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A multidimensional perspective of SME internationalization speed: The influence of entrepreneurial characteristics

Linda Hsieh[a], John Child[b,*], Rose Narooz[c], Said Elbanna[d], Joanna Karmowska[e], Svetla Marinova[f], Pushyarag Puthusserry[g], Terence Tsai[h], Yunlu Zhang[h]

[a] SOAS University of London, Thornhaugh Street, Russell Square, London WC1H OXG, United Kingdom
[b] University of Birmingham, Birmingham Business School, Edgbaston, Birmingham, B15 2TT, United Kingdom
[c] University of Glasgow, Adam Smith Business School, West Quadrangle, Glasgow, G12 8QQ, United Kingdom
[d] Qatar University, College of Business & Economics, Qatar University, P.O.Box 2713, Doha, Qatar
[e] Oxford Brookes University, Oxford Brookes Business School, Headington Campus, Oxford, OX3 0BP, United Kingdom
[f] Aalborg University, Department of Business and Management, Fibigerstræde 4, Aalborg East 9220, Denmark
[g] Kent Business School, University of Kent, Canterbury, Kent, CT2 7FS, United Kingdom
[h] China-Europe International Business School, 699 Hongfeng Road, Pudong, Shanghai 201206, China

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ABSTRACT

This paper contributes to a multidimensional perspective on the speed of SME internationalization. It examines the influence of entrepreneurial characteristics – experience, rationales and innovation strategies – on multiple dimensions of internationalization speed. Findings from a sample of 180 SMEs show that earliness, speed of deepening, and speed of geographic diversification can be viewed as three different strategic alternatives and that each dimension is predicted by a different set of entrepreneurial antecedents. Earliness of internationalization is associated with entrepreneurs' international business experience and their perception of opportunities abroad as well as preference for an innovation strategy characterized by ambidextrous innovation. Speed of deepening is related to entrepreneurs' international business experience, their orientation towards differentiation vis-à-vis competitors, and commitment to innovation and a strategy focusing on exploration. These results indicate the importance of distinguishing between different forms of innovation. Speed of geographic diversification is predicted only by entrepreneurs' orientation towards differentiation vis-à-vis competitors.

1. Introduction

International entrepreneurship [IE] studies focusing on the early and rapid internationalization of born globals and international new ventures (e.g. Coviello, 2015; Knight & Cavusgil, 1996; Oviatt & McDougall, 1994; Zander, McDougall, & Rose, 2015) have brought the notion of speed to the forefront of academic debate. They challenge the incremental and slow internationalization process described by the Uppsala 'stages' model (Bilkey & Tesar, 1977; Johanson & Vahlne, 1977). A key aspect of the debate between these two schools of thought concerns the role of decision-makers in the internationalization process (Oviatt & McDougall, 2005). The Uppsala model underspecified the proactive role of entrepreneurs in assuming that firms are risk-averse to internationalization and that the knowledge required for progressive new market entries can be provided by a firm's experience with foreign operations. By contrast, the IE literature has emphasized the role of innovative, proactive and risk-taking behavior of key actors in facilitating early and accelerated international expansion (McDougall & Oviatt, 2000).

Internationalization speed has mainly been conceptualized as the time elapsed between a firm's foundation and its first international sales (Kiss & Danis, 2008; Li, Qian, & Qian, 2015; Musteen, Francis, & Datta, 2010; Rialp, Rialp, & Knight, 2005). However, this conceptualization has been criticized for failing to capture the complexity of speed, ignoring internationalization activities that occur after initial market entry, such as the increase over time in the percentage of foreign sales a firm has achieved and the number of new foreign countries it has entered (Prashantham & Young, 2011). The former indicates the "depth"

* Corresponding author.
E-mail addresses: hh24@soas.ac.uk (L. Hsieh), j.child@bham.ac.uk (J. Child), rose.narooz@glasgow.ac.uk (R. Narooz), selbanna@qu.edu.qa (S. Elbanna), jkarmowska@brookes.ac.uk (J. Karmowska), svetla@business.aau.dk (S. Marinova), p.n.puthusserry@kent.ac.uk (P. Puthusserry), tterence@ceibs.edu (T. Tsai), zlulu@ceibs.edu (Y. Zhang).

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of internationalization and the latter its "breadth". Chetty, Johanson, and Martín (2014) have argued that the concept of internationalization speed needs to be theoretically grounded in the internationalization process model which encourages research to go beyond a limited focus on the speed at which internationalization is first undertaken. A starting point is to adopt a multidimensional perspective by taking into account both the time taken to achieve first foreign market entries and the time span over which firms achieve their current depth and breadth of internationalization (Casillas & Acedo, 2013; Chetty et al., 2014).

Each dimension of internationalization speed is different in nature and might therefore be predicted by a different set of antecedents. The antecedents of early internationalization have been extensively studied (e.g. Musteen, Datta, & Francis, 2014; Ciravegna, Kuivalainen, Kunduc, & Lopez, 2018. Previous studies have found that firms' technology and knowledge intensity, entrepreneurs' international experience, networks, foreign market knowledge, proactivity, international orientation and perception of opportunities and risks, contribute to an early internationalization process (Acedo & Galán, 2011; Acedo & Jones, 2007; Gassmann & Keupp, 2007; Ramos, Acedo, & Gonzalez, 2011; Weerawardena, Mort, Liesch, & Knight, 2007). However, the antecedents of the other two dimensions (speed of international depth and breadth) are less known and require additional empirical investigation. Moreover, apart from four empirical studies by Chetty et al. (2014), Hilmersson and Johanson (2016), Sadeghi, Rose, and Chetty (2018), Hilmersson, Johanson, Lundberg, and Papaioannou (2017), a multidimensional perspective of small and medium-sized enterprise (SME) internationalization speed remains relatively underexplored. The first three of these studies were restricted to the examination of the relationships between speed and performance, while the fourth only studied the antecedents of speed of internationalization breadth. Further research is warranted that adopts a multidimensional perspective and identifies the antecedents of each dimension of internationalization speed.

SMEs tend to be characterized by an individualized leadership (Child & Hsieh, 2014). Individual entrepreneurs who specialize in "taking judgmental decisions about the coordination of scarce resources" (Casson, 2003:20) are the main actors in SMEs. The significant role played by these individuals means that their profile and actions are highly likely to influence their decision on the speed at which to expand their business internationally and commit the required resources (Oviatt & McDougall, 2005). However, SME entrepreneurs' behavioral drivers (such as orientations, perceptions and strategies) remain underrepresented in the internationalization decision and process literature (Cavusgil & Knight, 2015; Dimitratos, Buck, Fletcher, & Li, 2016; Muzychenko & Liesch, 2015).

The aim of this paper is to fill the gaps identified above by applying an entrepreneur-centered view (described in section 2.2 below) to examine how different dimensions of internationalization speed can be explained through the lens of entrepreneurial actors' international business experience, their rationales for internationalization (perception of foreign market opportunities and differentiation vis-à-vis competitors), and innovation strategies (R&D intensity and types of innovation). These predictors reflect the "international entrepreneurial orientation (innovativeness, risk taking and proactiveness)" of SME entrepreneurs (see review by Covin & Miller, 2014). The focus of the paper is important not only for its academic interest but also for its managerial implications. Each dimension of internationalization speed represents an internationalization path or strategic alternative. Research into factors shaping these strategic choices therefore promises to be of practical value.

