dimension measures the agility of the businesses in the country to adopt technologies to enhance the productivity by fully leveraging information and communication technologies (ICTs) in business routines for efficiency improvement (World Economic Forum, 2017). We, therefore, expect to see a positive effect of technological distance on the dependent variable.

Number of foreign IJV partners

Following Goerzen and Beamish (2005), number of foreign IJV partners was judged by the count of foreign partners participating in the focal IJV. Hypothesis 5 proposes that the greater number of MNC partners in the IJV, the less development of managerial capabilities of Chinese firms. We, therefore, anticipate a negative impact of number of MNC partners on the managerial capability development of local Chinese firms.

Control Variables

Our analysis includes several variables which control the effect of country, effect of industry, effect of organizational factors (firm size, firm age, ownership characteristic, alliance experience of Chinese firm), effect of IJVs (length of collaboration) and effect of macroeconomic environment (GDP growth of China) on managerial capabilities development.

We controlled the effect of partners' countries of origin by including a dummy variable (0,1) of top 6 foreign partners' countries of origin, which are Japan, the U.S.,

Germany, Singapore, the UK and Korea in respective order, where the UK and Korea shared equally many collaborations. These top 6 countries accounted for 70% of the collaborations. Country dummy variable can account for more unobserved distances embedded in different countries which also influence managerial capabilities development and knowledge transfer in the alliances such as institutional structure, political environment, infrastructure development etc. Using individual country dummies for all countries represented in the sample would reduce degrees of freedom in a small sample leading to difficulties of interpretations and, in the worst-case, results might not be valid. However, using top 6 countries could summarize the effect of country differences that might exist controlling for unobserved heterogeneity that is not measured by the independent variables. We coded a country dummy variable as 1 if at least one foreign partner of Chinese firms comes from these top 6 countries, otherwise it was coded as 0. With this, we assume that partners that operate in distinct administrative and/or political national environments will affect the effectiveness of the collaboration. These differences may impact firm's resource transfer and organizational behavior (Jensen & Szulanski, 2004; Shenkar & Li, 1999). Therefore, collaborating with foreign partners originating from these countries is assumed to result in an increased development of managerial capabilities as these countries are developed countries and could indicate that the partners could bring more knowledge with them.

Chinese firm's industry was categorized into 4 groups; manufacturing, services, retail trade, and wholesale trade. Each industry was transformed into a dummy variable (0,1). We identified the industry based on the SIC code. Firms operating in industries with high asset and resource investments may require higher capability of managing resources. Thus, they are likely to have more motivation to develop their resource management capabilities and managerial knowledge through the alliances.

Size of Chinese firms, measured by total sale (Anand et al., 2016) and total number of employees, is a variable that has to be controlled in this study. Due to the large and disseminated values of total sale, we standardized the variable to reduce the spectrum. Firm size has been considered as a basic variable influencing organizational learning (Anand et al., 2016; Marquardt & Reynolds, 1994) and level of joint venture participation (Berg, Duncan, & Friedman, 1982). Hagedoorn and Schakenraad (1994) found a strong positive effect of firm size on the intensity of strategic partnering. Big

firms may have more capabilities to participate actively in the IJVs and gain more knowledge from the collaboration, while small firms may not be able to actively engage in the IJVs due to the lack of resources and managerial personnel (Tsang, 2002).

Chinese firm's age was measured as the number of years since the Chinese firms were founded. Firm age can be seen as a mediator for internal processes of knowledge management that change over time (Thornhill & Amit, 2003). Age also reflects the firm's experience and familiarity with knowledge management. Young firms may lack thorough routines and processes for knowledge management. They are more likely to count on ad hoc behaviors and improvisation processes. On the other hand, long established firms are more likely to deliberately manage knowledge and acquire knowledge better than young firms (Sapienza, Autio, George, & Zahra, 2006) since well-defined processes and structure are more often found in aged firms facilitating knowledge acquisition and knowledge sharing. Moreover, old firms have more time to develop their absorptive capacity which fortifies their abilities to obtain and improve their managerial knowledge from others than young firms do (Zahra & George, 2002). Thus, Chinese firms' age impact managerial capabilities development of Chinese firms.

We controlled Chinese firm's state ownership by applying a dummy variable (0,1). Chinese state-owned enterprises (SOEs) that are directly supervised and managed by the Chinese Central Government were coded as 1, otherwise as 0. The list of Chinese state-owned companies was obtained from State-owned Assets Supervision and Administration Commission of the State Council (SASAC). The influence of Chinese SOEs should be controlled because governmental influence in China's SOEs still exists in the form of communist party power and stricter regulations which intervene in companies' decision making (Hassard, Sheehan, & Morris, 1999; O'Connor, Chow, & Wu, 2004). Furthermore, governmental influence found in Chinese SOEs can distract management's attention which in turn lessens Chinese SOEs abilities to sharpen their managerial capabilities, to improve their resource management efficiency, and to adopt managerial knowledge through partnering with foreign MNCs (Anand et al., 2016; Child & Markoczy, 1993; Groves, Hong, McMillan, & Naughton, 1994; Peng & Heath, 1996). For example, the government may focus on providing employment over resource utilization efficiency due to a concern for social stability

(O'Connor et al., 2004). Supporting this idea, negative impact of Chinese governmental influence on implementation of modern resource management practices was found in Goodall and Warner (1999)'s study. Ownership structure is seen as most important in an IJV agreement in the literature (Luo, 2005). In an emerging market, foreign MNCs are often associated with superior capabilities and knowledge suggesting a positive relationship between foreign ownership and the potential for learning and knowledge transfer in IJVs (Zhou & Li, 2008). The prevalence of state ownership is a common characteristic in emerging markets, so IJVs are often formed in partnership with SOEs (Beamish, 1993a; Tan & Peng, 2003). Despite that SOEs enjoy advantages related to access to financial and human resources, governmental support and having access to external resources (Peng, Tan, & Tong, 2004). SOEs tend to receive negative view related to their organizational efficacy, capabilities and competitiveness (Peng, 1997; Peng & Heath, 1996; Zhou & Li, 2008). Albeit, it is indeed valuable to partner with SOEs due to ineffective and specialized intermediaries in emerging markets (Peng & Heath, 1996; Tan & Peng, 2003).

Past alliance experience of local Chinese firms was measured by the total number of previous alliances participated by the focal Chinese firm until the year of the IJV deal. We controlled the previous alliance experience of local Chinese firms because alliance experience may promote the development of absorptive capacity of Chinese firms as well as enhancing the abilities of Chinese firms to learn and acquire knowledge across borders (Barkema & Vermeulen, 1998; Tsang, 2002; Vermeulen & Barkema, 2001). Moreover, internalized collaborative know-how gained from past alliance experience can also contribute to future collaborative benefits (Elia & Santangelo, 2017; Simonin, 1997; Zeng et al., 2013).

Length of collaboration was determined as the number of years from the IJV's incorporation year until the year of dissolution. Long period of collaboration may lead to repeated intense social interaction which increases willingness of knowledge sharing among partners and expedites knowledge acquisition of firms in IJVs (Dyer & Singh, 1998; Yli-Renko et al., 2001). Ring and Van de Ven (1994) and Larson (1992) also suggested that the longer and the greater social interaction a firm had with a collaboration partner, the more exchange of knowledge and information occurred.

Lastly, Park, Vertinsky, and Becerra (2015) showed a positive relationship with IJV age and tacit knowledge transfer. Therefore, length of collaboration seems to have an effect on knowledge development of Chinese firms through the partnership.

China's economic growth has experienced fluctuating growth the past decades. Therefore, we controlled the average GDP growth of China over the collaboration periods. We measured macroeconomic impact by using the arithmetic mean of GDP growth spanning over the respective collaboration periods of the IJVs, represented as

$$Average\ GDP_{growth} = \frac{1}{n} \sum_{i=1}^n \frac{GDP_{growth_1} + GDP_{growth_2} + \dots + GDP_{growth_n}}{n}, \text{ where } n$$

denotes the total collaboration period, and GDP_{growth_i} (where $i = 1, 2, \dots, n$) represents the GDP growth of the given collaboration period. We controlled the influence of average GDP growth due to the fact that GDP is an indicator of the growth of an economy and macroeconomic fluctuation will impact individual firms' financial numbers. Exogenous uncertainty such as economic uncertainty like GDP, entails great business uncertainties and problems, which cannot be resolved through effort of a focal firm (Cuypers & Martin, 2010) and should thus be controlled in the estimation model (Lu et al., 2014).

