

SME Networks and International Performance: Unveiling the Significance of Foreign Market Entry Mode

by Maria-Cristina Stoian, Josep Rialp, and Pavlos Dimitratos

This study investigates the relevance of interorganizational networks for the international performance of small and medium-sized enterprises (SMEs) in relation to the foreign market entry mode (FMEM) selected. We distinguish two groups of internationalized SMEs: exporting firms and micromultinational enterprises (mMNEs). Drawing on insights from the network theory, our study accounts for the role of intermediate outcomes (innovative behavior and foreign market knowledge). Structural equation modeling is conducted in a sample of U.K.-based internationalized SMEs. Our findings suggest that interorganizational networks have an indirect influence on international performance but differences are found among the two groups of internationalized SMEs.

Introduction

Interorganizational networks play an important role in the internationalization of small and medium-sized enterprises (SMEs) as acknowledged widely by the international business literature (Chetty and Blankenburg Holm 2000; Coviello 2006; Hilmersson and Jansson 2012; Loane and Bell 2006). However, the way interorganizational networks foster innovative behavior and foreign market knowledge development to affect international performance, as well as the possible effect of the foreign market entry mode (FMEM)¹ selected by the SME, represent gaps in our knowledge that deserve to be further investigated. It may be that different market entry modes dictate dissimilar network-

ing strategies, affecting innovative behavior and foreign market knowledge differently.

The motivation behind the conduct of the present study draws from the following reasons. First, evidence on the direct influence of the usefulness of interorganizational networks for the international performance of SMEs remains scarce and yields mixed findings (Kenny and Fahy 2011). Apart from a few notable exceptions, which report a positive relationship with export performance (Babakus, Yavas, and Haahti 2006; Belso-Martínez 2006; Boehe 2013), most research examining the impact of networks on (international) performance was conducted mainly in large firms (Gronum, Verreynne, and Kstelle 2012). Second, the role of interorganizational networks for fostering innovative behavior

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¹FMEM represents the firm-level arrangement through which firms service a single foreign market with their value-adding activities (Young et al. 1989).

(Lee et al. 2010; Van de Vrande et al. 2009) is highlighted in the extant literature since partners can provide access to critical resources required for innovation (Colombo et al. 2012; Gronum, Verreyne, and Kastle 2012); however, the bridging role of innovative behavior for achieving increased (international) performance has received limited research attention, particularly in the SME context. Therefore, the link between these constructs merits further examination (Andersson, Evers, and Griot 2013; Gronum, Verreyne, and Kastle 2012; Hayter 2013). A few earlier studies suggest that in order for networks to be beneficial for firm (export/international) performance they should be used for productive means and highlight the existence of an indirect relationship mediated by one or various intermediate outputs such as innovation (Gronum Verreyne, and Kastle 2012) and foreign market knowledge (Haahti et al. 2005; Yli-Renko, Autio, and Tontti 2002). Third, the importance of networks for enhancing foreign market knowledge is well-documented (Chetty and Blankenburg Holm 2000; Jonsson and Lindbergh 2010; Loane and Bell 2006). Earlier studies suggest that in order for networks to be beneficial for firm performance they should be combined with foreign market knowledge (Haahti et al. 2005; Zhou 2007; Zhou, Barnes, and Lu 2010). Yet, knowledge deriving from network spillovers has often been regarded as simply another resource without considering its importance for innovation (Hayter 2013). Fourth, interorganizational networks have been recognized to influence the FMEM (Dimitratos et al. 2014; Johanson and Vallhne 2009; Prashantham 2011). Specifically, networks are likely to determine whether a firm participates in international operations solely by exporting as opposed to engaging in more committed international activities such as international licensing/franchising/joint ventures/strategic alliances and/or setting up subsidiaries abroad. SMEs have been increasingly reported to engage in higher commitment FMEMs beyond exporting (Dimitratos et al. 2003, 2014; Lu and Beamish 2001, 2006; Prashantham 2011). These SMEs, in spite of their innate resource constraints, display an international behavior similar to that of multinational companies; thus, they are coined in the international business/international entrepreneurship literature as micromultinational enterprises (mMNEs) (Dimitratos et al. 2003). Previous contributions highlight the crucial importance of interorganizational networks for the activities in which mMNEs are involved, namely

international licensing, franchising, joint ventures, strategic alliances, and establishing foreign subsidiaries (Dimitratos et al. 2003, 2014; Prashantham 2011). In fact, interorganizational networks are considered indispensable for mMNEs, as resources may lie within the networks rather than being directly owned by individual firms (Dimitratos et al. 2003). Building on a recent study by Dimitratos et al. (2014, p. 909) who note that “active networking distinguishes the activities of mMNEs from those of exporting firms,” we believe it is relevant to examine whether there are significant differences in the way interorganizational networks influence the international performance of SMEs depending on the FMEM.

The aim of this study is, therefore, to investigate the influence of interorganizational networks on the international performance of SMEs taking into account the role of innovative behavior and foreign market knowledge as intermediate outcomes. Furthermore, we examine whether these relationships differ for exporters and mMNEs. We do so by analyzing a sample of U.K.-based SMEs with international activity. For the purpose of this analysis we take a dichotomous view on FMEM, notably we consider exporters versus mMNEs. Our approach draws on the network theory as a driver of SME internationalization (Chetty and Blankenburg Holm 2000; Coviello 2006; Dimitratos et al. 2014; Hilmersson and Jansson 2012) for elaborating the conceptual framework of this paper.

This study contributes to the international business literature by suggesting that interorganizational networks have an indirect, rather than direct, influence on international performance, clearly pointing to the importance of utilizing networks in a proactive and productive manner for attaining increased performance results. Networks affect innovative behavior and foreign market knowledge, which, in turn, influence international performance. We additionally identify and explain distinct network strategies that firms follow according to the mode of the foreign market entry. The importance of innovative behavior and foreign market knowledge as intermediate outcomes are highlighted according to the mode of entering foreign markets. Thus, we show that mMNEs follow different internationalization mechanisms than exporting SMEs, alluding to the different routes and organizational resources that the two categories of firms necessitate.

The remainder of the article is organized as follows. We first elaborate on the research background of the study and present the theoretical underpinnings; the research hypotheses and the

research model are also proposed. Next, the method and data collection procedures are described. The empirical results are then presented. The penultimate section discusses the findings. The implications for researchers and practitioners as well as future research directions are explored in the concluding section.