The paper offers three main contributions to the internationalization speed literature. First, it informs existing debate (Casillas & Acedo, 2013) by providing additional empirical evidence for a multidimensional perspective on internationalization speed. Second, it complements Chetty et al. (2014), Hilmersson and Johanson (2016), and Hilmersson et al. (2017) by paying specific attention to the effect of entrepreneurs' characteristics on different dimensions of internationalization speed; this effect was somewhat overlooked in these studies. Third, previous studies of SME internationalization tended to overlook the nuances of exploratory and exploitative innovation (Child et al., 2017) and the pursuit of internationalization through both types of innovation (Martin, Javalgi, & Cavusgil, 2017). To the best of our knowledge, previous studies have not examined the relationship between entrepreneurs' orientation towards different types of innovation strategy and internationalization speed. Our findings indicate the importance of teasing out different forms of innovation because they help to account for different dimensions of internationalization speed.

We proceed as follows. The next section begins with a discussion of a multidimensional perspective on internationalization speed, followed by explaining the entrepreneur-centered view, identifying postulated predictors of SME internationalization speed, and describing the methodology employed to test the hypotheses. We then present the findings of our empirical study, concluding with their discussion, limitations and implications for future research and managerial practices.

2. Literature and development of hypotheses

2.1. A multidimensional perspective on internationalization speed

Although there has been an ongoing debate about the concept of internationalization speed reflecting the different terminologies (e.g. pace, rhythm, precocity, early, rapid, accelerated, time to internationalization) introduced into previous research (see Chetty et al., 2014), there seems to be a consensus emerging that speed is a multidimensional construct. The seminal work of Oviatt and McDougall (2005) as well as Casillas and Acedo (2013) has been influential in providing a conceptualization of the multiple dimensions of internationalization speed. The former differentiated three dimensions of internationalization speed: 1) time between the discovery of an opportunity and the first foreign market entry, 2) how rapidly foreign market entries proceed and how rapidly psychically distant markets are entered, and 3) how quickly international commitments are made and how fast the percentage of international sales increases. The latter identified three underlying dimensions of speed, namely speed of change in a firm's international commercial intensity, speed of change in its breath of international markets, and speed of change in its resource commitment abroad.

Casillas and Acedo (2013): 16) defined speed of the internationalization process as "a relationship between time and a company's international events". The time period considered in previous studies of born globals and international new ventures was normally the time elapsed to achieve first international expansion (see Coviello, 2015). By contrast, the time period considered in mainstream international business research was the whole history of a firm to the date of study, which emphasizes the experiential knowledge a firm accumulates from international operations since its foundation – i.e. its learning. The international diversity captured by the dispersion of a firm's business across different geographic markets and the depth of international activities are important sources of learning in the course of internationalization (Casillas & Moreno-Menéndez, 2014). Chetty et al. (2014): 634) borrowed the concept from physics which defines speed as "an object's change of position or its movement" and it "includes the time it takes to travel a specific distance". They defined speed as "a relationship between the internationalization distance covered and the time passed to reach this" and they conceptualize the international distance covered as "the firm's current state of internationalization" (Chetty et al., 2014: 640). Hence, the time elapsed to achieve the firm's current state of internationalization can be considered equivalent to the number of years operating/firm age. Hilmersson and Johanson (2016) and Hilmersson et al. (2017) define speed as the time it takes from inception to reach a certain degree of internationalization.

We build on the above understanding, defining internationalization speed as the specific time period over which a firm has achieved a certain state of internationalization since inception. The states of a firm's internationalization include achieving the first foreign market entry, the current depth (the firm's ratio of foreign to total sales) and breadth of internationalization (geographic diversification). Hence the three dimensions of internationalization speed to be examined in this study are: 1) how early a firm makes first sales abroad since its founding (earliness), 2) the speed of deepening, and 3) the speed of geographic diversification. The specific time period considered for the first dimension of speed is the time elapsed from the founding of firm to the first foreign market entry. In line with Chetty et al. (2014), Hilmersson and Johanson (2016), and Hilmersson et al. (2017), the specific time period considered for the last two dimensions of speed is the time elapsed from the founding of firm to the date of data collection. These measures capture the average speed of a firm that covers or travels a certain internationalization distance within a specific time period, i.e. the rate of international deepening per year and the rate of geographic diversification per year. The advantage of adopting an average measure is that it offers a representative indicator of a firm's overall internationalization evolution, bearing in mind that particular points in time (such as when maximum depth and breadth were attained) could be unrepresentative and also present problems for making comparisons between firms.

2.2. An entrepreneur-centered view

An entrepreneur-centered view draws attention to outcomes that derive from the characteristics and action models of the key decision-makers in SMEs. It is based on the theoretical premise that human agency is crucial to explaining the strategic choices made for organizations, in this instance choices regarding the speed of SME internationalization (Child, 1972). It therefore questions the assumption that speed of SME internationalization can be adequately explained by reference only to a firm's external contingencies and its structural characteristics (Geppert & Clark, 2003).

In the context of SME internationalization, the subjects of concern are usually the individual entrepreneurs or group of decision-makers who discover or enact opportunities abroad, who have been described as "internationally entrepreneurial actors" (Oviatt & McDougall, 2005). IE literature has ascribed the variation in firms' internationalization decisions to entrepreneur-specific factors (Jones, Coviello, & Tang, 2011). Oviatt and McDougall (2005) highlighted entrepreneurs' personal characteristics and thinking as prime factors determining the speed at which international activities are to be performed. Moreover, Freeman and Cavusgil (2007) indicated that entrepreneurs' propensity for proactiveness, innovativeness, and risk-taking often reflects their attitude to accelerated internationalization. They found that "strategist entrepreneurs" are highly innovative, proactive, and risk taking. They focus on leading technology, want to build their business in lead markets, and show a high level of commitment to accelerated internationalization from inception by "leaping directly into strategic alliances or joint manufacturing rather than following a gradual process of outward linkages, such as exporting" (2007: 29).

The entrepreneur-centered view of internationalization strategy draws attention to the characteristics of SME entrepreneurs. More specifically, the characteristics in question are the formative relevance of entrepreneurs' prior international business experience, their reasons for entering foreign markets and their innovation strategies. International experience "creates the motivation and ambition to become born global, among other thing because it changes the perception of distance to other countries" (Madsen & Servais, 1997: 574). This perspective may also shed light on the speed of internationalization through highlighting that some entrepreneurs are able to identify opportunities in foreign markets that others overlook. Moreover, the strategic orientation of SMEs is often manifested by their leading actors' entrepreneurial orientation, such as proactive motivations for internationalization, an innovation orientation, and a risk-taking attitude towards international opportunities (Hagen, Zucchella, Cerchiello, & De Giovanni, 2012). Entrepreneurs adopting a strategy of offering innovative and high value-added products that have the potential to serve a worldwide clientele, are more likely to see their firm internationalize early and launch products in several foreign markets (Cavusgil & Knight, 2015).

In critiquing these entrepreneurially-focused explanations for early internationalization, Hennart (2014) maintains that the early internationalization of born globals can in large part be explained by their business models, particularly "the way they have linked the type of product or service they sell with a particular subgroup of customers using a specific communication and delivery method" (p. 129). For firms with appropriate business models and whose additional costs of supplying foreign markets are low, internationalization becomes almost "accidental". It is undeniable that there is a degree of contextual influence here insofar as the activities of some SMEs, for example the production of software that can be distributed through the Internet, does permit them to use communication and delivery methods to foreign markets that are low cost and easily applied. Nevertheless, Hennart's argument is not incompatible with a strategic choice perspective. The illustrations he provides suggest the presence within an industry of different business models with a correspondingly differential impact on the speed of internationalization. In other words, within a given context, individual entrepreneurs retain some autonomy in their decision choices, and these have consequences (Kor, Mahoney, & Michael, 2007).