Table 1. Summary of variables employed in the regression analysis

| Variables | Measurement | Sources |
|--|--|---|
| <i>Dependent Variable:</i> | | |
| Managerial capabilities development | Difference between asset turnover of the year before the IJV's year and t years after the IJV's dissolution year | Zephyr, Orbis, Bloomberg, Factiva, LexisNexis, and Annual reports |
| <i>Independent Variables:</i> | | |
| Vertical IJVs | A dummy variable coded as 1 if partners in IJVs operate in different function of the value chain, 0 otherwise | Zephyr |
| Foreign partners' age | The number of years the foreign MNC firms have been established | Zephyr, Orbis, Bloomberg, and Company's website |
| Foreign partners' number of subsidiaries | Number of subsidiaries the MNC foreign partners had at the time of establishing IJV | Zephyr, Orbis, Bloomberg, and Company's website |
| Cultural distance | Difference of the accumulated scores of nine cultural dimensions between China and foreign partners' country of origin | GLOBE study (House et al., 2004) |
| Economic distance | Difference of score on macroeconomic environment dimension between China and foreign partners' country of origin | World Economic Forum ^a |
| Educational distance | Difference of score on higher education dimension between China and foreign partners' country of origin | World Economic Forum ^a |
| Technological distance | Difference of score on technological readiness dimension between China and foreign partners' country of origin | World Economic Forum ^a |
| Number of foreign IJV partners | Total number of foreign partners in the IJV | Zephyr |
| <i>Control Variables:</i> | | |
| Germany | A dummy variable coded as 1 if the foreign partner is from Germany, 0 otherwise | Zephyr |
| Japan | A dummy variable coded as 1 if the foreign partner is from Japan, 0 otherwise | Zephyr |
| Korea | A dummy variable coded as 1 if the foreign partner is from Korea, 0 otherwise | Zephyr |
| Singapore | A dummy variable coded as 1 if the foreign partner is from the Singapore, 0 otherwise | Zephyr |
| UK | A dummy variable coded as 1 if the foreign partner is from the United Kingdom, 0 otherwise | Zephyr |
| The U.S. | A dummy variable coded as 1 if the foreign partner is from the U.S., 0 otherwise | Zephyr |
| Manufacturing | A dummy variable coded as 1 if Chinese firms are in the manufacturing industry, 0 otherwise | Standard Industrial Classification (SIC) from Zephyr |
| Retail Trade | A dummy variable coded as 1 if Chinese firms are in the retail industry, 0 otherwise | Standard Industrial Classification (SIC) from Zephyr |
| Services | A dummy variable coded as 1 if Chinese firms are in the service industry, 0 otherwise | Standard Industrial Classification (SIC) from Zephyr |
| Wholesale Trade | A dummy variable coded as 1 if Chinese firms are in the wholesale industry, 0 otherwise | Standard Industrial Classification (SIC) from Zephyr |
| Chinese firms' size | Total sales of Chinese firms | Zephyr, Orbis, Bloomberg, and Annual reports |
| Number of Employees | Total employees of Chinese firms | Zephyr, Orbis, Bloomberg, and Annual reports |
| Chinese firms' age | The number of years Chinese firms have been operating | Zephyr, Orbis, Bloomberg, and Company's website |
| State-owned enterprises | A dummy variable coded as 1 if Chinese firms are state-owned enterprise, 0 otherwise | Supervision and Administration Commission of the State Council (SASAC) ^b |
| Past alliance experience | Total numbers of previous alliances participated by the focal Chinese firm until the year of the IJV deal | Zephyr |
| Length of collaboration | The number of years since IJV's incorporation year until the year of dissolution | Zephyr |
| GDP growth | Average GDP growth of China over the collaboration periods | The World Bank ^c |

^a Source: World Economic Forum, The Global Competitiveness Report 2017–2018, retrieved from <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>

^b Source: Supervision and Administration Commission of the State Council (SASAC), retrieved from <http://en.sasac.gov.cn/>

^c Source: The World Bank, GDP growth (annual %), retrieved from <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=CN>

Model for analysis

This study used an Ordinary Least Squares (OLS) regression to estimate how our explanatory variables predict managerial capabilities. We conducted our analysis by using STATA/IC version 15.1. The coefficients of the explanatory variables thus indicate the average amount by which Y increases when X increases by one unit.

Theoretically, we wish to search and use best estimators when analyzing data, often known as the Best Linear Unbiased Estimator (BLUE). According to the Gauss-Markov theorem, OLS is indeed BLUE, if our data fulfills certain requirements. In short, our OLS estimators are required to be not perfectly multicollinear, and exogeneous. Lastly, OLS is optimal when there exists no heteroscedasticity and correlation problems.

The tested model took the following form: $Y_{t=i} = \beta_0 + \beta_1 * \text{Vertical IJVs} + \beta_2 * \text{Foreign Partner's Age} + \beta_3 * \text{Foreign Partner's Number of Subsidiaries} + \beta_4 * \text{Cultural Distance} + \beta_5 * \text{Economic Distance} + \beta_6 * \text{Educational Distance} + \beta_7 * \text{Technological Distance} + \beta_9 * \text{Number of Foreign IJV Partners} + \beta_i * \text{Control}_i + \varepsilon_i$, where $Y_{t=i}$ represents the managerial capabilities development t years after IJV dissolution, Control_i represents the respective control variables and ε_i represents the error term, and $i \in [1, n]$.

Over the last two decades there has been increasing attention towards endogeneity in the field of strategic management (see Hamilton & Nickerson, 2003 for overview). Econometrically, endogeneity problems are vexing as there might exist bias of predictions leading to wrong conclusions (Shaver, 1998). Endogeneity is present when one of the independent variables in the regression model is correlated with the error term. Tools correcting for endogeneity have long been available; instrumental variable and two- and three-stage methods are both well-known and promptly implemented (Shaver, 1998). Theoretically, an immediate correction would be to define that variable as an adjacent variable in the regression model. However, it is extremely difficult to find appropriate measures (Dutta, Narasimhan, & Rajiv, 2005; Rutz & Watson, 2019) providing genuine information (Griliches & Mairesse, 1995). Furthermore, any models reflect limited view of relations amidst relevant variables,

many of which might not be easily measurable. Thus, the use of control variables in addition to the two aforementioned instrumental variables, and multistage methods often serve as a substitute for more complex models (Hoskisson, Hitt, Johnson, & Moesel, 1993). We acknowledge these limitations of our paper, but defer the search for appropriate instruments, or more structural modeling approaches to future research. Additionally, subject to data availability we did not manage to gather and analyze our data as a panel, thus inhibiting us to utilize built-in function as Durbin-Watson, Durbin-Wu-Hausman, Heckman's models etc. in STATA, to build multistage models to deal with the problem of endogeneity, which would be ideal. Coping with the restriction of not utilizing a panel data design, we alternatively based our measurement on pre-sample values to control for fixed effects (Blundell, Griffith, & Reenen, 1995), i.e., measuring data of the dependent variable prior to the period of collaboration. Albeit, a less good solution, the lagged variable can serve to control for this fixed effects (Bettis, Gambardella, Helfat, & Mitchell, 2014).

Due to the heterogeneous characteristics that influence firms' managerial capabilities and the difficulties to measure and obtain values (Himmelberg, Hubbard, & Palia, 1999), unobservable heterogeneity was controlled through the effect of economic variable (De Miguel, Pindado, & De La Torre, 2004), which is GDP growth, as well as the firm size through revenue, technological difference (Miller, 2004) and industry variables (Hoskisson et al., 1993). We also tried to include many control variables to reduce the problem of endogeneity (Wooldridge, 2010) by controlling for other macroeconomic and country measures, which did not yield better models and was thus left out from the analysis. Furthermore, it is imaginable that the unobserved heterogeneity could be further revealed by utilizing more firm specific measurements, however, we acknowledge that we have restrictions due to access of data and would leave this to future research for more fine-grained measurements and approaches. Lastly, as the problem of endogeneity is context dependent, more comprehensive work is required to properly address this (Rutz & Watson, 2019).