Research Background and Hypotheses Development

SMEs have long been acknowledged to suffer from liabilities of smallness (Aldrich and Auster 1986) which place them in a difficult position for obtaining critical resources, such as financial and human capital as compared to larger counterparts; and, liabilities of foreignness (Hymer 1976; Zaheer 1995) which suggest that when venturing abroad firms are confronted with numerous obstacles particularly related to their limited foreign market knowledge (Lord and Ranft 2000). These liabilities may act as barriers to the development of export activities (Zhou, Wu, and Luo 2007) and even more so to their involvement in higher commitment FMEMs (Lu and Beamish 2001, 2006). In fact, traditionally SMEs were considered to be able to participate in international trade activities merely as exporters/importers since the liabilities of smallness and foreignness would prevent them from being able to engage in higher commitment modes (Dimitratos et al. 2003). However, recent empirical evidence (Dimitratos et al. 2014; Lu and Beamish 2001, 2006; Prashantham 2011) unveils the contrary, as numerous SMEs, also known as mMNEs, are increasingly reported to engage in various “constellation and investment (C&I) modes of foreign market servicing” (Dimitratos et al. 2003, p. 164).²

In light of the above it is reasonable to inquire what enables SMEs to obtain the necessary foreign market knowledge that would foster innovation in accord with the specific market idiosyncrasies, or allow them to adopt an innovative behavior considering new foreign markets/customers/suppliers; and, which would finally lead to achieving increased international performance. Furthermore, those SMEs that become mMNEs are expected to require different capabilities to those employed by exporting SMEs (Dimitratos et al. 2003).

Networks “form part of the fabric of the intangible resource and knowledge base of a firm” (Loane and Bell 2006, p. 478) and have largely been recognized to play an essential role for the international expansion of SMEs, enabling firms to have access to an increased pool of resources in addition to their own; and, thus, overcome the liabilities of smallness and foreignness, and disadvantages in terms of their ability to innovate (Chetty and Blankenburg Holm 2000; Coviello 2006; Lee et al. 2010; Loane and Bell 2006; Wincent, Anokhin, and Örtqvist 2010). Interorganizational networks provide firms with knowledge on internationalization, which otherwise would not be available to the firm (Johanson and Vahlne 2009). By networking, SMEs are able to supplement their limited internal R&D base and gain access to new markets and innovation sources (Colombo et al. 2012; Hite and Hesterly 2001; Lasagni 2012). Knowledge acquired in FMEM constellations, mMNEs specifically engage in, can be of higher-level and entrepreneurial nature, enhancing alertness to opportunities and leading to innovative behavior to tap these opportunities. This is less likely to take place in the activities of exporting firms that do not exhibit an advanced level of activity exposure abroad (Dimitratos et al. 2014). Specifically, innovative orientation has been reported to enable SMEs to engage in more international activities and get involved in high-control FMEMs (Ripolles-Meliá, Blesa-Pérez, and Roig-Dobón 2010). Knowledge is not the only resource that interorganizational networks facilitate. They can also facilitate access to external resources (e.g., human, financial, and/or technology) available through the interplay with their business partners (Beamish and Lupton 2009; Dimitratos et al. 2003; Johanson and Vahlne 2006, 2009).

Existing business relationships influence FMEM, and foreign market selection and new knowledge related to host countries can be obtained through the interaction with business network partners (Coviello and Munro 1995, 1997; Johanson and Vahlne 2006, 2009). Foreign market knowledge has been reported to exert a positive impact on the export/international performance of SMEs (Autio, Sapienza, and Almeida 2000; Haahti et al. 2005; Zhou 2007; Zhou, Barnes, and Lu 2010). Moreover, according to Lasagni (2012), external links can provide the

²According to Dimitratos et al. (2003): Constellation and investment (C&I) modes of foreign market servicing include licensing, franchising, joint ventures, strategic alliances and subsidiaries.

SME with the relevant knowledge needed to access new ideas and, thus, enhance innovative behavior. Prior contributions recognize the crucial role played by networks for fostering innovation/innovative behavior (Chetty and Stangl 2010; Colombo et al. 2012; Van de Vrande et al. 2009), which would lead SMEs to increased performance outcomes in international competitive environments (Knight and Cavusgil 2004; Zhou, Barnes, and Lu 2010). Dimitratos et al. (2003) argue that mMNEs actively seek to engage in advanced FMEMs to overcome the resource scarcity and are likely to obtain access to the necessary missing human, financial and information resources from their network partners. For this particular type of internationalized SMEs, effective management of the interorganizational networks is key, as resource ownership is likely to lie predominantly with the global interorganizational network rather than be directly owned by the firm. Furthermore, the constellation modes which generally suppose ongoing communication and coordination with foreign market counterparts, as opposed to solely exporting, allow learning seeking mMNEs to obtain relevant foreign market information and knowledge (Dimitratos et al. 2003; Ibeh et al. 2004). This, in turn, will influence their international performance outcomes. In this sense, Inkpen and Beamish (1997) highlight licensing agreements as an important source of gaining local knowledge and learning the skills of their international partners. Altinay and Wang (2006) observed that franchisors need to upgrade and adapt their prior knowledge to fit the unique characteristics of the foreign markets, in order to effectively manage their international franchise. Delios and Henisz (2000) note that the local knowledge obtained from international joint venture partners may help alleviate the liabilities of foreignness of the foreign subsidiaries of a firm. Similarly, Lu and Beamish (2001) find that a viable strategy for overcoming the constraints in resources and capabilities, which typically hinder the international development of SMEs, is entering alliances with partners with local knowledge.

Direct Effect of Interorganizational Networks on the International Performance of SMEs

Several studies report a direct influence of networks on the performance of SMEs. For example, Ostgaard and Birley (1996) find a positive relationship between networks and firm performance in a sample of English owner-managed companies. Hu and Stanton (2011) report that five

aspects of networking (quality building, variety diversifying, resource sharing, exercising power, and focusing) have a positive impact on the performance of small and medium privately owned businesses. Li, Veliyath, and Tan (2013) identify a positive relationship between in-cluster (local) and extra-cluster (distant/nonlocal) ties and firm performance. Empirical evidence also suggests that local networks (Boehe 2013) as well as foreign networks (Babakus, Yavas, and Haahti 2006) have a direct and positive impact on the export performance of SMEs, measured as export intensity (export sales as a percentage of total sales). Similarly, Belso-Martínez (2006) finds that networks with clients and competitors positively influence export intensity and satisfaction with export performance. The extant SME literature mainly identified a positive link between (interorganizational) networks and performance in general or export performance (rather than international performance). Nevertheless, previous contributions acknowledge the important role of social capital for the growth of mMNEs (Prashantham 2011); as well as the relevance of networks for the activities of mMNEs as compared to exporters that are commonly located in their own domestic market lacking the proximity advantage that mMNEs benefit from (Dimitratos et al. 2014). We, therefore, argue:

H1: a) Interorganizational networks positively influence the international performance of SMEs; b) This relationship will be stronger for mMNEs as compared to exporters.