Drawing on insights from the entrepreneur-centered view, we develop a conceptual framework (Fig. 1) with constituent hypotheses concerning the impact on different dimensions of internationalization speed of entrepreneurs' characteristics, namely, international business experience, perception of opportunities abroad, orientation towards differentiation vis-à-vis competitors, their commitment to innovation (R &D intensity) and the type of innovation. The dimensions of internationalization speed examined are earliness, deepening and geographic diversification. As already mentioned, while adopting a relatively conventional theoretical perspective, this paper enlarges our understanding by adopting a multidimensional analysis of internationalization speed, as well as by examining associations between different innovation strategies and internationalization speed dimensions.

2.3. Hypotheses development

2.3.1. Prior international business experience

Prior international business experience of entrepreneurs or management teams in SMEs has been found to contribute to early internationalization as it can be drawn upon to compensate for the lack of organizational knowledge of foreign markets (e.g. Bruneel, Yli-Renko, & Clarysse, 2010; Love, Roper, & Zhou, 2016; Zucchella, Palamara, & Denicolai, 2007). Bruneel et al. (2010), for example, conclude that when firms have less experiential learning in foreign markets, the effect of entrepreneurs' prior international experience on internationalization matters more. SME entrepreneurs with past international experience have a greater propensity to delay less in obtaining foreign sales after start-up because experience mediates their perception of distance to foreign countries (Madsen & Servais, 1997; Reuber & Fischer, 1997). In addition, they are more likely to have a greater awareness of potential and emerging international opportunities and tend to be more receptive and proactive to pursue those opportunities, thus leading them to internationalize early and achieve accelerated post-entry internationalization, in comparison to SME founders without international experience. (De Clercq, Sapienza, Yavuz, & Zhou, 2012; Weerawardena et al., 2007).

Experience as a foundation for entrepreneurs' intuition (Elbanna &

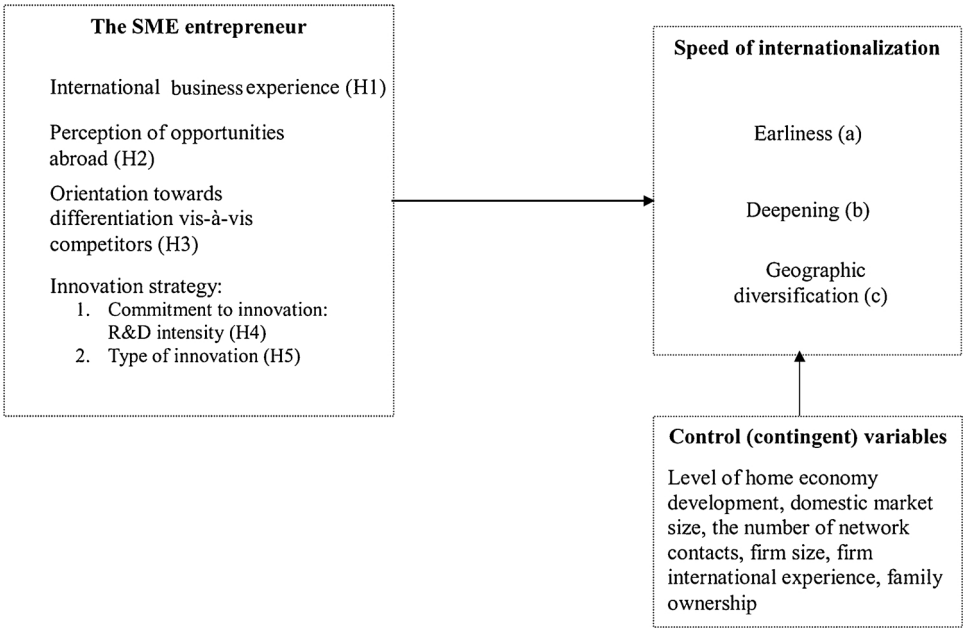

Fig. 1. Conceptual framework and hypotheses.

Fadol, 2016) enhances their ability to learn and access the relevance of past events efficiently (Wally & Baum, 1994). It can also simplify complex situations. When decision makers use intuition, they may make judgments from either heuristics or analogical reasoning that draws upon experientially established cognitive structures and compares between previously experienced international market situations and those newly encountered (Jones & Casulli, 2014). The international experience of entrepreneurs might be translated into heuristics or decision-rules that support rapid internationalization (ibid). Analogical reasoning can increase an entrepreneur's reasoning capability, speed, and expertise so that it may speed up decisions on internationalization and influence successive internationalization market entries (ibid). Additionally, entrepreneurs with prior international experience are said to have greater absorptive capacity which enables their firm to readily accumulate additional foreign market knowledge. This in turn reduces the uncertainty of operating abroad and increases the likelihood of a more rapid build-up of depth and breadth in post-entry internationalization (Oviatt & McDougall, 2005). Hence:

Hypothesis 1. The international business experience of SME entrepreneurs is positively associated with a) earliness of internationalization, b) speed of deepening, c) speed of geographic diversification.

2.3.2. *Perception of opportunities abroad*

The perception that foreign markets offer favorable opportunities is among the subjective characteristics of SME entrepreneurs that are influential in shaping internationalization decisions (Hutchinson, Quinn, & Alexander, 2006). Compared to the entrepreneurs of incrementally internationalizing SMEs, those of international new ventures or born-globals tend to be more positive about overcoming barriers to international expansion, perceive international markets as providing opportunities, and as being less risky (Chetty & Campbell-Hunt, 2004; Dimitratos, Voudouris, Plakoyiannaki, & Nakos, 2012). Additionally, they view internationalization as an opportunity for value creation as well as taking advantage of market inefficiencies (Anokhin, Wincent, & Autio, 2011; Di Gregorio, Musteen, & Thomas, 2008; Kalinic & Forza, 2012). A high self-efficacy towards internationalization among entrepreneurs "results in a reduced risk perception and increased expectation of more positive outcomes in a given situation" (Muzychenko & Liesch, 2015: 707). Thus, it can be argued that if entrepreneurs exhibit a positive view towards internationalization, see it more as an opportunity than a threat, and perceive foreign market opportunities to be more attractive than domestic ones, they are more likely to commit resources to exploit international opportunities early (Acedo & Galán, 2011; Moen, 2002) and to increase the international presence of their company (Kiss, Williams, & Houghton, 2013). This leads to:

Hypothesis 2. SME entrepreneurs' perception of opportunities abroad is positively associated with a) earliness of internationalization, b) speed of deepening, c) speed of geographic diversification.

2.3.3. *Orientation towards differentiation vis-à-vis competitors*

The strategic posture of individual entrepreneurs is critical to internationalization decision-making (De Clercq, Sapienza, & Zhou, 2014). Entrepreneurs' recognition of the possibility of achieving differentiation vis-à-vis competitors through having a market presence abroad often contributes to the decision to internationalize early. Additionally, their desire to build a positive image to defend competitive advantages has been suggested as a key and proactive motive for firm internationalization (Hutchinson, Alexander, Quinn, & Doherty, 2007). International new ventures typically exploit their innovative technology early in lead markets in order to show that they are capable of serving key customers (Crick, 2009). Similarly, Vanninen, Kuivalainen, and Ciravegna (2017) found that a global entrepreneurial mindset willing to seize multiple sources of opportunities abroad and achieving this through visibility, reputation, and being close to clients and partners in strategic markets, could explain the use of high-commitment market entry strategies from inception in the rapid multinationalization process of Finnish born micro-multinationals.