Results

Table 2 shows the descriptive statistics and correlation matrix of our variables. We see that the average absolute value of managerial capabilities development ($t=1$) is 0.2, in percentage, this equals to 170%, which is quite significant and could be a source of competitive advantage in the long run. Further, the average absolute value of managerial capabilities development 2 years after collaboration ($t=2$) is 2.1. Correlations were relatively low, with few exceptions. Chinese firms' size measured by total sales and development of managerial capabilities were highly correlated ($corr = 0.65$). This is because this study defines managerial capabilities as the ability to efficiently manage resources measured by asset turnover ratio and that total sales is a part of the managerial capabilities development calculation. However, we also used Number of employees as another measurement of Chinese firms' size showing that the size actually does matter. Number of employees and Firm size measured in revenue was not highly correlated ($corr = 0.12$) and we chose to include both indicators to capture the effect of size. Difference in Technological readiness and Difference in Education were highly correlated ($corr = 0.66$). It is sensible that countries with high technological readiness will be well equipped in their educational systems. Lastly, the industry dummies Manufacturing and Services were highly negatively correlated ($corr = -0.92$). Due to these highly correlated variables, we checked for potential problems related to collinearity by controlling for the variance inflation factor (VIF). None of the variables had values higher than the threshold of 10 (Cohen, West, & Aiken, 2014; O'brien, 2007) except the industry dummies which had marginally higher value. We also controlled all our models for VIF and the highest mean was 3.5⁴, thus collinearity does not seem to be problematic or leading to bias in the estimated models. In addition, due to the concern of improperly and inefficient specified linear fit for linear models and small sample size, we also tested for the presence of heteroscedasticity using the White test (White, 1980). None of our models revealed significant heteroscedasticity, with the maximum⁵ of $Prob > chi2 = 0.0784$.

⁴ VIF Value: Lower VIF value is preferred.

⁵ Worst performing model in regards of White, did not reveal significant heteroscedasticity

Table 2. Descriptive Statistics and correlation matrix (N = 348)

| Variable | Mean | S.D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|--|----------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
| 1. Managerial capabilities development (F1) | 0.20 | 1.82 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Managerial capabilities development (F2) | 2.11 | 1.50 | 0.40 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. Vertical IIV (H1) | 0.55 | 0.50 | -0.03 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. Foreign partner's age (H2) | 48.41 | 40.93 | 0.24 | 0.17 | -0.03 | | | | | | | | | | | | | | | | | | | | | | | |
| 5. Foreign partner's number of subsidiaries (H3) | 241.71 | 402.87 | 0.29 | 0.31 | -0.02 | 0.23 | | | | | | | | | | | | | | | | | | | | | | |
| 6. Cultural distance (H4) | 0.15 | 0.08 | 0.08 | -0.10 | -0.07 | 0.00 | -0.01 | | | | | | | | | | | | | | | | | | | | | |
| 7. Economic distance (H4) | 1.15 | 0.75 | -0.01 | 0.04 | 0.02 | 0.03 | -0.02 | -0.50 | | | | | | | | | | | | | | | | | | | | |
| 8. Educational distance (H4) | 0.84 | 0.47 | 0.05 | 0.11 | 0.02 | -0.04 | 0.06 | -0.02 | 0.05 | | | | | | | | | | | | | | | | | | | |
| 9. Technological distance (H4) | 1.79 | 0.45 | 0.00 | 0.25 | 0.12 | 0.05 | 0.08 | 0.10 | 0.05 | 0.66 | | | | | | | | | | | | | | | | | | |
| 10. Number of foreign IIV partners (H5) | 1.27 | 0.54 | -0.02 | 0.05 | -0.11 | 0.02 | 0.02 | 0.45 | -0.47 | 0.03 | -0.02 | | | | | | | | | | | | | | | | | |
| 11. Germany | 0.31 | 0.46 | -0.04 | 0.25 | 0.05 | 0.05 | -0.06 | -0.29 | 0.45 | -0.33 | 0.02 | 0.06 | -0.01 | | | | | | | | | | | | | | | |
| 12. Japan | 0.04 | 0.20 | 0.06 | -0.13 | 0.04 | -0.03 | -0.04 | -0.03 | -0.14 | -0.13 | -0.17 | 0.03 | -0.08 | -0.14 | | | | | | | | | | | | | | |
| 13. Korea | 0.06 | 0.24 | -0.07 | 0.04 | 0.13 | -0.15 | -0.04 | 0.00 | -0.35 | 0.31 | 0.06 | 0.03 | -0.09 | -0.17 | -0.05 | | | | | | | | | | | | | |
| 14. Singapore | 0.04 | 0.20 | 0.01 | 0.01 | 0.04 | 0.11 | 0.09 | -0.01 | 0.06 | -0.06 | 0.14 | 0.01 | -0.08 | -0.14 | -0.04 | -0.05 | | | | | | | | | | | | |
| 15. UK | 0.72 | 0.45 | -0.13 | 0.00 | -0.15 | -0.06 | -0.19 | 0.04 | 0.15 | -0.19 | -0.07 | -0.02 | 0.11 | 0.13 | 0.00 | -0.19 | -0.03 | -0.11 | | | | | | | | | | |
| 16. The U.S. | 0.01 | 0.12 | 0.00 | 0.00 | 0.06 | 0.02 | -0.04 | -0.07 | 0.08 | -0.08 | -0.08 | -0.06 | -0.04 | 0.13 | -0.03 | -0.03 | -0.03 | -0.05 | -0.19 | | | | | | | | | |
| 17. Manufacturing | 0.25 | 0.44 | 0.08 | -0.03 | 0.10 | 0.06 | 0.21 | 0.00 | -0.19 | 0.23 | 0.09 | 0.04 | -0.08 | -0.19 | -0.02 | 0.22 | 0.05 | 0.12 | -0.92 | -0.07 | | | | | | | | |
| 18. Retail Trade | 0.02 | 0.13 | 0.18 | 0.07 | 0.12 | 0.01 | -0.01 | -0.05 | 0.05 | -0.04 | 0.01 | 0.02 | -0.05 | 0.05 | 0.08 | -0.03 | -0.03 | 0.01 | -0.21 | -0.02 | -0.08 | | | | | | | |
| 19. Wholesale Trade | 0.00 | 1.00 | 0.65 | 0.51 | -0.01 | 0.11 | 0.27 | 0.05 | -0.02 | 0.02 | 0.05 | 0.00 | -0.02 | 0.00 | -0.03 | -0.03 | 0.02 | -0.05 | -0.05 | -0.02 | 0.06 | -0.02 | | | | | | |
| 20. Chinese firms size (Revenue) | 29492.84 | 72923.45 | -0.04 | 0.13 | 0.09 | 0.03 | 0.13 | 0.06 | 0.00 | -0.05 | 0.03 | -0.04 | 0.09 | -0.01 | -0.07 | -0.05 | 0.07 | -0.03 | 0.03 | -0.02 | -0.02 | -0.05 | 0.12 | | | | | |
| 21. Number of employees | 23.23 | 12.76 | -0.03 | -0.03 | -0.11 | 0.12 | 0.04 | 0.02 | -0.04 | 0.00 | 0.03 | 0.06 | 0.02 | -0.05 | 0.09 | -0.02 | 0.06 | -0.02 | 0.03 | -0.01 | -0.01 | -0.05 | 0.02 | 0.04 | | | | |
| 22. Chinese firms' age | 0.06 | 0.23 | -0.06 | -0.03 | -0.08 | 0.01 | -0.02 | 0.07 | 0.02 | -0.05 | -0.03 | -0.05 | -0.01 | 0.05 | 0.01 | -0.06 | -0.05 | -0.03 | 0.10 | -0.03 | -0.09 | -0.03 | 0.04 | 0.25 | | | | |
| 23. State-owned enterprises | 4.18 | 5.34 | -0.08 | 0.13 | 0.05 | 0.07 | 0.08 | 0.03 | 0.00 | -0.06 | 0.02 | 0.00 | 0.13 | 0.06 | -0.07 | -0.05 | -0.01 | -0.04 | 0.10 | 0.01 | -0.09 | -0.06 | 0.05 | 0.50 | 0.26 | | | |
| 24. Past alliance experience | 10.75 | 4.12 | 0.05 | -0.02 | -0.09 | 0.08 | 0.06 | 0.12 | -0.12 | 0.07 | -0.05 | 0.00 | 0.10 | 0.10 | -0.23 | -0.01 | 0.04 | 0.05 | 0.09 | -0.13 | 0.01 | -0.13 | -0.01 | 0.02 | 0.07 | 0.12 | 0.16 | 0.18 |
| 25. Length of Collaboration | 8.75 | 1.06 | 0.07 | 0.05 | -0.11 | 0.02 | 0.13 | 0.03 | -0.04 | 0.09 | 0.02 | -0.03 | 0.05 | -0.17 | -0.02 | -0.05 | 0.12 | 0.14 | -0.05 | 0.00 | 0.06 | -0.04 | 0.00 | 0.00 | 0.14 | 0.10 | 0.10 | 0.10 |
| 26. GDP Growth | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 3 describes the regression results of the development of managerial capabilities for our study with a time lag of one year after collaboration ($t=1$). We used a time lag of one year to see the immediate effect of potential development of managerial capabilities to examine if local Chinese firms acquire knowledge through collaboration with foreign MNCs. OLS regressions were used to estimate the outcome of our explanatory variables. Generally, the models perform reasonably well, with support for Hypothesis 2, 3 and 5, as well as partial support for Hypothesis 4 in model 3, 4, 5, 7, respectively.