Indirect Effect of Interorganizational Networks on the International Performance of SMEs: The Role of Innovative Behavior

Prior research acknowledges that success in an innovative context may be given by the skills of the SME to use external links more efficiently as compared to its larger peers (Rothwell and Dodgson 1994). These external network collaborations allow numerous SMEs to surmount potential innovative disadvantages, which may derive from the limited resource availability and higher dependency on outside entities as compared to large corporations, hence, helping them to stay ahead of the competition (Lee et al. 2010; Wincent, Anokhin, and Örtqvist 2010). SMEs which show an innovative orientation are able to engage in a wider range of international activities and to select the FMEM most suitable

for their control requirements for operating in specific foreign markets (Ripolles-Meliá, Blesa-Pérez, and Roig-Dobón 2010). In the particular case of mMNEs, resources seem to lie predominantly within the interorganizational constellation (Dimitratos et al. 2003). Firms engaged in FMEMs beyond exporting can obtain access to resources controlled by their network partners (Beamish and Lupton 2009; Lu and Beamish 2001), which may drive an innovative international behavior, for example, considering new product/service ideas for international markets, new foreign markets, and/or new clients and suppliers abroad. Viewed in this light, Beamish (2008) and Beamish and Lupton (2009), while recognizing that nonequity strategic alliances are also viable means of accessing resources controlled by other firms, posit that by engaging in joint ventures firms have access to each other's complementary resources and capabilities. Therefore, they are able to develop new products/services faster, more reliably and more cheaply and/or are able to enter new and foreign markets. Based on the arguments presented above, we propose:

H2: a) Interorganizational networks positively influence the innovative behavior of internationalized SMEs; b) This relationship will be stronger for mMNEs as compared to exporters.

Moreover, innovativeness represents an important mechanism by means of which performance benefits are derived from interorganizational networks (Gronum, Verreynne, and Kastle 2012). Innovative behavior enables new ways of thinking, the development of entry strategies for new geographical markets to be entered with novel products, and, consequently, plays a major role for the growth and success of SMEs on international markets (Colombo et al. 2012; Golovko and Valentini 2011; Knight and Cavusgil 2004; Zhou, Barnes, and Lu 2010). According to Castellani and Zenfei (2007), higher levels of innovative behavior on international markets are associated with increased commitment to international operations. Likewise, Basile, Giunta, and Nugent (2003) observed that innovative activities influence the level of involvement in international activities. What is more, as compared to exporters, mMNEs are in a better position to co-innovate jointly with their foreign customers and/or suppliers, considering their increased ability to work more closely with them (Dimitratos et al. 2014; Prashantham 2011). We, thus, propose:

H3: a) Innovative behavior will increase the international performance of SMEs; b) This relationship will be stronger for mMNEs as compared to exporters.

Indirect Effect of Interorganizational Networks on the International Performance of SMEs: The Role of Foreign Market Knowledge

In line with the knowledge-based view, knowledge represents the main source of sustained competitive advantage and performance outcomes for the firm (DeCarolis and Deeds 1999; Grant 1996). The lack of knowledge regarding foreign markets represents a main barrier for SME internationalization (Loane and Bell 2006). Due to the aforementioned liabilities of smallness and foreignness, SMEs may not be able to ensure the necessary knowledge for internationalization, relying solely on in-house resources. However, SMEs can draw on their interorganizational networks and learn from the international business experiences of their network partners, thus, overcoming knowledge (and other resource) constraints (Chetty and Blankenburg Holm 2000; Loane and Bell 2006; Sharma and Blomstermo 2003). Nahapiet and Ghoshal (1998) suggest that by developing joint activities and fostering frequent interaction, business partners can share information and create new knowledge. In a similar vein, Johanson and Vahlne (2009) acknowledge that the interplay within the business network will promote access to new knowledge regarding foreign markets, which will help decide upon the international market and FMEM. Obtaining relevant foreign market knowledge is particularly important for SMEs involved in FMEMs beyond exporting considering the on-going communication and coordination required between international business partners (Altınay and Wang 2006; Beamish and Lupton 2009; Dimitratos et al. 2003) as compared to exporters that frequently operate through intermediaries, and, therefore, may not necessarily require in-depth knowledge of the foreign markets. Thus, we propose the following hypotheses:

H4: a) Interorganizational networks positively influence the accumulation of foreign market knowledge in internationalized SMEs; b) This relationship will be stronger for mMNEs as compared to exporters.

While external links have been recognized to increase foreign market knowledge, in turn, this knowledge is reported to have a positive impact on the export performance and international growth/performance of SMEs (Autio, Sapienza, and Almeida 2000; Hahti et al. 2005; Zhou 2007; Zhou, Barnes, and Lu 2010). The above gains even further importance in the case of mMNEs, where continuous communication and coordination with foreign business partners is needed; increased foreign market knowledge is expected to lead to an improved relationship management and, consequently to international performance. Cooper and Gardner (1993) note that managers who understand others' corporate cultures are expected to be able, as well as willing, to communicate and comprehend more effectively. Access to local knowledge of alliance partners alleviates the efforts of SMEs to expand internationally (Lu and Beamish 2001). In this sense, Delios and Beamish (2001) argue that the performance of international joint ventures is influenced by the knowledge/experience of the firm of doing business in that particular market. Similarly, Lyles and Salk (2007) find that the acquisition of local knowledge improves the performance of international joint ventures. Therefore, we propose the following hypotheses:

H5: a) Foreign market knowledge will increase the international performance of SMEs; b) This relationship will be stronger for mMNEs as compared to exporters.

Direct Effect of Foreign Market Knowledge on the Innovative Behavior of Internationalized SMEs

Nonaka and Takeuchi (1995) note that innovation is an information and knowledge intensive process. A recent review on the knowledge-based entrepreneurship networks by Hayter (2013) suggests that although the importance of networks for knowledge enhancement is well documented in the existing literature, there exists only limited empirical research investigating the influence of such knowledge spillovers on innovation (as well as economic growth). In their review paper on innovation and knowledge creation, Popadiuk and Choo (2006) suggest that interaction among people in appropriate environments for enabling knowledge creation leads to innovation. More concretely, novel ideas are generated and transformed or

implemented in new products, processes or services and will, in turn, bring increased value to the firm. Salomon and Shaver (2005) and Wang and Kafourous (2009) note that firms engaged in exporting or international trade, by interacting with international players, have access to diverse sources of foreign knowledge, which are likely to foster innovative behavior and, thus, influence the production process. In this vein, a recent contribution by Lasagni (2012) highlights the importance of network derived knowledge for new idea development and enhancement of innovative behavior in the SME context. For internationalized SMEs, being able to obtain foreign market knowledge regarding the institutional environment, effective marketing techniques and distribution channels would also enable SMEs to better innovate in product/service and process. Specifically, by understanding specific product/service regulations as well as the appropriate techniques and channels to reach potential local customers, SMEs are in a better position to innovate in terms of their offer, as well as select the most suitable foreign markets, clients and suppliers. As compared to mMNEs that have a better understanding of the idiosyncrasies of the foreign markets they operate on since they work closely with their customers and suppliers (Dimitratos et al. 2003; Prashantham 2011), exporters commonly rely on export agents or distributors that may not provide the same opportunities to exchange information and/or knowledge and, so, deter innovation (Dimitratos et al. 2014). Hence, we propose:

H6: a) Foreign market knowledge positively influences the innovative behavior of internationalized SMEs; b) This relationship will be stronger for mMNEs as compared to exporters.