Moreover, new ventures from developing countries such as China and India are more likely to internationalize into developed economies (as opposed to other emerging economies) because these advanced economies can provide potential reputational benefits and learning opportunities (Yamakawa, Khavul, Peng, & Deeds, 2013). Seifert, Child, and Rodrigues (2012) found that some Brazilian SME entrepreneurs considered selling abroad as a way to differentiate their firm in the domestic market through obtaining international acceptance and the status of being an exporter, and consequently decided to internationalize early and into more distant markets, even if the decision did

not seem economically justifiable in the short term. Their findings support Oviatt and McDougall's (1994) claim that significant competitive advantages can be gained by new ventures using their resources and selling their outputs to operate immediately in multiple countries. In this sense, we expect that SME entrepreneurs who prefer differentiation-based competitive advantages will internationalize early and pursue paths to rapid international growth as a way to sustain positional advantages. Also that, given the possibility of learning, SMEs will increase the scale, scope, and commitment of their international presence in order to stay ahead of their competitors. This suggests:

Hypothesis 3. SME entrepreneurs' orientation towards differentiation vis-à-vis competitors is positively associated with a) earliness of internationalization, b) speed of deepening, c) speed of geographic diversification.

2.3.4. Commitment to innovation

A positive relationship between innovation and exporting among SMEs has been widely reported (Golovko & Valentini, 2011; Love & Roper, 2015). Innovation is a key component of a product differentiation strategy which enables firms to rely on their technological expertise to compete in international markets and in turn to contribute to international sales growth (Lisboa, Skarmeas, & Lages, 2011). Thus in a study of Spanish SMEs, Ramos et al. (2011) found that entrepreneurs from technology-intensive firms who consider product innovation as a fundamental component of competitive strategy internationalize their firms significantly earlier than do their main competitors.

An indicator of an SME entrepreneur's commitment to innovation is the firm's *R&D intensity*. R&D intensity has been identified as an important determinant of SME export intensity and diversification (Raymond, St-Pierre, Uwizeyemungu, & Le Dinh, 2014). Entrepreneurs' decision to invest in specialist R&D personnel enhances the capability of their SMEs to develop firm-specific advantages in knowledge-based resources which could be leveraged across different foreign markets (Oviatt & McDougall, 1994). Faced with increasing competition and/or opportunities presented by global demand, some entrepreneurs may seek to derive firm competitive advantages by commercializing new products or services in multiple country markets, thus increasing the expected returns to their R&D (D'Angelo, Majocchi, Zucchella, & Buck, 2013). Also small new ventures with high R&D intensity tend to internationalize within three years of founding (Li et al., 2015). The need to amortize the high R&D costs typical of high-tech firms often pushes new ventures to expand more quickly into international markets (Andersson, Evers, & Kuivalainen, 2014).

Moreover, some researchers (e.g. Filipescu, Prashantham, Rialp, & Rialp, 2013) have found that R&D intensity and international breadth and depth have a reciprocal relationship. They suggest that the entrepreneurs of exporting firms can take advantage of their participation in international markets by acquiring and absorbing new knowledge inputs not available in domestic markets. Therefore, entrepreneurs can enhance the existing knowledge base of their firm by increasing its exposure to a richer source of knowledge through subsequent international diversification, which in turn is helpful to maintain the firm's competitiveness and international market position. Prashantham and Young (2011) specifically argue that technological learning in international markets enhances the speed of post-entry internationalization. Therefore, we hypothesize the following:

Hypothesis 4. SME entrepreneurs' commitment to innovation (R&D intensity) is positively associated with a) earliness of internationalization, b) speed of deepening, c) speed of geographic diversification.

2.3.5. Type of innovation

Innovation can take various forms even if we confine the scope of the term to the generation of new or improved products and services. It can be radical, involving what March (1991) termed "exploration", namely the generation of new knowledge to produce new products or services. It can also be incremental involving the "exploitation" of already available knowledge for purposes of adapting or improving existing products or services.

Exploratory innovation is an entrepreneurial strategic choice characterized by the highest level of innovation orientation. It provides a means for new ventures to achieve international market entry and growth. But, it is riskier, more expensive, and has less certain outcomes and longer time horizons (Prashantham, 2015). In the pursuit of more sustainable growth and positional advantages, the entrepreneurs of resource-deficient SMEs may have to complement exploratory innovation with exploitative innovation which permits faster time to market and facilitates the achievement of short-term positive performance. In knowledge-based SMEs, such as biotech firms, entrepreneurs often adopt the policy of complementing discovery work with more routine analytical 'contract research', exploiting existing knowledge, in order to provide cash flow to sustain their business during the long product development cycle (Child et al., 2017). Hughes, Martin, Morgan, and Robson (2010) and Martin et al. (2017) found that ambidextrous innovation (the possession of both types of innovation capability) contributes to the performance of SMEs that internationalize within two years of their founding. Firms that shun exploration could be vulnerable to stagnation threatening their future viability, whereas firms that avoid exploitation could suffer from the loss of short-term efficiency (Smith & Tushman, 2005). In view of the above, we argue that the adoption of an ambidextrous innovation policy enables SMEs to internationalize early and to lower the risk of failure.

On the one hand, an exploitative innovation strategy allows SMEs to leverage existing knowledge to quickly enter foreign countries similar to their home country, while on the other hand, an exploratory innovation strategy helps generate potential positional advantages and avoid technological obsolescence. Post-entry internationalization therefore often combines exploration and exploitation activities across product and market functions. However, smaller firms frequently lack the requisite human and financial resources to create the structure to manage increasing organizational complexity and to accrue value from ambidextrous innovation (Voss & Voss, 2013). To avoid spreading their limited resources too thinly, SMEs adopting the strategy of pursuing ambidextrous product innovation are therefore less likely to engage in a high speed of subsequent internationalization.

By contrast, focusing on exploratory innovation may delay SMEs' internationalization. However, if SMEs can successfully accomplish exploratory innovation, they can acquire first-mover advantages that competitors often find it difficult to imitate (Mueller, Rosenbusch, & Bausch, 2013). We suggest that if an exploratory innovation policy is successful in the early stage of internationalization, it allows SME entrepreneurs to maximize international growth opportunities offered by product innovation. As a result, entrepreneurs are more likely to increase the proportion of international sales as rapidly as possible to realize scope economies through a concentrated regional market strategy. A broad regional market strategy increases the likelihood of born-global failures due to the increasing cost of managing sales in very diverse geographic regions (Patel, Criaco, & Naldi, 2016). Hence, we pose the following hypotheses:

Hypothesis 5.1. SMEs whose entrepreneurs focus on exploratory innovation will tend to a) internationalize later, and exhibit b) higher speed of deepening, c) lower speed of geographic diversification, in comparison to those focusing on an exploitative innovation strategy.

Hypothesis 5.2. SMEs whose entrepreneurs pursue an ambidextrous innovation strategy will tend to a) internationalize earlier, and exhibit b) lower speed of deepening, c) lower speed of geographic diversification, in comparison to those focusing on an exploitative innovation strategy.