The results are reported in Table 3, where Model 1 is the baseline model including all the control variables. Model 2 introduces the first explanatory variable, which is a dummy variable representing the Vertical IJVs. Horizontal IJVs were coded as 0 and vertical IJVs were coded as 1 to test Hypothesis 1. Model 3 introduces the second explanatory variable, Foreign Partners' Age to test Hypothesis 2, while Model 4 introduces the third explanatory variable, Foreign Partners' Number of Subsidiaries to test Hypothesis 3. Model 5 introduces a set of variables to test Hypothesis 4, which are Cultural Distance, Economic Distance, Educational Distance, Technological Distance. However, due to concern of correlation and collinearity, Model 5 does not include the country effects, this is represented as N/A in the table. Model 6 introduces our last explanatory variable measuring Number of Foreign IJV Partners to test Hypothesis 5, while Model 7 serves as the full model including all variables.

Model 1 in Table 3 reveals a significant effect that managerial capabilities increase with Chinese Firms' Size in revenue ($\beta = 1,20$ $p < 0,000$) and GDP Growth ($\beta = 0.18$, $p < 0,05$). In addition to aforementioned effects of the control variables, Model 2 indicates no significant effects caused by Vertical IJVs as hypothesized in Hypothesis 1. Model 3, however, reveals that managerial capabilities increase with Foreign Partners' Age ($\beta = 0.01$, $p < 0,000$), providing highly significant support for Hypothesis 2. This means that for every unit Foreign Partners' Age increase, it contributes to 0.01 of the development of managerial capabilities. Further, Model 4 shows a marginal positive effect of Foreign Partners' Number of Subsidiaries ($\beta = 0.00$, $p < 001$), showing support for Hypothesis 3. This indicates that an increase of 1 unit in Foreign Partners' Number of Subsidiaries, it will contribute 0.00 to the

development of managerial capabilities. Model 5 indicates that managerial capabilities increase with Cultural Distance ($\beta = 2.45, p < 0.05$) while it decreases with Technological Distance ($\beta = -0.44, p < 0.05$). Economic and Educational Distances seemed not to indicate any significant effects in this model. Model 6 indicates no significant effects caused by the Number of Foreign IJV partners. Lastly, in Model 7, in addition to all the previously mentioned effects, Educational Distance ($\beta = 0.72, p < 0.05$) seemed to have a positive effect on the development of managerial capabilities, while Number of Foreign Partners ($\beta = -0.24, p < 0.1$) received marginally support for a negative effect. Thus, the positive effects of Cultural and Educational Distances provide support for Hypothesis 4, while Hypothesis 5 is also marginally supported due to the negative beta coefficient. This indicates that managerial capabilities increase with Cultural and Educational Distance, while it decreases with Technological Distance and the Number of Foreign Partners. The negative effect of -0.24 of Number of Foreign Partners, indicates that the more partners one collaborates with, the less knowledge one will acquire, thus meaning that it is beneficial to partner with less MNC partners.

Table 3. Development of managerial capabilities t=1 (N = 348)

| Variables | Development of managerial capabilities | | | | | | |
|---|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
| <i>Independent Variables</i> | | | | | | | |
| Vertical IJVs (H1) | | -0.15 (0.15) | | | | | -0.10 (0.14) |
| Foreign partners' age (H2) | | | 0.01*** (0.00) | | | | 0.01*** (0.00) |
| Foreign partners' number of subsidiaries (H3) | | | | 0.00** (0.00) | | | 0.00* (0.00) |
| Cultural distance (H4) | | | | | 2.45* (1.07) | | 2.06+ (1.16) |
| Economic distance (H4) | | | | | 0.12 (0.11) | | -0.14 (0.15) |
| Educational distance (H4) | | | | | 0.33 (0.21) | | 0.72* (0.29) |
| Technological distance (H4) | | | | | -0.44* (0.22) | | -0.48+ (0.27) |
| Number of foreign IJV partners (H5) | | | | | | -0.08 (0.13) | -0.24+ (0.13) |
| <i>Control Variables</i> | | | | | | | |
| Country effects | included | included | included | included | N/A | included | included |
| Industry effects | included | included | included | included | included | included | included |
| Chinese firms' size (Revenue) | 1.20*** (0.07) | 1.18*** (0.07) | 1.15*** (0.07) | 1.13*** (0.07) | 1.20*** (0.07) | 1.18*** (0.07) | 1.10*** (0.07) |
| Number of employees | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) |
| Chinese firms' age | -0.00 (0.01) | -0.00 (0.01) | -0.01 (0.01) | -0.00 (0.01) | -0.00 (0.01) | -0.00 (0.01) | -0.01 (0.01) |
| State-owned enterprises | -0.34 (0.33) | -0.47 (0.33) | -0.40 (0.32) | -0.39 (0.33) | -0.40 (0.33) | -0.46 (0.33) | -0.49 (0.32) |
| Past alliance experience | -0.02 (0.02) | -0.01 (0.02) | -0.01 (0.02) | -0.01 (0.02) | -0.01 (0.02) | -0.01 (0.02) | -0.01 (0.02) |
| Length of collaboration | -0.01 (0.02) | -0.01 (0.02) | -0.02 (0.02) | -0.01 (0.02) | -0.02 (0.02) | -0.01 (0.02) | -0.02 (0.02) |
| GDP Growth | 0.18* (0.09) | 0.19* (0.09) | 0.21* (0.08) | 0.16+ (0.09) | 0.19* (0.09) | 0.19* (0.09) | 0.17* (0.08) |
| Intercept | 1.48 (0.82) | 1.89* (0.85) | 0.94 (0.82) | 1.81* (0.82) | 1.56 (0.89) | 1.80* (0.85) | 1.61 (0.94) |
| Model F | 31.33 | 19.97 | 22.38 | 21.02 | 23.20 | 19.89 | 17.25 |
| p < | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| R2 | 0.48 | 0.51 | 0.54 | 0.52 | 0.49 | 0.51 | 0.56 |

+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Hypothesis 4 in the previous section tested country differences as a linear relation, however, it has been argued that cultural difference might take a positive value for mid-range observations, while upper-range observations take a negative value (Björkman, Stahl, & Vaara, 2007). Hence, we conducted additional analyses including both first order and second order terms of the country differences we measured. In Table 4, we tested whether Country differences had a curvilinear relation rather than a linear relation, following this formula $Y_{t=i} = \beta_0 + \beta_1 * Distance_i + \beta_2 * Distance_i * Distance_i^2 + \beta_i * Control_i + \varepsilon_i$, where $Y_{t=i}$ represents the managerial capabilities development t years after IJV dissolution, $\beta_i * Control_i$ represents the respective control variables and ε_i represents the error term, and $i \in [1, n]$. Similar to the previous model country dummies were not included here due to collinearity and correlation issues.