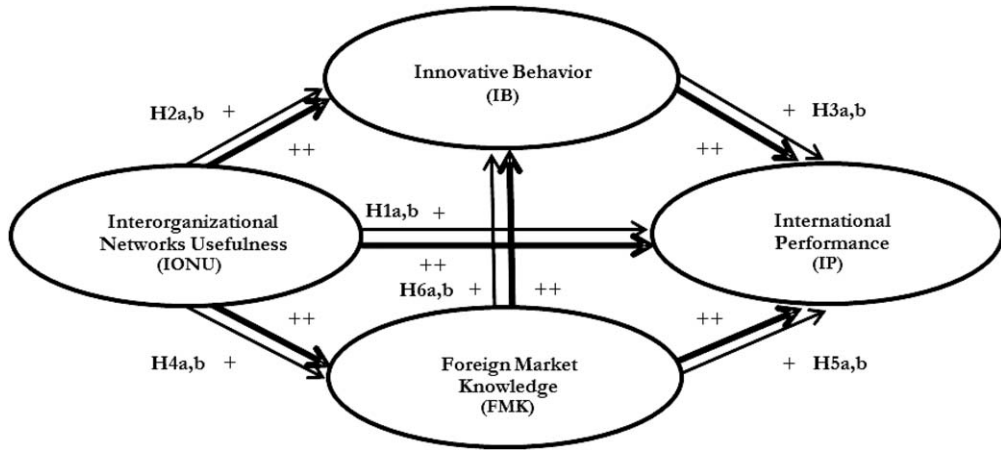
Based on the arguments presented above we developed the following research model (Figure 1).

Methodology

Sample and Data Collection

This study focuses on internationalized U.K. SMEs that employ distinct modes of foreign market entry ranging from pure exporters to mMNEs. The British Exporters Database was the sampling frame employed. We chose our sample from this database because it contains firms that are active internationally. The sampling

Figure 1
Research Model



Note: The thinner line refers to exporters, the thicker one to mMNEs.

criteria were the following: (1) be SMEs as defined by the European Commission (2003)³; (2) be U.K.-based firms; and (3) provide a personalized email address of the decision-maker in the SME. The data collection was completed via a structured questionnaire directed at the decision-maker. In order to avoid comprehension issues the questionnaire was carefully constructed following recommendations by Tourangeau, Rips, and Rasinski (2000): vague and ambiguous concepts as well as complex syntax were avoided; questions were kept specific and concise, and no double barrel questions were included in our research survey. Once the questionnaire was finalized, a pilot study was conducted with eight decision-makers of SMEs with different degrees of international involvement. In line with prior contributions in the international business literature (e.g., Agarwal and Ramaswami 1992; Lord and Ranft 2000) the pilot study involved in-depth semi-structured interviews that lasted on average 60 minutes and were voice recorded. Full transcripts were created on the basis of these recordings. The information collected through this pilot study allowed us to revise our ques-

tionnaire, confirming its appropriateness for the specific context of our study and refine the research model. The questionnaire was also discussed with academics with relevant experience in the international business research field.

The survey was administrated, by invitation, to 1,876 decision-makers via personalized emails, followed by two reminders. A total of 251 answers were obtained representing an effective response rate of 13.4 percent. Considering that the empirical data used in this analysis derives from a single survey instrument, we took precautions in order to control for common method bias following the recommendations of Podsakoff et al. (2003). Specifically, the anonymity of the respondents was assured and the order of the research items was randomized for each construct included in the survey by the software program used to send the invitation to research. After eliminating incomplete questionnaires, a valid sample of 190 observations was obtained, representing a broad range of manufacturing and service sectors (corresponding to 10 two-digit SIC groups) with an average business age of 41 years and average size of 39 employees. Of these 190 SMEs, 101 are pure

³An SME is defined by the European Commission as an enterprise that employs fewer than 250 persons and whose annual turnover does not exceed EUR 50 million, and/or whose annual balance sheet total does not exceed EUR 43 million (European Commission 2003).

exporters while the remaining 89 firms go beyond exporting in their international activities, being involved in at least one of the following FMEMs: licensing/franchising, joint ventures/strategic alliances, production subsidiaries, sales subsidiaries, or other subsidiaries (Dimitratos et al. 2014). Non-response bias was addressed by employing Armstrong and Overton's (1977) extrapolation procedure. Using a series of t-tests, early respondents were compared to middle and late respondents. No significant differences were found across the three groups of respondents regarding their age, size, and industry sector, allowing us to conclude that non-response bias was not an issue in our study.

Measures

Independent Variables. Perceptual measures were used to operationalize interorganizational networks' usefulness, innovative behavior and foreign market knowledge on five-point scales as follows: (I) Interorganizational Networks Usefulness (IONU) is the perceived level of usefulness of interorganizational networks for international activity as reported by the decision-maker; its operationalization is based on the revisited Uppsala internationalization model (Johanson and Vahlne 2009), which recognizes the central role played by networks in the internationalization process. The respondents were asked to indicate their agreement (1 = Totally disagree to 5 = Totally agree) with the following statements: (1) Interorganizational networks are useful for foreign market selection (IONU 1); (2) Interorganizational networks are useful for foreign market entry mode selection (IONU 2); and (3) Interorganizational networks provide the firm with extended internationalization understanding (IONU 3). (II) Innovative Behavior (IB) was operationalized based on previous contributions by Lumpkin and Dess (1996), Zhou (2007), and Zhou, Barnes, and Lu (2010), and measured the degree of agreement (1 = Totally disagree to 5 = Totally agree) with the following items: (1) Our top management always encourages new product/service ideas for international markets (IB 1); (2) Our top management continuously searches for new foreign markets (IB 2); and (3) Our top management is willing to consider new suppliers/clients abroad (IB 3). (III) Foreign Market Knowledge (FMK) assessed the degree of foreign market knowledge of top management (1 = Much worse to 5 = Much better than main competi-

tors) and was adapted from prior studies by Hadley and Wilson (2003), Zhou (2007), and Zhou, Barnes, and Lu (2010): (1) Our top managers' knowledge about effective marketing in foreign markets (FMK 1); (2) Our top managers' knowledge about foreign business laws and regulations (FMK 2); and (3) Our top managers' knowledge about foreign distribution channels (FMK 3).

Dependent Variable. Contributions capturing quantitative assessments on the impact of networks on SME internationalization are scarce and have frequently referred to export activity (e.g., Ciravegna, Lopez, and Kundu 2014; Ciravegna, Majano, and Zhan 2014; Eberhard and Craig 2013). Given the aim of this study it was of utmost relevance for us to be able to measure the international performance (Carpenter, Pollock, and Leary 2003; Fernhaber and Li 2013; Lu et al. 2010) of the SMEs, including various FMEMs, rather than export performance only. Similar to previous other studies (Knight and Cavusgil 2004; Lu et al. 2010; Zhou 2007; Zhou, Barnes, and Lu 2010; Zhou, Wu, and Barnes 2012; Zhou, Wu, and Luo 2007), we use perceptual measures of international performance. These measures, which were inspired and adapted from previous relevant contributions (Zhou, Wu, and Barnes 2012; Zhou, Wu, and Luo 2007), were operationalized on a five-point scale (ranging from 1 = Much worse to 5 = Much better than main competitors) where respondents were asked to rate the following International Performance (IP) items: (1) International profit over the past three years (IP 1); (2) International sales over the past three years (IP 2); and (3) International market share over the past three years (IP 3). In line with previous research related to performance, both the reliability and the validity of perceptual measures were found to be satisfactory (Ketokivi and Schroeder 2004)-Cronbach's alpha (α) is 0.956 for the total valid sample, 0.966 for the exporters and 0.941 for the mMNEs subsamples. Following prior contributions (Dollinger and Golden 1992; Geringer and Hebert 1991), we tested and found that perceptual measures of international performance correlated to objective measures of international performance. More precisely, the factor-based variable International Performance (IP) used in our analysis significantly correlates with the international sales intensity obtained from the database

developed from our survey (correlation coefficient = 0.48; $p < 0.05$).