3. Methodology

3.1. Sampling, data collection and coding

Data were collected for this study between 2012 and 2014 from the clothing, software and biotechnology industries in six economies, namely, the Arab Middle East, China, Denmark, India, Poland and the UK.[1] Firms were selected for the purposes of this study according to predetermined criteria in order to maintain consistency within a research design that incorporated systematic contextual contrasts. The first criterion was that selected firms in Denmark, Poland and the UK should employ fewer than 250 employees in order to ensure that they fall in the SME category according to the EU definition.[2] For comparative purposes, the same employment size criterion was applied when selecting firms from the other three economies. The second criterion concerned the choice of the three industries, which was informed by Bell, McNaughton, Young, and Crick's (2003, 2004) typology distinguishing between traditional, knowledge-intensive and knowledge-based SMEs. Clothing is an example of traditional industry in which the advanced knowledge is not intrinsic to market offerings. Software and biotech firms, which respectively fall into the knowledge-intensive and knowledge-based industry categories, rely more on advanced knowledge. Software firms usually are not inherently knowledge-based and they tend to use available advanced knowledge to develop new offerings. In contrast, biotech firms can usually be considered as 'first-movers' in niche markets and new knowledge is intrinsic to their market offerings. A third sampling criterion involved the inclusion of two contrasting categories of economy (developed economy and developing economy) in order to combine avoiding the risk of drawing conclusions from a single national context with the ability to control this context when required. A fourth criterion was that the selected firms must be active in outward international business and have generated sales revenues from abroad.

The sample was a non-probability purposeful one. It did not aim to represent a given population, but rather to provide a set of firms that met the criteria described above. An equal number of SMEs located in developed and developing economies were selected. The choice of countries within these two categories reflected the availability of local researchers/authors known to have the necessary language and subject-area competences and the understanding of the research context. The author(s) responsible for data collection in each country contacted potential SMEs that met the predetermined criteria in terms of firm size, the type of industry, the level of home economy development, and engagement in international business. Data from 30 SMEs in each economy were collected and evenly distributed between the three industries. In total 334 candidate firms were approached. Those firms agreeing to participate were added to the sample until the target sample of 180 SMEs was met (giving a response rate of 54%).

Semi-structured interviews incorporating a mixture of closed-ended and open questions were designed to collect data from the principal decision-maker on internationalization in each SME. Using the on-site visits approach helped to better understand the sampled firms' activities. The interviews lasting between one and two hours were digitally recorded and later transcribed. The interviewers were normally full members of the project team and all had competences in the field of international business along with extensive local area knowledge. For interviews conducted outside the UK, interviewers were bilingual in the local language and in English (cf. Welch & Piekkari, 2006).

In order to ensure consistency of measures and reliability within the multi-country and multi-case research process, the interview schedule was standardized to serve as a replication guide for the researchers and hence enhance data collection stability (Miles, Huberman, & Saldaña, 2014; Silverman, 2009). Various procedures were followed to control for the use of multiple interviewers and achieve consistency and a common understanding of all questions in general and of the meanings to be attached to qualitative responses in particular. These include: (1) strict control of the interview process (Harris, 2000) and training of the interviewers concerning issues such as the identification of follow-up questions, use of probes, establishment of rapport, and avoidance of leading questions (Boutain & Hittu, 2006); (2) the involvement of the second author in several interviews conducted in four countries other than his own; (3) the participation of all project members in four three-day workshops, which were further supported by several face-to-face meetings between sub-groups within the project, and (4) 32 regular Skype conference calls among project members, all of which were at least one hour long and minuted. This was further reinforced by the exchange of regular emails each week.

Transcripts of initial interviews were analyzed at one of the workshops to ensure common understanding and interpretation. Each project member undertook the cross coding of six cases from one of the other countries and subsequently the initial coding scheme was refined. Overall inter-coder agreement in the cross-coding was 79.7%. After six months of discussions among project members, consensus was reached in all instances of initially different interpretation. All transcripts were then coded using the refined coding scheme. To further reduce validity concerns and to check for coding anomalies, frequency runs and tabulations were performed after coding and entering the data into an SPSS data file.

3.2. Measures

Table 1 provides details of the measurement of the variables that this paper used. It indicates the relevant questions asked in the interviews and how replies were operationalized. Some items are factual in nature and are recorded either directly (e.g. R&D intensity) or in terms of their presence or absence (e.g. exploratory innovation). Others, notably SME entrepreneur's reasons for internationalization, are perceptual in nature and are coded from an analysis of interviewee statements.

The measure of *internationalization speed* is multidimensional, consisting of *earliness*, the speed of *deepening*, and the speed of *geographic diversification*. Earliness was measured by the time taken to make the first international sales since founding (e.g. Musteen et al., 2010; Ramos et al., 2011). In line with previous empirical work on internationalization speed (Chetty et al., 2014; Hilmersson & Johanson, 2016; Hilmersson et al., 2017), the other two dimensions were operationalized in terms of mean speed. The denominator, time, was measured by the number of years operating, i.e. "the time elapsed from firm inception to the date of data collection" (Hilmersson & Johanson, 2016: 83). The speed of deepening was measured by dividing the ratio of international to total sales by time (Hilmersson & Johanson, 2016). The speed of geographic diversification was measured by dividing the geographic diversity by time. Geographic diversity was calculated as the total number of geographic regions that SMEs operate outside their home region [Each was scored 1 if mentioned, otherwise 0: Europe, North America, South & Central America, MENA (Middle East & North Africa), Oceania, East & South East Asia, South Asia (India, Pakistan, Bangladesh), Sub-Saharan Africa]. For example, if a Danish or Polish SME exports only within Europe, its geographic diversity would be coded as 0. The maximum score for geographic diversity would be 7. The *international business experience* of entrepreneurs was operationalized as whether they had previous experience in international business prior to joining or founding the firm (Reuber & Fischer, 1997). To assess entrepreneurial orientation, we asked SME entrepreneurs about their reasons for internationalization and their orientation towards innovation strategies. Two second-order themes which captured some aspects of entrepreneurial orientation arose in open-ended

[1] The Arab Middle East in this sample is actually a region consisting of three countries, Egypt, Jordan and the UAE. However, it is treated as one unit.

[2] The definition was obtained from http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003H0361

Table 1
Variables and their measurements.

Variables	Interview questions	Operational measure(s)
Dependent variables		
Earliness of internationalization	When did your company first make any sales abroad? When was this company founded?	Reverse coding of *the elapsed time between founding of the firm and first international sales* on a scale from 1 to 11 (0 year = 11, 1 year = 10…10 years and above = 1)
Speed of deepening	What is the percentage of your company's sales revenues currently coming from overseas markets?	% of foreign sales / the number of years operating
Speed of geographic diversification	Please briefly describe your company's foreign business in terms of regions involved	Total number of geographic regions excluding the home region of SME / the number of years operating
Independent variables		
International business experience of entrepreneur	Did you have experience in doing business internationally prior to joining or founding the firm?	Scored: 0 if No; 1 if Yes
Perception of opportunities abroad	Initial question: What are your reasons for entering foreign markets?	Scored: 0 if not mentioned, 1 if mentioned – see Appendix 1 for derivation.
Orientation towards differentiation vis-à-vis competitors	Initial question: What are your reasons for entering foreign markets?	Scored: 0 if not mentioned, 1 if mentioned – see Appendix 1 for derivation.
Commitment to innovation (R&D intensity)	How many people do you have working on research and development?	R & D staff as percentage of total employment
Types of innovation	Q1. Have you developed new products or services as a basis for going abroad? Q2. Have you carried out any modification to your existing products or services to supply them abroad?	1 = Exploitation [if Q1 coded 0 (No), Q2 coded 1 (Yes)]; 2 = ambidexterity [if Q1 coded 1 (Yes), Q2 coded 1 (Yes)]; 3 = exploration [if Q1 coded 1 (Yes), Q2 coded 0 (No)]
Control variables		
Level of home economy development		Developing economy = 1, Developed economy = 0
Domestic market size		Home country GDP (trillion, US$)
Network contacts	Which network contacts are key sources of assistance for the firm's internationalization? (For each, scored: 0 if no, 1 if relevant: distributors/agents; customers; suppliers; universities/research institutes; government support agencies in home country; government support agencies abroad; other firms in the region or business/science park; industry/trade associations; board/advisory group; consultants; venture capitalists; banks)	Total number of categories of network contact mentioned
Firm size	What is the company's present size in terms of total employment?	Total employment
Firm international experience	When did your company first make any sales abroad?	The number of years since the firm first made any sales abroad
Family ownership	What is the company's ownership?	Family = 1, Non-family = 0