Model 1 shows that Cultural Distance ($\beta = 2.16, p < 0.05$) maintains a linear relation while the squared interaction term does not have any significant effect, however there might be a potential inverted U shape relationship that lacks statistical support. This result is consistent with Vaara et al. (2012) which also tried to test the curvilinear effect of cultural and country differences. However, likewise to our results the authors did not receive statistical support despite that we clearly see that there is a diminishing curve. Furthermore, Technological Distance ($\beta = -0.46, p < 0.1$) and its squared interaction term ($\beta = 0.03, p < 0.1$) shows indeed a U shape. However, its derivative and minima are outside the range of the observed values and will thus not hold. Lastly, despite no significant effect for Economic and Educational Distances, we observe that the relation takes shape as a U. The U shape relations of Economic, Educational, and Technological Distances suggest that at extremely high levels of differences firms may learn other things.

Table 4. Curvilinear effect of Distances and Development of managerial capabilities t=1 (N = 348)

| Variables | Development of managerial capabilities | | | |
|-------------------------------|--|----------|----------|----------|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| <i>Independent Variables</i> | | | | |
| Cultural distance (H4) | 2.16* | | | |
| | (1.08) | | | |
| CultureSquaredEffect | -2.86 | | | |
| | (2.77) | | | |
| Economic distance (H4) | | -0.09 | | |
| | | (0.12) | | |
| EconomicSquaredEffect | | 0.01 | | |
| | | (0.01) | | |
| Educational distance (H4) | | | -0.15 | |
| | | | (0.24) | |
| EducationalSquaredEffect | | | 0.02 | |
| | | | (0.01) | |
| Technological distance (H4) | | | | -0.46+ |
| | | | | (0.24) |
| TechnologicalSquaredEffect | | | | 0.03+ |
| | | | | (0.02) |
| <i>Control Variables</i> | | | | |
| Industry effects | included | included | included | included |
| Chinese firms' size (Revenue) | 1.20*** | 1.20*** | 1.20*** | 1.20*** |
| | (0.07) | (0.07) | (0.07) | (0.07) |
| Number of employees | -0.00+ | -0.00 | -0.00 | -0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Chinese firms' age | -0.00 | -0.00 | -0.00 | -0.00 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| State-owned enterprises | -0.38 | -0.33 | -0.34 | -0.34 |
| | (0.33) | (0.33) | (0.33) | (0.33) |
| Past alliance experience | -0.01 | -0.02 | -0.02 | -0.02 |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Length of collaboration | -0.02 | -0.01 | -0.01 | -0.01 |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| GDP Growth | 0.19* | 0.18* | 0.18* | 0.18* |
| | (0.09) | (0.09) | (0.09) | (0.09) |
| Intercept | 1.19 | 1.59+ | 1.56+ | 2.09+ |
| | (0.83) | (0.83) | (0.83) | (0.89) |
| Model F | 26.60 | 26.18 | 26.20 | 26.55 |
| p < | 0.00 | 0.00 | 0.00 | 0.00 |
| R2 | 0.49 | 0.48 | 0.48 | 0.49 |

+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Robustness Test

We ran multiple robustness checks to validate our findings presented in Table 5, 6, 7, and 8 in the Appendix.

First, given that some articles have expressed concerns regarding the quality of alliance formations and terminations (e.g., Schilling, 2009) and that the effect of capabilities that could possibly take effect or be implemented at a later stage after the collaboration, we ran a robustness check with a 2-year lagged variable (t=2) to measure

the development of managerial capabilities 2 years after the IJV dissolution, displayed in Table 5. The results revealed that our hypotheses were still supported with an exception of Hypothesis 5. Moreover, Hypothesis 4 also revealed that Cultural Distance turned from positive to negative, and Technological Distance changed from negative to positive.

Second, we intended to further test the country differences' effect on the development of managerial capabilities and examine which type of relation it has, due to the changed sign of the beta coefficients. We see that Table 6 provides an entirely different conclusion, where all distances turned signed. For Model 1, Cultural Distance, only the constant term was statistically significant ($\beta = -2.50, p < 0.05$), however, the value of the beta coefficient is now turned from positive to negative meaning that Cultural Distance contributes negatively to the development 2 years after, which could be explained by the difficulty for firms to grasp tacit knowledge long time after the collaboration. This supports the notion that tacit knowledge is context specific, in the extent that cultural difference facilitates learning initially, while it can counteract when there has been too long time since the collaboration because the actors have difficulties of understanding the original context and the exact mechanisms under which learning occurred. Furthermore, another possible explanation could be that there existed collaboration or integration problems resulting in lagged realization of the development. Model 2 shows that Economic Distance ($\beta = 0.23, p < 0.1$) and its squared term ($\beta = -0.01, p < 0.05$) is significant taking an inverted U shape, however the extrema is outside of the observed value. Model 3 shows that Educational Distance ($\beta = 1.19, p < 0.000$) and its squared term ($\beta = -0.06, p < 0.000$) is significant taking an inverted U shape as well, however, its derivative is again outside of the observed value. Lastly, Technological Distance ($\beta = 1.56, p < 0.000$) and its squared term ($\beta = -0.08, p < 0.000$) shows again that the variable is significant taking an inverted U shape, with the extrema outside of the observed values.

Third, we checked the ramification of development of managerial capabilities by isolating multi partner and single partner IJVs showed in Table 7. We see that the results are similar to the predicted values in Table 3 and that Hypothesis 2, Hypothesis 3 and Hypothesis 4 still receive significant support. Interestingly, Cultural, Educational

and Technological Distances seem to have a higher coefficient, meaning they have a greater impact on single party IJVs.

Fourth, we tried all the country differences one by one, and to combine them differently, we used the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) to judge the model fit, where lower values were preferred. The value of R-squared was used to pick the best model when AIC and BIC yielded opposing conclusions, where the highest value of R-squared was preferred. Additionally, we also considered the significance of each independent variable. However, in the end we landed on the combination of the variables presented earlier in the section above. Further, we also tried to include a variable measuring differences in institution and a geographical dummy for continents rather than countries which both did not yield better models and subsequently was left out from the analysis.

Fifth, for control variables we also tried to include variables as Inward Foreign Direct Investment Flows (IFDI), Outward Foreign Direct Investment Flows (OFDI), Inflation rate of China and an IJV year dummy. However, without these variables lead to better models. In particular, the models do indeed result in higher R-squared, and excluding those variables did not significantly change our results.

Sixth, Hypothesis 5 measured number of foreign partners in the IJV, we also tried including local partners, and found that our results were consistent.

Lastly, for all variables, we tried different ways of capturing the value using logarithm, average rather than the highest value vice versa. However, the used variables resulted in the best models.

Discussion

In this study, we set out to examine if Chinese firms develop managerial capabilities through forming IJVs with foreign MNC partners, more importantly, the focus of this study has been to examine the factors that has led to the development. We found evidences of development of managerial capabilities by forming IJVs with foreign MNC partners which is interesting from both practical and theoretical perspectives. Nonetheless, the level of development was not found extremely high. This might be due to the tacit nature of managerial capabilities (Shenkar & Li, 1999)

which leads to its stickiness (Szulanski, 1996). This study found support that, for managerial knowledge to be acquired and developed through collaboration, it is beneficial for the recipient firms to have sufficient previous alliance experience to facilitate inter-firm knowledge acquisition and learning (Cohen & Levinthal, 1990; Levitt & March, 1988). Not only the past alliance experience of recipient firms was found facilitating capabilities development, foreign MNC partners' characteristics and IJV configuration were also found to have influence on knowledge development through IJVs in this study. This indicates the essence of partner selection and IJV formation process which should be taken into consideration when local firms intend to participate in an international collaboration. The highly statistical significance of foreign partners' managerial experiences measured as age of operation and subsidiary counts uncover that forming IJVs with more experienced partners expedites managerial capabilities development of local Chinese firms. Thus, it is valuable for local Chinese firms aiming at managerial capabilities improvement to select foreign MNC partners based on their experiences (Chung et al., 2000; Eisenhardt & Schoonhoven, 1996; Gulati, 1995b, 1999). Notwithstanding, these results should not be interpreted unilaterally, despite the significant positive effect, it is reasonable that more subsidiaries could entail problems such as inhibited learning due to management issues or capacity constraints.