For determining whether an SME fitted either in the group of exporters or mMNEs, respondents were asked to check all forms of international business the firm uses: (1) Export; (2) Licensing/franchising; (3) Joint venture/strategic alliance; (4) Production subsidiary; (5) Sales subsidiary; and (6) Other subsidiary (Dimitratos et al. 2014).

Results

For testing the proposed hypotheses, a multi-group Structural Equation Model (SEM) was performed with AMOS (version 20.0). We chose to perform our analysis with SEM, as this technique allows assessing various relationships comprehensively, involving multiple constructs at the same time (Brown 1997). SEM has been previously employed in studies on SMEs and internationalization (Alegre and Chiva 2013; Zhou, Barnes, and Lu 2010; Zhou, Wu, and Luo 2007). A SEM model is analyzed and interpreted in two steps: first, the assessment of the reliability and validity of the measurement model and second, the assessment of the structural model.

Measurement Model

Following the approach of other studies (Alegre and Chiva 2013; Joshi and Sharma 2004; Zhou, Barnes, and Lu 2010), we assessed whether common method bias posed a threat to our data by performing Harman's one-factor test on the items. If there is a substantial amount of common method variance, then either a single factor will emerge from the factor analysis, or one general factor will account for the majority of the covariance among the variables (Podsakoff et al. 2003). Our results show that common method bias was not a relevant concern in our data set: the factor analysis conducted in the overall sample resulted in four factors with eigenvalues greater than one (accounting for 82.67 percent of the total variance), with the largest factor accounting for 47.20 percent of the explained variance.

To assess the reliability of the constructs, we first conducted an Exploratory Factor Analysis (EFA). Using EFA and considering multiple items for each construct, in line with recommendation to increase construct reliability by Terblanche and Boshoff (2008), we found that only one dimension emerged for all constructs. Next, we conducted a Confirmatory Factor Analysis

(CFA) jointly for all the constructs for the overall sample model as well as in both subsamples, with the aim of performing a more precise assessment of the reliability and validity of the measurement (Table 1).

The content validity of the measurement instrument was assured by a systematic review of the relevant literature and by conducting interviews with decision-makers in internationalized SMEs (Alegre and Chiva 2013). Our results for testing the reliability of the constructs generally showed a high internal consistency of the constructs (Table 1). We found that the item-total correlation, which measures the correlation of each item with the sum of the remaining items that constitute the scale, is above the minimum of 0.30 (Nurosis 1993). For each case, the Cronbach's alpha exceeded Nunnally and Bernstein's (1994) recommendation of 0.70. Construct reliability (CR) was examined by a composite reliability test (Fornell and Larcker 1981). All values of the construct reliability coefficients were above 0.70 exceeding the recommended minimum level (Bagozzi and Yi 1988).

Convergent validity was tested by analyzing the factor loadings and their significance. The *t*-scores obtained for the coefficients in Table 1 indicate that all factor loadings are significant ($p < 0.01$). The factor standardized loadings are generally higher than 0.50 as recommended by Steenkamp and Geyskens (2006); the average of the item-to-factor loadings are higher than 0.70 (Hair et al. 2006). Therefore, our results provide evidence supporting the convergent validity of the items (Anderson and Gerbing 1988). Discriminant validity is established if the shared variance between pairs of constructs is always less than the corresponding Average Variance Extracted (AVE) (Fornell and Larcker 1981). This criterion was met for all four constructs included in our study (Table 2).

In light of the above, the measures in this study provided sufficient evidence of reliability, convergent and discriminant validity. Thus, the measurement model was retained as the final measurement model for this study.

Given the nature of our analysis it was necessary to test the invariance of the measurement instrument in order to compare the two subsamples (Hair et al. 2006; Schmitt and Kuljanin 2008). A three-step process was followed. As a first step, we evaluated the single group solution, estimating the CFA in each subsample, separately. The CFA fit was good for both subsamples. Second, we checked the configural

Table 1
Internal Consistency and Convergent Validity

Construct	Item	Overall Sample				Exporters				mMNEs			
		Factor Loading ^a	α	CR	AVE	Factor Loading ^a	α	CR	AVE	Factor Loading ^a	α	CR	AVE
IONU	IONU 1	0.930	0.932	0.934	0.825	0.961	0.939	0.941	0.843	0.885	0.912	0.912	0.777
	IONU 2	0.944				0.955				0.915			
	IONU 3	0.849				0.833				0.844			
IB	IB 1	0.721	0.818	0.818	0.602	0.814	0.860	0.859	0.671	0.547	0.733	0.743	0.497
	IB 2	0.855				0.883				0.836			
	IB 3	0.746				0.757				0.704			
FMK	FMK 1	0.662	0.833	0.836	0.633	0.742	0.872	0.873	0.697	0.483	0.730	0.737	0.496
	FMK 2	0.848				0.884				0.722			
	FMK 3	0.862				0.872				0.857			
IP	IP 1	0.938	0.956	0.956	0.878	0.928	0.966	0.965	0.903	0.950	0.941	0.944	0.849
	IP 2	0.972				0.980				0.959			
	IP 3	0.901				0.943				0.853			

Goodness of fit indices:

Overall Sample: $\chi^2 (48 df) = 63.54$; $\chi^2/df = 1.32$; NFI = 0.965; GFI = 0.947; CFI = 0.991; RMSEA = 0.041.

Exporters: $\chi^2 (48 df) = 44.47$; $\chi^2/df = 0.927$; NFI = 0.960; GFI = 0.934; CFI = 1.000; RMSEA = 0.000.

mMNEs: $\chi^2 (48 df) = 60.07$; $\chi^2/df = 1.252$; NFI = 0.916; GFI = 0.902; CFI = 0.981; RMSEA = 0.053.