interview responses: *perception of opportunities abroad*, and *orientation towards differentiation vis-à-vis competitors*. Appendix 1 indicates how they were derived from interviewees' statements. Entrepreneurs' orientation towards innovation strategies were assessed in terms of their commitment to innovation (*R&D intensity*) and the *types of innovation* activity pursued. Previous research (e.g. Child et al., 2017; Miller & del Carmen Triana, 2009) has supported the use of a firm's R&D intensity measured by R&D staff as a share of the total employment which can be considered an appropriate proxy for its *innovation*. R&D intensity was then transformed into logarithmic form.[3] However, because R&D intensity does not readily capture innovation in lower-technology industries such as clothing, we also assessed innovation activities with reference to exploration, exploitation, and ambidexterity (He & Wong, 2004; March, 1991).

Moreover, a number of contextual (level of home economy development, domestic market size) and firm (network contacts, firm size, firm international business experience, family ownership) factors known potentially to influence internationalization speed are included as control variables in this study, since its aim is to focus on entrepreneur-related rather than contextual and contingent influences on internationalization speed. There are divergent arguments over whether and how level of home economy development will predict internationalization speed. One argument stems from the logic of 'learning by exporting' (see the review by Love & Roper, 2015). Insofar as SMEs from developing (rather than developed) economies are endeavoring to catch up with their competitors from other economies in terms of innovation and product competitiveness, they may be encouraged not only to begin exporting early but also to enlarge the depth and spread of their foreign markets as rapidly as possible. Counter to this argument is the fact that SMEs located in developing economies tend to suffer from institutional voids (Mesquita & Lazzarini, 2008), focus on less technological intensive business with lower product development costs (Kiss, Danis, & Cavusgil, 2012), and rely more heavily on social ties to facilitate their internationalization than do SMEs in a developed country (Narooz & Child, 2017), which in turn, would restrict the range of foreign markets in which they can compete. In our sample, Denmark, Poland and the UK are classified as developed economies, while the Arab Middle East, China and India are classified as developing economies.[4] Domestic market size may also be important in explaining early internationalization and the depth and breadth of international sales, as indicated by Hennart (2014) and Fan and Phan (2007). While early internationalizing firms tend to come from economies with a smaller domestic market, they have also been found in economies with a large domestic market (Knight & Liesch, 2016). Domestic market size was measured by the country GDP data from the World Bank (Duanmu, 2012).[5]

[3] The variable of R&D intensity measured by R&D staff as a share of the total employment has a substantially positive skewness (skewness value is 5.49) and the data contains 16 zero scores. As suggested by Tabachnick and Fidell (2007), the variable should be transformed into LG10 (X + K). K is a constant. When a small constant value of 6 is added to the scores, the skewness value reduced to 0.023.

[4] While Poland, along with other Central and Eastern European economies, was considered to be emerging in the 1990s (Meyer & Peng, 2016), it is today classified as a developed economy by the United Nations – see http://www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf, accessed 26 January 2016.

[5] Average GDP data for the period 2010-2014 was used in the regression analyses and reported in Table 3. We also conducted an additional regression analysis by substituting for the average GDP data with GDP data from 2011. The results are consistent with those reported in Table 3. Hence, it can be concluded that using either average GDP data for the years just prior to and

Among firm-level controls, the number of network contacts was measured by the total number of categories of network contact considered by interviewees as key sources of assistance for their firm's internationalization. Some studies (e.g. Fernhaber & Li, 2013; Park, LiPuma, & Prange, 2015) suggest that the greater number of network contacts can facilitate and support internationalization activities of SMEs, especially for those entrepreneurs with limited or no previous international business experience. However, this effect was not found by Felzensztein, Ciravegna, Robson, and Amorós (2015). Firm size has also been shown in previous studies (e.g. Bonaccorsi, 1992; Chetty et al., 2014) to influence internationalization decisions and the speed of the internationalization process suggesting the premise that larger firms tend to have a greater capacity to adopt more resource-consuming strategies. A firm's international experience was measured by the number of years during which a firm had been engaged in sales to foreign markets (Child et al., 2017). The accumulation of international market knowledge helps mitigate the level of perceived risk associated with further international expansion and could thus encourage entrepreneurs to increase the range/scope of foreign market entries and to increase international revenues through more effective sales efforts (Johanson & Vahlne, 1977; Prashantham & Young, 2011). Accordingly, they could potentially affect the speed of deepening and geographic diversification. Research on the speed of internationalization of family-owned firms is controversial. Some authors argue that they internationalize later and slower (see review by Pukall & Calabrò, 2014), while others suggest that family firms are fast internationalizers (Hennart, Majocchi, & Forlani, 2017; Marinova & Marinov, 2017). In the sample, 51 (28.3%) of the firms were family owned.[6]

4. Findings

Table 2 presents the means, standard deviations and correlation coefficients of the study variables. Based on Field (2013), the Phi coefficient was used to estimate the strength of association between two binary variables and Cramer's V was used to assess the correlation between types of innovation and binary variables. Biserial correlation was used to estimate the strength of associations between binary and continuous variables (ibid). None of the correlations between independent variables exceed 0.43. We further checked for possible multicollinearity. All the variance inflation factor values were below the suggested threshold of 10 (Hair, Black, Babin, & Anderson, 2009).[7] The results suggest that multicollinearity was not a concern in this paper. We can conclude that the correlations among the independent variables did not affect our results.

4.1. Test of hypotheses

Considering the hypotheses of this study, we conducted a series of ordinary least squares regressions and the results are shown in Table 3.[8] Model 2 shows that the earliness of internationalization was positively related to SME entrepreneurs' international business experience (β = 0.24, p < 0.001), their perception of opportunities abroad (β = 0.27, p < 0.001) and their commitment towards ambidextrous innovation strategy (β = 0.17, p < 0.05). Their orientation towards differentiation vis-à-vis competitors, R&D intensity, and exploratory innovation strategy were not significant as evidenced in Model 2. These findings provide full support for H1a, H2a, and H5.2a, but not for H3a, H4a, and H5.1a.

Model 4 shows that the speed of deepening was positively associated with SME entrepreneurs' international business experience (β = 0.17, p < 0.05), and their orientation towards differentiation (β = 0.15, p < 0.05), R&D commitment (β = 0.17, p < 0.05), and an exploratory innovation strategy (β = 0.16, p < 0.05). The perception of opportunities abroad and ambidextrous innovation were not significant. These results demonstrate full support for H1b, H3b, H4b, H5.1b, but not for H2b and H5.2b.