We further hypothesized that country differences among partners would have a positive impact on local firms' managerial capabilities development by providing complementary synergies and learning opportunities. The results showed positive effects for cultural and educational distances, while technological distance surprisingly yields a negative impact. However, we did not find any mathematical support for curvilinear effects of country differences on managerial capabilities development in our analysis. Even though culture can be highly embedded in restrictive mindset and traditions, which could prohibit growth and development, we argued that cultural difference leads to more novel ways of operating and growing. Thus, it can be argued that collaborating with firms from culturally distant countries provides the local firms with the opportunities to acquire knowledge from foreign partners, in turn enables local firms to develop their managerial knowledge. These findings are similar to the study of Vaara et al. (2012) where national and cultural differences have a positive impact

on knowledge transfer. This supports the view that there is complementarity residing in different national and organizational beliefs, values and practices that drives knowledge transfer in an interorganizational setting.

More interestingly, a positive effect of educational difference between China and origin countries of foreign partners means that partnering with firms from countries with better developed educational system and higher quantity of education can escalate managerial capabilities of local Chinese firms. This may be due to the fact that education contributes to capabilities (Hambrick & Mason, 1984; Smith, Collins, & Clark, 2005). Supported by Wiersema and Bantel (1992) and Goll, Brown Johnson, and Rasheed (2007), educational level of top management team has a positive relationship to their strategic decision making, corporate capabilities, and strategic change. Therefore, local firms could learn and development their managerial capabilities from foreign partners filling with well-educated and knowledgeable employees. Even though our study did not prove any curvilinear relation of country differences, managers should beware that too much distances also could impede learning as there is no common basis to exchange upon.

A negative effect of technological difference on local firms' managerial capabilities development shown in the analysis is similar to the finding of Zhang et al. (2010). This is also in line with the argument of Ahuja and Morris Lampert (2001) and Phene, Fladmoe-Lindquist, and Marsh (2006) that as technological distance between collaboration partners increases, understanding between partners declines and knowledge exchange becomes more obscure and, at a certain point, is no longer possible. High level of technological advance occupied by foreign partners may become a liability of local firms for learning and absorption. The potential explanations of this negative effect could be that a broad scope of technological difference makes it more difficult for Chinese firms to understand and learn something that is highly different (Nooteboom, Van Haverbeke, Duysters, Gilsing, & Van den Oord, 2007). Along these lines, several studies (e.g., Enkel, Groemminger, & Heil, 2018; Gilsing, Nooteboom, Vanhaverbeke, Duysters, & van den Oord, 2008; Wuyts, Colombo, Dutta, & Nooteboom, 2005) have also argued that technological distance, at certain level, precludes the mutual understanding needed to utilize the knowledge and opportunities generated by collaboration. However, to cope with high technological distance, strong

social connections and embeddedness among IJV partners have been seen to shorten the distances and promote difficult-to-transfer knowledge (Katila & Ahuja, 2002; Nooteboom et al., 2007; Zahra & George, 2002).

In addition, a marginally significant negative effect of foreign partner counts in IJVs on managerial capabilities development in this study indicated that the less foreign partners whom Chinese firms interact with, the better Chinese firms can develop their managerial capabilities. The possible reasons of the result could be as follows; first, numerous parties in IJVs are found to lead to poorer communication, low level of integration and unproductive behaviors (Miller, Burke, & Glick, 1998). These behaviors inhibit examination of the operating environment and long-term planning and would thus directly impact the development of managerial capabilities of Chinese firms. Second, various partners in IJVs could lead to redundancies (Burt, 2009), inefficiency (McEvily & Zaheer, 1999) and result in increased transaction costs of learning which hinders managerial knowledge development of Chinese firms. Third, partnering with fewer foreign firms better allows local Chinese firms to focus on building strong ties and social embeddedness, whether through face-to-face communication or telecommunications (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004) which are important in the Chinese context. These strong ties with foreign partners and high level of relational embeddedness constitute trust between partners in the IJVs which in turn facilitates learning and tacit knowledge sharing by creating common identity and a sense of security, thus, promoting free exchange of knowledge and reducing the cost of knowledge acquisition (Dhanaraj et al., 2004; Dyer & Nobeoka, 2000; Kale et al., 2000). As managerial capabilities are tacit and hard to quantify, unlike technical knowledge, strong ties and high level of social embeddedness with partners in IJVs are essential for the firms to learn and develop their managerial knowledge. This result aligns well with the view of transaction cost theory (Coase, 1937; Williamson, 1975) on alliance networks and learning, that a larger size of IJVs with several number of partners can create various difficulties for the Chinese firms to learn and develop their capabilities. As IJVs are becoming larger with more number of parties, it is harder to integrate and coordinate amongst partners (Nohria & Ghoshal, 1997) which consequently increases transaction costs of learning, both in monetary and non-monetary, e.g., cost of communication, cost of managing alliances, large amount

of time to acquire knowledge and assimilate knowledge from diversified partners, etc. Similarly, Teece (1977) found a negative association between number of other firms possessing similar technological knowledge and cost of transfer. It is also coherent with prior research suggesting that more tightly integrated international networks or alliances outperform those that are loosely interacted (Dyer, 1996).

This study also examines the influence of the vertical and horizontal IJVs on local Chinese firms' managerial capabilities development. Several studies have reported the effect of vertical alliances on technical knowledge transfer and interorganizational learning (e.g., Dyer & Hatch, 2006; Dyer & Nobeoka, 2000; Kotabe et al., 2003), we thus also assumed a positive impact of vertical IJVs on managerial capabilities improvement. However, our study surprisingly revealed no significant effect. There may be several reasons explaining our result. First, previous studies have predominantly focused on technological knowledge within the manufacturing and automotive industries in Japan and some in the U.S. (e.g., Clark & Fujimoto, 1991; Dyer & Hatch, 2006; Dyer & Nobeoka, 2000; Kotabe et al., 2003; Martin, Mitchell, & Swaminathan, 1995) with focus on technical knowledge such as assembling and productivity. Hence, we tested the separate industry effects of Manufacturing and its interaction term with Vertical IJV (H1) in table 8. Despite not receiving statistical significance we see that the beta coefficients are both negative. Clearly, more research needs to be conducted to examine this effect. Additionally, since managerial knowledge and capabilities entail higher degree of tacitness than technical knowledge (Armstrong & Mahmud, 2008; Baumard, 1999), vertical IJVs may not be sufficient for overcoming challenges of interfirm tacit knowledge transfer. Second, the social links in the vertical relationship might not be strong enough to provide good incentives to make managerial knowledge transfer work since complex and hard-to-transfer knowledge could be facilitated by strong links (Fichman & Levinthal, 1991; Levinthal & Fichman, 1988; Martin & Salomon, 2003). Furthermore, vertical knowledge flow also depend on actors' abilities to assess the value of the knowledge (Dyer & Singh, 1998; Lane & Lubatkin, 1998). Lastly, vertical IJVs could entail power asymmetry, resulted from dependency, which creates the instability of IJVs and in turn burdens the managerial capabilities development of local firms in IJVs (George et al., 2001; Inkpen & Beamish, 1997).

Moreover, this study further examined the development of managerial capabilities with a 2-year time lag in order to unveil a delayed realization of knowledge development. While level of managerial capabilities development one year right after IJV dissolution was low, the development after 2 years was drastically higher. This indicates a lagged relationship between partnering with foreign MNC through IJVs and managerial capabilities development of local firms. The effect of technological distance turned out to be positive. This clearly implies that if firms have some time after the collaboration period to handle, digest, assimilate, and adapt knowledge and know-how, obtained from foreign partners, to the current environment, they could tremendously learn and develop their managerial capabilities through international collaborations. Therefore, managers of firms participating in IJVs and interfirm collaborations should keep in mind that one may not be able to realize the intended knowledge acquisition and capabilities development instantly. Rather, it might be developed through a cumulative process where ties and relation have to be built to facilitate transfer, and then the focal firm can step wise learn by observing and doing. Thus, this provides an affirm that IJVs deed as a means to develop managerial capabilities.