^a = $p < 0.01$

Note: IONU, Interorganizational Networks Usefulness; IB, Innovative Behavior; FMK, Foreign Market Knowledge; IP, International Performance.

invariance (the factorial structure is the same in the subsamples). To this purpose a multigroup estimation was conducted. The resulting model served as a basis for checking whether the incorporated restrictions deteriorate the adjustment. The significance of Bollen test is 0.637, the chi-squared (χ^2) and the degrees of freedom (df) are the sum of the single group solutions,

and the rest of the goodness of fit indexes show that it is reasonable to assume the same factorial structure in the two subsamples (NFI = 0.943; CFI = 0.995; RMSEA = 0.022). As a third step, we tested the metric invariance (invariance of the factorial loadings). Our results show that is reasonable to assume that the factorial loadings that join each factor with its items is the same in

Table 2
Discriminant Validity

Overall Sample				Exporters				mMNEs			
IONU	IB	FMK	IP	IONU	IB	FMK	IP	IONU	IB	FMK	IP
IONU	0.825			IONU	0.843			IONU	0.777		
IB	0.156	0.602		IB	0.088	0.671		IB	0.252	0.497	
FMK	0.110	0.439	0.633	FMK	0.072	0.532	0.697	FMK	0.082	0.266	0.496
IP	0.068	0.360	0.381	IP	0.042	0.396	0.311	IP	0.075	0.284	0.494

Note: The diagonal represents the AVE, while the values below the diagonal indicate the shared variance (squared correlations).

the two subsamples. To do this, we compared the chi-squared of the equal form and equal factor loadings and demonstrated that the fit of the new model is not significantly worse (the difference of the chi-squared is 5.727, and is not significant). Thus, we can conclude that imposing restrictions of the equality of factorial loadings does not deteriorate the fit. In other words, we can confirm the factorial invariance of the measurement instrument (Table 3).

Structural Equation Model

The fit indexes obtained for the overall sample suggest a good fit of the model to the data meeting the traditional cut-off points recommended by the literature (Browne and Cudeck 1993): χ^2 (48 *df*) = 63.54; χ^2/df = 1.32; NFI = 0.965; GFI = 0.947; CFI = 0.991; RMSEA = 0.041.

For running the multigroup estimation, we compare the unconstrained model (χ^2 [*df* = 96] = 104.568 [*p* = 0.258]; χ^2/df = 1.089; NFI = 0.943; GFI = 0.919; CFI = 0.995; RMSEA = 0.022), the model assuming equal measurement weights in both subsamples (χ^2 [*df* = 104] = 110.295 [*p* = 0.318]; χ^2/df = 1.061; NFI = 0.940; GFI = 0.915; CFI = 0.996; RMSEA = 0.018) and the model assuming that the structural weights are also the same in the two subsamples (χ^2 [*df* = 109] = 122.888 [*p* = 0.172]; χ^2/df = 1.127; NFI = 0.933; GFI = 0.905; CFI = 0.992; RMSEA = 0.026). The chi-squared difference between the unconstrained model and the model assuming equal measurement weights is 5.727 (*p* = 0.678) indicating that the fit is not significantly deteriorated assuming equal measurement weights. However, the difference of the chi-square between the model assuming equal measurement weights and the model assuming also the equality of the structural weights is 12.593

(*p* = 0.028), so, we cannot impose the equality of the structural weights in both subsamples.

Table 4 shows the structural coefficients for the overall sample as well as for both subsamples in the multigroup analysis assuming equal measurement weights. In general, there appears to exist a good fit of the model to the data for all three groups analyzed.

As presented in Table 4 in the overall model, the results obtained are not significant for the positive relationship predicted between interorganizational networks and international performance; therefore, H1a is not supported. However, our empirical evidence shows there is a positive and significant influence of interorganizational networks on innovative behavior, which, in turn, positively and significantly influences international performance. Thus, both H2a and H3a are supported. A positive and significant relationship exists between interorganizational networks and foreign market knowledge as well as between foreign market knowledge and international performance. Consequently, support is provided to both H4a and H5a. Foreign market knowledge also positively and significantly impacts the innovative behavior of internationalized SMEs, supporting H6a.

These effects are only partially observed for exporters; however, they are generally consistent for mMNEs. Related to the direct link between interorganizational networks and international performance, no significant relationship was observed, in any of the two subsamples; thus, H1b does not receive support. For exporters, interorganizational networks do not have a significant influence on innovative behavior, while this relationship is positively significant for mMNEs; therefore, H2b is supported. The positive relationship

Table 3
Measurement Invariance Test

Model	χ^2	<i>df</i>	Dif. χ^2	Δdf	<i>p</i>	RMSEA	CFI	NFI
Single Group Solution								
Exporters (101 SMEs)	44.47	48				0.000	1.000	0.960
mMNEs (89 SMEs)	60.08	48				0.053	0.981	0.916
Measurement Invariance (190 SMEs)								
Equal Form	104.568	96				0.022	0.995	0.943
Equal Factor Loadings	110.295	104	5.727	8	0.678	0.018	0.996	0.940

Table 4
Structural Coefficients

Path	Regression Weights											
	Overall Sample				Exporters				mMNEs			
	<i>Est.</i>	<i>Ll</i>	<i>Ul</i>	<i>Sig.</i>	<i>Est.</i>	<i>Ll</i>	<i>Ul</i>	<i>Sig.</i>	<i>Est.</i>	<i>Ll</i>	<i>Ul</i>	<i>Sig.</i>
IONU→IP (H1)	-0.01	-0.12	0.11	0.95	0.00	-0.14	0.15	0.98	-0.03	-0.21	0.15	0.80
IONU→IB (H2)	0.14	0.05	0.24	0.01	0.09	-0.04	0.22	0.23	0.26	0.14	0.38	0.01
IB→IP (H3)	0.43	0.19	0.73	0.00	0.55	0.17	0.95	0.03	0.36	0.04	0.75	0.07
IONU→FMK (H4)	0.19	0.11	0.29	0.00	0.17	0.06	0.30	0.01	0.15	0.03	0.26	0.04
FMK→IP (H5)	0.64	0.31	0.92	0.01	0.33	-0.18	0.83	0.29	1.15	0.72	1.57	0.01
FMK→IB (H6)	0.77	0.55	1.05	0.00	0.96	0.70	1.27	0.00	0.54	0.20	0.96	0.01

Note: Est., Estimated coefficient; Ll, Lower limit; and Ul, Upper limit of the confidence interval for the estimated coefficient; Sig., Significance level.

proposed by H3b between innovative behavior and international performance is positive and significant in both subsamples. There are non-significant differences between them in the two groups analyzed; hence, this hypothesis is not supported. Interorganizational networks positively and significantly impact on foreign market knowledge for both subsamples, and again, no significant difference exists between the estimated coefficients for the two subsamples; consequently, H4b is not supported. Foreign market knowledge has a positive significant influence on international performance only for mMNEs. As for exporters this relationship is not significant; thus, H5b receives support. Foreign market knowledge positively and significantly associates with innovative behavior in both subsamples. No significant difference was observed between the estimated coefficients for the two subsamples, so, H6b does not receive support.

Figure 2 (a, b, and c) graphically illustrates the results obtained from the SEM analysis for the overall sample as well as for the two subsamples: exporters and mMNEs.

Based on the results obtained from the analysis and presented in Table 4, Table 5 presents a synopsis of the findings related to the hypotheses.