As shown in Model 6, the speed of diversifying into different geographic regions was positively related to SME entrepreneurs' orientation towards differentiation vis-à-vis competitors (β = 0.16, p < 0.05), thus confirming H3c only. H1c, H2c, H4c, H5.1c, and H5.2c are rejected as the variables of entrepreneurs' international business experience, perception of opportunities abroad, the strategies of exploration, ambidextrous innovation and R&D intensity were not significant.

The above findings illustrate that each dimension of internationalization speed is different in nature and predicted by a different set of antecedents. Hence, we have empirically validated the multidimensional concept of internationalization speed. There is another method suggested by Hilmersson et al. (2017: 23) to further validate the multidimensional concept, i.e. by "examining the interrelatedness between different temporal dimensions". As shown in Table 2, earliness is positively correlated with speed of deepening (r = 0.46) and geographic diversification (r = 0.39) albeit with a limited amount of common variance. To further corroborate this finding, we followed Hilmersson et al. (2017) to treat earliness as an independent variable along with other predictors in the analysis of speed of deepening and geographic diversification, respectively. Earliness was found to be a significant predictor in both models.[9] This is in line with the born global thesis that early internationalization boosts the speed of further internationalization (Autio, Sapienza, & Almeida, 2000).

Moreover, Models 5 and 6 show that SMEs from developing economies are more likely to engage in higher speed of geographic diversification. A sub-sample analysis indicates that among developing economy SMEs [Adjusted R^2 of the model = 0.33, F = 4.50 (p < 0.001)], speed of geographic diversification was predicted only by entrepreneurs' orientation towards differentiation vis-à-vis competitors (β = 0.25, p < 0.01). The implication of this will be further discussed in Section 5.1. As to other control variables, domestic market size and family ownership were significant in Model 1 where only control variables were included. Models 1–4 show that firm size was significantly negatively related to the earliness and speed of deepening, contrary to the findings of some previous studies. Models 3–6 show that the international experience of firm was significant and the positive coefficients of the squared terms suggest that the relationship is curved and U-shaped.[10] This implies that speed of deepening and speed of

(*footnote continued*)
during the study period rather than the GDP data from the year before the data collection started does not affect the results of regression and hypothesis testing.

[6] An additional 21 firms (11.7% of the sample) were wholly-owned owned by an individual and not classified as family-owned. The other categories of ownership were group of non-family shareholders; dispersed shareholding; venture capital/private equity; university; cooperative/collective, government authority.

[7] VIF values ranged from 1.03 to 1.84 in the model of earliness, from 1.04 to 8.23 in the model of speed of deepening, and from 1.04 to 8.35 in the model of speed of geographic diversification.

[8] Due to non-availability of data in one firm on prior international experience of decision-makers, in one firm on the speed of geographic diversification, in one firm on the number of network contacts, and in two firms on the number of R&D staff, the N for the analyses of earliness and speed of deepening in Table 3 is 176. The N for the analysis of speed of geographic diversification is 175.

(*footnote continued*)

[9] Earliness was significantly (β = 0.342, p < 0.001) associated with the speed of deepening [Adjusted R^2 of the model = 0.38, F = 8.73 (p < 0.001)]. It was significantly (β = 0.34, p < 0.001) associated with the speed of geographic diversification [Adjusted R^2 of the model = 0.31, F = 6.57 (p < 0.001)]. Due to limitations of paper length, the results are available upon request from the first author.

[10] The scatterplot of firm international experience versus speed of deepening indicates a non-linear relationship. The scatterplot of firm international

Table 2
Descriptive statistics and correlations.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1													
2	.46**	1												
3	.39**	.65**	1											
4	.34**	.29**	.18*	1										
5	.24**	.14	.04	−.02	1									
6	.05	.16*	.18*	.07	.04	1								
7	.26**	.27**	.16	.33**	.04	.07	1							
8	.32**	.32**	.17*	.24**	.01	.01	.39**	1						
9	.03	.02	.21**	−.09	.09	.03	.07	−.39**	1					
10	.13	−.04	.16*	.08	−.20**	−.04	.17*	.03	.41**	1				
11	.00	.01	−.02	.05	.09	−.03	.13	.24**	−.21**	.06	1			
12	−.28**	−.31**	−.13	−.06	−.02	−.04	.02	−.43**	.39**	.35**	−.03	1		
13	−.22**	−.36**	−.35**	−.13	−.08	−.08	−.19*	−.30**	−.10	−.13	−.09	.34**	1	
14	−.32**	−.12	−.14	−.18*	−.02	.00	.19*	−.32**	.09	−.10	−.17*	.25**	.28**	1
Mean	7.08	6.10	0.30	0.49	0.62	0.04	1.51	1.36	0.50	2.34	4.38	3.77	12.24	0.28
S.D.	3.88	8.04	0.48	0.50	0.49	0.19	0.68	0.38	0.50	2.88	2.53	1.24	11.33	0.45

Note: 1, earliness; 2, speed of deepening; 3, speed of geographic diversification; 4, international business experience of entrepreneur; 5, perception of opportunities abroad; 6, orientation towards differentiation; 7, types of innovation; 8, R&D intensity (log); 9, developing economy; 10, domestic market size; 11, network contacts; 12, firm size (log); 13, firm international experience; 14, family ownership.

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

Table 3
OLS regression results: Speed of internationalization.

Dependent variables	Earliness		Speed of deepening		Speed of geographic diversification	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control variables						
Developing economy	0.11	0.13	0.09	0.17*	0.21*	0.27**
	(.189)	(.108)	(.286)	(.049)	(.011)	(.003)
Domestic market size (GDP)	0.18*	0.15†	−0.08	−0.11	0.05	−0.01
	(.023)	(.065)	(.336)	(.198)	(.498)	(.913)
Number of network contacts	−0.02	−0.08	0.01	−0.01	−0.00	−0.01
	(.797)	(.236)	(.868)	(.854)	(.961)	(.897)
Firm size (log)	−0.34***	−0.31***	−0.18*	−0.17*	−0.09	−0.07
	(.000)	(.000)	(.042)	(.050)	(.328)	(.456)
Family ownership	−0.22**	−0.12†	0.02	0.10	−0.04	0.01
	(.004)	(.078)	(.826)	(.176)	(.638)	(.869)
Firm international experience			−0.82***	−0.61***	−0.91***	−0.84***
			(.000)	(.001)	(.000)	(.000)
Firm international experience^2			0.56**	0.44**	0.68***	0.65***
			(.002)	(.010)	(.000)	(.000)
Entrepreneur characteristics						
International business experience		0.24***		0.17*		0.07
		(.000)		(.014)		(.328)
Perception of opportunities abroad		0.27***		0.09		−0.01
		(.000)		(.186)		(.922)
Orientation towards differentiation		0.06		0.15*		0.16*
		(.344)		(.022)		(.019)
Exploratory innovation#		0.07		0.16*		0.05
		(.339)		(.030)		(.548)
Ambidextrous innovation#		0.17*		0.10		0.11
		(.028)		(.193)		(.174)
R&D intensity (log)		0.12		0.17*		0.11
		(.155)		(.049)		(.245)
F value	8.15***	9.44***	6.96***	7.04***	7.54***	5.21***
R^2	0.19	0.39	0.22	0.36	0.24	0.30
Adjusted R^2	0.17	0.35	0.19	0.31	0.21	0.24
N	176	176	176	176	175	175

exploitative innovation as the reference category. Standardized coefficients (βs) were reported with *P* values in parentheses. ***p ≤ 0.001; **p ≤ 0.01; *p ≤ 0.05; † p ≤ 0.10.