This study lends empirical support to the RBV, knowledge management, and the IJV literatures by examining managerial capabilities development, which has remained underexposed, particularly in the context of international strategic alliance. While much work has sought to uncover how firms learn and acquire technological knowledge (e.g., Baum et al., 2000; Berg et al., 1982; Zhao et al., 2005), this study contributes additional insight into the less developed area of research related to managerial capabilities in IJVs, especially in an emerging market context. Penrose (1959) argued that amongst the limits of firms' growth, managerial limit is an important "within the firm" condition, and it is fundamental while inescapable towards growth. Furthermore, it is also argued that there exist limited capacity and capabilities in firm. Our study thus contributes to address the means of overcoming the managerial limits by collaborating with others and utilizing their experiences. Coherently with previous research emphasizing the importance of partner characteristics such as complementarity and experience (Hitt, Ahlstrom, Dacin, Levitas, & Svobodina, 2004; Li, Zhou, & Zajac, 2009; Mitsuhashi & Greve, 2009), our results also support the

importance of partner selection. Furthermore, we also show that a firm's knowledge base could be anticipated and positively affected by partners' knowledge base and knowledge complementarity (Almeida & Phene, 2004; Wang et al., 2004).

Additionally, new managerial knowledge and capabilities are constantly expected to be created to fulfill firms' need (Penrose, 1959), utilizing partners to acquire this need significantly decreases the cost compared to internal developing. Hitt et al. (2000) argued that a critical step in the success of an alliance is the selection of a partner. In consensus with earlier research, IJV partners can provide access to resources and organizational learning opportunities which may enhance a focal firm's capabilities. This study has proved that firms can learn based on other firms' experience (Argote & Epple, 1990; Argote et al., 2000; Levitt & March, 1988). Our lagged results are also analogous of the work by Cohen and Levinthal (1990), that knowledge and capabilities are developed through a cumulative process and that experience is the fundament of developing and exchanging new capabilities (Argote & Miron-Spektor, 2011). However, our study contributes to the literature to the extent that we focus on managerial capabilities, while earlier research has mainly been based on technological knowledge, which could suffer from generalizability issues as the knowledge form is significantly different and other mechanisms might be needed. Our findings also reinforce the research stream which support the notion of efficient alliance configuration (Baum et al., 2000; Burt, 2009; Gomes-Casseres, 1994). This stream emphasizes that smaller IJVs with partners possessing complementary knowledge and resources are reported to facilitate interfirm learning better, and it is contradicting to the network theory perspective considering large alliances and a greater number of partners as an advantage. Hence, a small number of foreign partners should be utilized to acquire and facilitate tacit knowledge and know-how.

Limitations and future research

Our study is not without limitations.

First, our study's context examined under which circumstances the development of managerial capabilities would occur with a setting that was Chinese firms collaborating with foreign MNC partners through IJVs. Albeit China could represent emerging economies, there are still great differences from other emerging

markets and other countries. Thus, our study could suffer from generalizability issues. Future studies could thus test the development of managerial capabilities in 1) other emerging economies, 2) other countries, and 3) other collaboration forms, as equity alliances to examine the effects of how different ownership percentages could impact the development.

Second, utilizing secondary data restricted this study from gaining more in-depth insight, to capture and identify other aspects of managerial capabilities. Therefore, our measurement of managerial capabilities development could be criticized to be too unilateral focusing on assets and productivity, and not being able to capture factors or mechanisms that are related to capabilities, thereby exposing us to endogeneity and causality issues. Future research thus need more fine-grained methods of collecting data such as case study, interview, observation, survey etc. This is particularly relevant due to the tacitness and know-how characteristics of managerial capabilities that potentially could be insights, not easily captured by secondary data, but rather through observations. In-depth measurements of managerial capabilities need to be identified in future research to capture the multidimensionality of managerial capabilities to enrich the literature.

Third, subject to restriction of data, we adopted a cross-sectional analysis rather than a time-series which would be preferred to capture the dynamic nature of managerial capabilities. Thus, future research could benefit from investigating this phenomenon by adopting a time-series analysis to further evaluate the causality in the hypothesized relation. This could also allow researchers to better address the aforementioned problems with endogeneity by using multistage models or identify strong instrumental variables.

Fourth, an initial search resulted in 8,038 IJVs, while we ended up with a final sample of 348 Chinese firms with 297 IJVs⁶. This drastic reduction could entail concerns related to the integrity of the database or our criteria of reduction. However, we tried to turn the tide as much as possible by supplementing with other databases and annual reports as described. Clearly, more manual effort in data gathering would lead

⁶ We explained stepwise how we ended up with the final sample under the Sample section

to a smaller gap, but due to time constraints, we stopped at a certain point in order to proceed with our study.

Fifth, our study's unit of analysis is organization, however it is imaginable that individual units and departments have high diversity due to the nature of operations. Furthermore, the relationship between the dependent and independent variables is indeed created and operated by individuals which whom it applies to (Blumer, 1956). Thus, one could look into the effects of the top management team on the development of managerial capabilities, such as Succession of Leadership and CEO variables. Nonetheless, as individuals behave differently, the different system and attribution characteristics could potentially lead to biased and distorted results leading to misinterpretation and misattribution of analysis (Rousseau, 1985) which should be taken into account in future research.

Sixth, lending from network theory, future studies could also look at the previous experience and ties amongst the partners, instead of using a general JV experience as in our study. Social ties and embeddedness could facilitate tacit knowledge transfer. However, if there is strong intention of collaboration it is also proved to affect the outcome of alliances. This could suffer from topics related to learning races and trust in alliance if the focal partnering firm have strong intentions to learn, the counterparts could raise questions related to its intention of collaboration and protect ones' knowledge.

Seventh, as our study have discussed a lot about the positive effects related to country and culture differences, future studies could look at the moderating effect of social conflict and differences in organizational cultures. Addressing purely positive effects is not sufficient to provide a thorough understanding of which learning occurs. Equally important is to examine the barriers and restrictions in order to avoid and handle it.

Eighth, according to our results of curvilinearity of distances, all coefficients seem to have diminishing effects. However, in the current setting we could not further exploit this insight and data, warranting future research for further investigation.

Lastly, it could be interesting to examine mutual or two-way knowledge flow of the alliance. That is, while local firms acquire managerial capabilities, foreign partners might acquire knowledge and know-how related to the market. Thus, examining the mutual benefit could improve our understanding of knowledge acquisition in the context of alliances.

Conclusion

To conclude, this study contributes to increased insight in the strategic knowledge management and alliance literature by looking into managerial capabilities development in an emerging market context. This study also suggests that IJVs serve as a means of Chinese firms to acquire managerial knowledge and to bridge the knowledge gap residing in deficit managerial capabilities. Finally, more research are needed to elevate our understanding of managerial capabilities by deriving more attention to managerial capabilities in the context of alliances and to examine more fine-grained measures to better unveil the phenomenon.