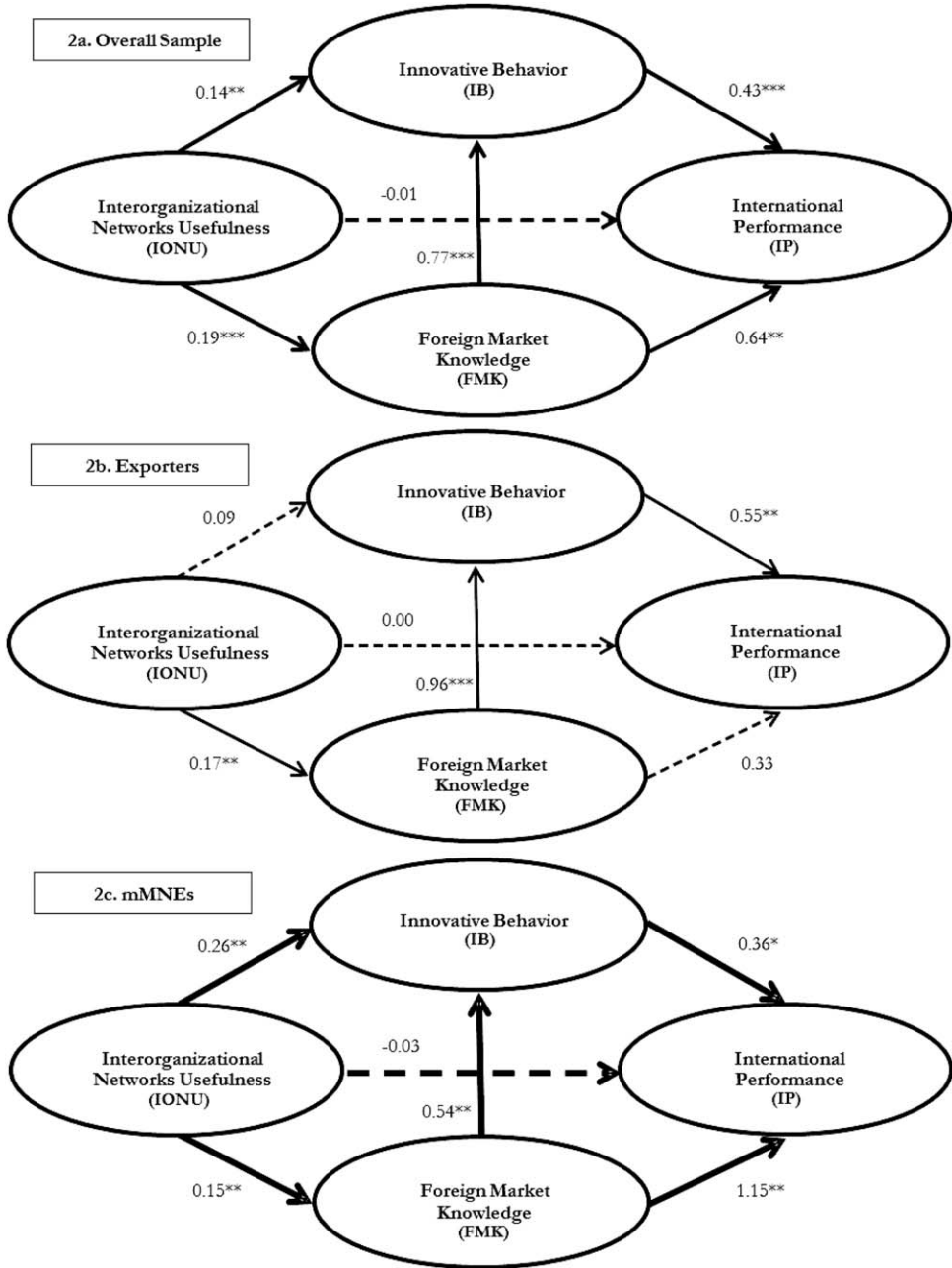
Discussion of Findings

In this research, we advanced hypotheses regarding the influence of interorganizational

networks for the international performance of SMEs, and then analyzed these relationships in a sample of U.K. internationalized firms. Somewhat dissimilar to previous contributions by Babakus, Yavas, and Haahti (2006), Belso-Martínez (2006), and Boehe (2013) who reported a positive link between networks and export performance, we found that interorganizational networks do not significantly associate with international performance. The lack of significance of this relationship is consistent in the overall sample as well as in the two multigroups representing exporters and mMNEs. These findings suggest that the existence of interorganizational networks as perceived by the decision-maker is necessary but not sufficient for them to play a significant role for the international success of the firm. These networks have to be used in a proactive and productive manner, frequently first leading to achieving intermediate outcomes such as enhancing foreign market knowledge and innovative behavior (Colombo et al. 2012; Gronum, Verreynne, and Kastle 2012; Loane and Bell 2006; Zhou, Barnes, and Lu 2010).

Our empirical evidence undoubtedly suggests that interorganizational networks have an indirect effect on international performance by enhancing innovative behavior and foreign market knowledge for both mMNEs and exporters; yet, in line with Dimitratos et al. (2014), networking influence somewhat distinguishes between the international activities of mMNEs

Figure 2 (a, b, and c)
SEM Results for the Overall Sample, Exporters and mMNEs Groups



Note: *Significant at $p < 0.10$; **Significant at $p < 0.05$; ***Significant at $p < 0.01$. The continuous line refers to significant associations, the dashed one to nonsignificant ones.

Table 5
Hypotheses Testing

Hypotheses	Result
H1 a) Interorganizational networks positively influence the international performance of SMEs.	Not supported
H1 b) This relationship will be stronger for mMNEs as compared to exporters.	Not supported
H2 a) Interorganizational networks positively influence the innovative behavior of internationalized SMEs.	Supported
H2 b) This relationship will be stronger for mMNEs as compared to exporters.	Supported
H3 a) Innovative behavior will increase the international performance of SMEs.	Supported
H3 b) This relationship will be stronger for mMNEs as compared to exporters.	Not supported ^a
H4 a) Interorganizational networks positively influence the accumulation of foreign market knowledge in internationalized SMEs.	Supported
H4 b) This relationship will be stronger for mMNEs as compared to exporters.	Not supported ^a
H5 a) Foreign market knowledge will increase the international performance of SMEs.	Supported
H5 b) This relationship will be stronger for mMNEs as compared to exporters.	Supported
H 6 a) Foreign market knowledge positively influences the innovative behavior of internationalized SMEs.	Supported
H6 b) This relationship will be stronger for mMNEs as compared to exporters.	Not supported ^a

Note: To test H1a–H6a the overall sample was used; to test H1b–H6b the multigroup analysis was used.

^aThere are nonsignificant differences between the estimated coefficients of the two multigroups considered.

and exporters. As illustrated in Figure 2 (a, b, and c), a few interesting similarities and differences between the two groups considered were highlighted. We posit that these findings bring new insight to our knowledge related to SME internationalization, in particular enriching our understanding regarding the differentiating capabilities of mMNEs as compared to exporters (Dimitratos et al. 2003).