Appendix

Tables for robustness test

Table 5. Development of managerial capabilities $t=2$ ($N = 348$)

| Variables | Development of managerial capabilities | | | | | | |
|---|--|-------------------|-------------------|-------------------|--------------------|-------------------|-------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
| <i>Independent Variables</i> | | | | | | | |
| Vertical IJVs (H1) | | -0.16 (0.13) | | | | | -0.16 (0.12) |
| Foreign partners' age (H2) | | | 0.00*** (0.00) | | | | 0.00* (0.00) |
| Foreign partners' number of subsidiaries (H3) | | | | 0.00*** (0.00) | | | 0.00*** (0.00) |
| Cultural distance (H4) | | | | | -3.43*** (0.99) | | -0.10 (0.99) |
| Economic distance (H4) | | | | | -0.14 (0.10) | | -0.26* (0.13) |
| Educational distance (H4) | | | | | -0.25 (0.19) | | 0.23 (0.24) |
| Technological distance (H4) | | | | | 1.00*** (0.20) | | 0.18 (0.22) |
| Number of foreign IJV partners (H5) | | | | | | 0.09 (0.11) | 0.02 (0.11) |
| <i>Control Variables</i> | | | | | | | |
| Country effects | included | included | included | included | N/A | included | included |
| Industry effects | included | included | included | included | included | included | included |
| Chinese firms' size (Revenue) | 0.76*** (0.07) | 0.80*** (0.06) | 0.78*** (0.06) | 0.73*** (0.06) | 0.75*** (0.07) | 0.80*** (0.06) | 0.71*** (0.06) |
| Number of employees | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| Chinese firms' age | -0.01 (0.01) | -0.00 (0.00) | -0.01 (0.00) | -0.00 (0.00) | -0.01 (0.01) | -0.00 (0.00) | -0.01 (0.00) |
| State-owned enterprises | -0.57 (0.32) | -0.49 (0.28) | -0.44 (0.27) | -0.40 (0.27) | -0.46 (0.30) | -0.45 (0.28) | -0.44 (0.27) |
| Past alliance experience | 0.04* (0.02) | 0.03+ (0.01) | 0.02 (0.01) | 0.02 (0.01) | 0.03* (0.02) | 0.02+ (0.01) | 0.02 (0.01) |
| Length of collaboration | -0.04+ (0.02) | -0.02 (0.02) | -0.02 (0.02) | -0.01 (0.02) | -0.02 (0.02) | -0.02 (0.02) | -0.01 (0.02) |
| GDP Growth | 0.17* (0.08) | 0.14* (0.07) | 0.16* (0.07) | 0.11 (0.07) | 0.13+ (0.08) | 0.15* (0.07) | 0.11 (0.07) |
| Intercept | 2.05** (0.79) | 1.19+ (0.72) | 0.52 (0.70) | 1.11 (0.68) | 1.15 (0.82) | 0.87 (0.72) | 0.86 (0.79) |
| Model F | 14.59 | 18.84 | 19.94 | 20.99 | 14.28 | 18.72 | 16.06 |
| p < | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| R2 | 0.31 | 0.50 | 0.51 | 0.52 | 0.38 | 0.49 | 0.55 |

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6. Curvilinear effect of Distances and Development of managerial capabilities t=2 (N = 348)

| Variables | Development of managerial capabilities | | | |
|-------------------------------|--|----------|----------|----------|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| <i>Independent Variables</i> | | | | |
| Cultural distance (H4) | -2.50* | | | |
| | (1.04) | | | |
| CultureSquaredEffect | 1.82 | | | |
| | (2.65) | | | |
| Economic distance (H4) | | 0.23+ | | |
| | | (0.12) | | |
| EconomicSquaredEffect | | -0.01* | | |
| | | (0.01) | | |
| Educational distance (H4) | | | 1.19*** | |
| | | | (0.22) | |
| EducationalSquaredEffect | | | -0.06*** | |
| | | | (0.01) | |
| Technological distance (H4) | | | | 1.56*** |
| | | | | (0.22) |
| TechnoogicalSquaredEffect | | | | -0.08*** |
| | | | | (0.02) |
| <i>Control Variables</i> | | | | |
| Industry effects | included | included | included | included |
| Chinese firms' size (Revenue) | 0.77*** | 0.76*** | 0.75*** | 0.75*** |
| | (0.07) | (0.07) | (0.07) | (0.06) |
| Number of employees | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Chinese firms' age | -0.01 | -0.01 | -0.01 | -0.01+ |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| State-owned enterprises | -0.54+ | -0.60+ | -0.53+ | -0.54+ |
| | (0.32) | (0.32) | (0.31) | (0.30) |
| Past alliance experience | 0.04* | 0.04* | 0.04** | 0.04* |
| | (0.02) | (0.02) | (0.02) | (0.01) |
| Length of collaboration | -0.03 | -0.03 | -0.04* | -0.02 |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| GDP Growth | 0.16+ | 0.17* | 0.14+ | 0.15+ |
| | (0.08) | (0.08) | (0.08) | (0.08) |
| Intercept | 2.37** | 1.75* | 1.52* | -0.14 |
| | (0.79) | (0.80) | (0.76) | (0.79) |
| Model F | 12.84 | 12.79 | 15.88 | 18.33 |
| p < | 0.00 | 0.00 | 0.00 | 0.00 |
| R2 | 0.32 | 0.32 | 0.37 | 0.40 |

+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Table 7. Development of managerial capabilities in Single party JVs ($N = 271$)

| Variables | Development of managerial capabilities | | | | | |
|---|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| <i>Independent Variables</i> | | | | | | |
| Vertical IJVs (H1) | | -0.11 (0.16) | | | | -0.11 (0.16) |
| Foreign partners' age (H2) | | | 0.01*** (0.00) | | | 0.01*** (0.00) |
| Foreign partners' number of subsidiaries (H3) | | | | 0.00 (0.00) | | 0.00 (0.00) |
| Cultural distance (H4) | | | | | 2.42* (1.09) | 2.35* (1.19) |
| Economic distance (H4) | | | | | 0.16 (0.12) | -0.19 (0.16) |
| Educational distance (H4) | | | | | 0.41+ (0.22) | 0.94** (0.29) |
| Technological differences (H4) | | | | | -0.44+ (0.24) | -0.68* (0.28) |
| <i>Control Variables</i> | | | | | | |
| Country effects | included | included | included | included | N/A | included |
| Industry effects | included | included | included | included | included | included |
| Chinese firms' size (Revenue) | 1.46*** (0.08) | 1.43*** (0.08) | 1.39*** (0.08) | 1.39*** (0.08) | 1.45*** (0.08) | 1.34*** (0.08) |
| Number of employees | -0.00+ (0.00) | -0.00+ (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) |
| Chinese firms' age | -0.00 (0.01) | -0.00 (0.01) | -0.01 (0.01) | -0.00 (0.01) | -0.00 (0.01) | -0.01 (0.01) |
| State-owned enterprises | -0.30 (0.34) | -0.37 (0.34) | -0.30 (0.33) | -0.32 (0.34) | -0.34 (0.33) | -0.42 (0.33) |
| Past alliance experience | -0.03 (0.02) | -0.02 (0.02) | -0.03 (0.02) | -0.02 (0.02) | -0.03 (0.02) | -0.02 (0.02) |
| Length of collaboration | -0.01 (0.02) | -0.01 (0.02) | -0.01 (0.02) | -0.01 (0.02) | -0.02 (0.02) | -0.01 (0.02) |
| GDP Growth | 0.12 (0.09) | 0.12 (0.09) | 0.14 (0.09) | 0.10 (0.09) | 0.14 (0.09) | 0.14 (0.09) |
| Intercept | 0.35 (0.90) | 0.84 (0.95) | 0.01 (0.92) | 0.80 (0.92) | 0.31 (0.99) | 0.26 (1.00) |
| Model F | 37.28 | 22.71 | 24.89 | 23.03 | 27.70 | 19.80 |
| p < | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| R2 | 0.59 | 0.60 | 0.63 | 0.61 | 0.60 | 0.65 |

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8. Development of managerial capabilities $t=1$, by industry ($N = 348$)

| Development of managerial capabilities | |
|--|-------------------|
| Variables | Model 1 |
| Vertical IJVs (H1) | 0.20 (0.25) |
| Manufacturing | -0.14 (0.20) |
| Vertical IJV (H1) x Manufacturing | -0.41 (0.27) |
| <i>Control Variables</i> | |
| Country effects | included |
| Chinese firms' size (Revenue) | 1.19*** (0.29) |
| Number of employees | -0.00* (0.00) |
| Chinese firms' age | -0.01 (0.00) |
| State-owned enterprises | -0.50** (0.18) |
| Past alliance experience | -0.01 (0.01) |
| Length of collaboration | -0.01 (0.03) |
| GDP Growth | 0.18* (0.08) |
| Constant | -0.45 (0.57) |
| Model F | 19.26 |
| p < | 0.00 |
| R2 | 0.48 |

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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