An evident distinction in the use of networking between the two groups of internationalized SMEs analyzed refers to the impact of interorganizational networks on the innovative behavior of the decision-makers. While a significant and positive relationship exists for mMNEs, no significant relationship was identified for exporters. Koka and Prescott (2008) noted that high levels of resource commitment lead to increas-

ing the regularity of interactions between business partners, and, thus, the quality of the exchange relationship is also improved. Consequently, it is reasonable to argue that mMNEs that generally collaborate closely with their business partners may, therefore, share financial, technological and human resources as a result of the interactions within the network (Beamish and Lupton 2009; Dimitratos et al. 2003), and will be able to adopt an innovative behavior simply by having had access to the resources controlled by their interorganizational collaborators; this is unlikely to be feasible for exporters. mMNEs apparently have developed networking capabilities that can easily transform the knowledge acquired from the interaction with business partners into useful processes. Our results further show that adopting an innovative

behavior in terms of product/service, foreign markets, and suppliers/clients abroad is positively and significantly related to international performance for both groups analyzed. This could be explained by acknowledging that keeping an open mind toward and constantly considering innovation in foreign markets related to both exporting and higher commitment foreign market servicing modes will enable the SME to choose the most appropriate internationalization strategy that will lead to increased international performance.

Our findings show a positive and significant link between the interorganizational networks for internationalization and foreign market knowledge. This relationship is valid irrespective of the commitment to foreign market activities of the SME. In other words, those decision-makers who strongly believe in the relevance of their business networks for their international activity and find them particularly useful for market entry and the accumulation of international understanding, actively use them and, thus, are able to benefit from the accumulation of increased foreign market knowledge. In the case of mMNEs, which require ongoing communication and coordination between international alliance partners (Dimitratos et al. 2014), gaining increased foreign market knowledge will place the decision-makers in a good position for understanding some of the idiosyncrasies of the market where their business partner is embedded. As a result, collaboration is likely to improve and positively influence international performance. Conversely, for exporters, which are often located in their own domestic markets and frequently rely on agents or distributors for reaching foreign markets rather than being directly in contact with international business partners/customers (Dimitratos et al. 2014), the foreign market knowledge obtained from their networks will not have a direct impact on international performance. It seems that mMNEs through their advanced modes have developed those organizational routines that effectively use idiosyncratic foreign market knowledge to improve performance abroad.

Nevertheless, foreign market knowledge positively and significantly influences the innovative behavior of both exporters and mMNEs. Specifically, increased knowledge of the foreign business environment, effective distribution channels and marketing techniques abroad allow innovation to take place (Lasagni 2012; Popadiuk and Choo 2006; Zahra, Ireland, and Hitt 2000); as

well as for innovative changes related to considering entering new foreign markets or new clients and suppliers abroad (Zhou 2007; Zhou, Barnes, and Lu 2010) to be implemented.

Contribution, Implications, Limitations, and Future Research Directions

This study contributes to the international business literature by providing further insights into the relevance of interorganizational networks for the international performance of SMEs according to their degree of commitment to the international markets entered. Furthermore, our analysis illustrates the role of interorganizational networks in obtaining intermediate outcomes such as fostering innovative behavior and foreign market knowledge, which, in turn, will influence international performance. This expands the networking theory in internationalization as it suggests novel nuances on the networking influence in internationalized firms. We also add to previous research on networking in that different networking patterns exist within the internationalized SME domain, corresponding to the mode of commitment to the foreign markets. Support is also provided to previous contributions on the role of networks for the internationalization of SMEs (Chetty and Blankenburg Holm 2000; Jonsson and Lindbergh 2010; Loane and Bell 2006; Sharma and Blomstermo 2003) as well as to the revisited Uppsala internationalization model (Johanson and Vahlne 2009), in the sense that networks clearly influence the accumulation of foreign market knowledge that may be, in turn, vital for international success. Simultaneously, we contribute to the development of the literature on SME internationalization, by refining our knowledge of mMNEs, which despite their relevance and potential to proliferate, are yet under researched (Jones, Coviello, and Tang 2011). The main differences are that, in contrast to exporters, (a) mMNEs largely rely on networks to enhance their innovative behavior, and (b) use foreign market knowledge to boost international performance. Therefore, they seemingly have developed a stronger set of organizational capabilities in terms of networking capability and foreign market knowledge use, which are needed in order to successfully compete abroad. Viewed in this light, we argue that mMNEs can possess a stronger international entrepreneurial

culture (Dimitratos et al. 2012) that is essential for enhanced performance abroad.

The research findings suggest a few implications for decision-makers in internationalized SMEs. Networks should be proactively used to gain/enhance foreign market knowledge and foster innovative behavior in order to attain improved international performance. Hence, managers should nurture and cultivate their business relationship developing skills. Decision-makers in internationalized SMEs, should be aware that the influence of networks on their international business activity may follow distinct patterns according to their degree of commitment to foreign markets. Consequently, the implications are further tailored according to the FMEM. Export managers should concentrate their attention to proactively use their interorganizational networks to expand their foreign market knowledge. This will then increase their innovative propensity, which may lead to the emergence of new ideas regarding novel products/services for international markets, entering new foreign markets or finding new business partners abroad. Due to these changes it is likely that increased international performance results will be obtained. Conversely, managers of mMNEs, should be cognizant of the vital importance of interorganizational networks for improving their foreign market knowledge and innovative behavior. Considering their close and on-going relationship with their business partners, managing their networks effectively is expected to enhance their collaboration and yield increased international performance outcomes. This alludes to two different network strategies that managers of the two groups have to pursue in order to achieve enhanced performance overseas.

We recognize that this study has a few limitations that could generate further research. First, in our sample we included major constructs that are important to the network theory in internationalization, such as innovative behavior and foreign market knowledge. Future studies could consider including additional constructs in the model, such as entrepreneurial proactiveness related to developing and managing interorganizational networks for internationalization, customer orientation and learning. This would be crucial for identifying what other aspects of an international entrepreneurial culture are different for mMNEs. Second, this study is one of the first attempts aimed at understanding how net-

works can play a different role in firm internationalization according to the FMEM. Future research could adopt a fine-grained approach, comparing across groups of each particular mode of entering foreign markets (exporting, licensing, franchising, joint ventures, strategic alliances, and subsidiaries abroad); as well as simultaneously considering the psychic distance existing between the home and host markets. Third, the empirical data collected for this study is cross-sectional. We encourage further research to adopt a longitudinal perspective, therefore, being able to capture the dynamics of the relationship between interorganizational networks intermediate outcomes and international performance. In-depth case studies may also provide insightful suggestions in that respect. Fourth, this study is based on empirical data deriving from a single survey instrument. Future studies should aim to use additional independent measures of the dependent variable, deriving from archival data and/or separate survey instruments, in order to further mitigate the potential problem of common method bias. Fifth, our research is based on a multi-industry sample. Researchers may find fruitful to investigate our model in specific sectors, such as science-based sectors, where scientific inputs rather than market related information are of particular importance for fostering innovative behavior and internationalization. Furthermore, it would be interesting to consider potential alternative flows of causality in these sectors given that innovative behavior can influence interorganizational networks (Gay and Dousset 2005) as science-based SMEs may need to establish links with universities.

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