(*footnote continued*)
experience versus speed of geographic diversification also shows a non-linear relationship. To take into account of these non-linear relationships, the square of firm international experience was included in the regression analyses.

geographic diversification decrease when SMEs' accumulation of international market knowledge is low. SMEs have to unlearn established routines, such as those on intra-regional markets, in order to overcome inter-regional liability of foreignness and to increase speed of geographic diversification. Overall, the number of network contacts does not appear as important as was expected and predicted by some

previous studies.

4.2. Tests of robustness

We took several actions to increase confidence in our results (See Appendix 2). First, following previous studies (e.g. Thornhill, 2006), we used industry membership as an alternative measure for R&D intensity. Based on Bell et al.'s (2003, 2004) threefold distinction between traditional, knowledge-intensive and knowledge-based SMEs, industry membership was categorized in terms of the degree that advanced knowledge plays in their activities (clothing = 1; software = 2; biotech = 3). All the coefficients of main effects (Models 2, 4, 6) shown in Appendix 2 closely correspond to those in Table 3 and provide consistent support for the hypotheses, except that the proxy measure was non-significant in the speed of deepening.[11]

Second, we also tested whether or not the results remain robust after the inclusion of additional controls. A commonly studied driver of early internationalization is entrepreneurs' proactivity (Cavusgil & Knight, 2015).[12] After the inclusion of proactivity as a control variable, the results of main effects shown in Appendix 2, Models 8, 10, 12, were consistent with those reported in Table 3 and provide consistent support for the hypotheses.

Third, we carried out two additional robustness checks.[13] To minimize possible outlier effects, we transformed all the continuous variables in Table 3 into logarithmic form and re-estimated the models. The results (Models 14, 16, 18) reported in Appendix 2 suggest that our main findings are statistically sound and robust. Moreover, to test if our main results are affected by unobserved industry heterogeneity, we re-estimated the models by considering sampled SMEs from only two sectors (more traditional and low-tech clothing vs. more innovative and high-tech biotech). The results (Models 20, 22, 24, Appendix 2) are again broadly in line with those reported in Table 3.[14] Overall the robustness of our models is therefore deemed satisfactory.

5. Conclusions

5.1. Discussion

This paper, adopting an entrepreneur-centered approach, set out to examine the influence of entrepreneurs' characteristics (international business experience, perception of foreign market opportunities, orientation towards differentiation and commitment to innovation strategies) on the multiple dimensions of SME internationalization speed. It offers several contributions to the literature. First, it informs existing debate (Casillas & Acedo, 2013) by providing additional empirical evidence for the relevance of a multidimensional perspective on internationalization speed. More specifically, it extends the studies of Chetty et al. (2014), Hilmersson and Johanson (2016), and Hilmersson et al. (2017) by paying specific attention to the role of entrepreneurs which was somewhat overlooked in these studies. Our findings suggest that earliness, speed of deepening, and speed of geographic diversification can be viewed as three different strategic alternatives, although they are not mutually exclusive. As Table 3 shows each dimension of internationalization speed is predicted by a different set of factors, indicating how each choice is shaped by entrepreneurial perception, thinking and preference. Additionally, given that previous studies (e.g. Acedo & Jones, 2007) have generally focused on the impact of entrepreneurs on just one dimension of internationalization speed – earliness – this study advances knowledge by demonstrating how entrepreneurs might influence other dimensions of speed including deepening and geographic diversification. For example, SME entrepreneurs' perception of opportunities abroad predicted early internationalization but not speed of deepening and speed of geographic diversification. The latter two dimensions were predicted by entrepreneurs' orientation towards differentiation to bolster firm competitiveness. This contrasting finding suggests that although entrepreneurs may initiate internationalization because they perceive foreign market opportunities to be more attractive than domestic ones, some may not be motivated to exploit further internationalization opportunities because they do not see these as an opportunity to differentiate themselves from their competitors. It appears that the decision of increasing either speed of deepening or speed of geographic diversification is a deliberate strategic choice of SME entrepreneurs, especially if they think doing so will enable them to obtain reputational benefits and learning opportunities which could potentially be useful for defending their firm competitive advantages.

Moreover, our findings are consistent with the argument that entrepreneurs' international business experience induces firm growth through internationalization and shapes the direction of that growth (Tan & Meyer, 2010; Zucchella et al., 2007). The experiential knowledge of entrepreneurs compensates for the lack of organizational experience in internationalization at the time of founding, prepares them for capitalizing on the learning advantages of newness and helps to alleviate the liabilities of foreignness and newness. Although the capacities of SME decision makers at the time of founding are likely to set a limit to the extent of internationalization, they may enhance those capabilities by focusing experiential learning over time from a specific market or markets within the same region. In doing so, they enhance early internationalizing firms' chance of survival because intra-regional liability of foreignness may be lower than inter-regional liability of foreignness (Sleuwaegen & Onkelinx, 2014), which enables entrepreneurs to increase the proportion of international revenues through more effective sales efforts in extant markets.

Our findings on entrepreneurs' international business experience and firm international experience provide preliminary evidence in support of Prashantham and Young's conceptual argument (2011) that specific market knowledge in the form of experiential knowledge needs to be transformed into objective and neutral market knowledge, so that market knowledge can be easily transferred and applied, which in turn facilitates the speed of post-entry. More specifically, our results imply that although entrepreneurs' experiential knowledge is beneficial for increasing speed of deepening, they need to develop organizational mechanisms to facilitate the acquisition of market knowledge and to transform individualized experiential knowledge into an explicit and objective form. The procedure or routine established would provide guidance on how to do things in similar situations. On the other hand, our results also imply that the international experience of firms in a specific market region or home region may inhibit speed of geographic diversification as the procedure or routine that has been developed over time for operating in SMEs' home region or a narrow set of markets has become embedded and hence inflexible. To increase the speed of geographic diversification, firms need to unlearn or adjust their established country-specific or intra-regional routines or procedures for operating in other regional markets.

The results of our study suggest that in order to predict speed of internationalization along various dimensions, it is important to take account not just of an SME's commitment to innovation, as indicated by

[11] Due to non-availability of data in one firm on prior international business experience of SME entrepreneurs, and in one firm on the speed of geographic diversification, the N for the analyses (Models 1-4) of earliness and speed of deepening is 178. The N for the analysis (Models 5-6) of speed of geographic diversification is 177.

[12] Proactivity is a binary variable constructed from replies to a question on how the SME's internationalization started. The firm was classified as proactive if its entrepreneur had taken the initiative to find international customers as opposed to reacting to a serendipitous approach.

[13] We thank an anonymous referee for suggesting these alternative robustness tests.

[14] Minor exceptions were that ambidexterity is non-significant in the model for earliness whereas pure exploration is significant in the model for speed of geographical diversification.

its R&D intensity, but also the type of innovation activity that is undertaken. In particular, there needs to be consideration of whether it is applied mainly to exploration, or exploitation, or both. Previous studies (e.g. Hughes et al., 2010; Martin et al., 2017) only address the consequences of different types of innovation for SME performance. They offer limited explanation of how the nuances of exploratory and exploitative innovation will predict internationalization speed. The present study contributes to this gap in knowledge by showing that it is important to distinguish entrepreneurial orientations towards different types of innovation strategy because they have varying effects on the different dimensions of internationalization speed. Exploratory innovation strategies help explain speed of deepening (increasing the proportion of international sales to total sales) but not speed of geographic diversification.

There are several possible explanations for this finding which deserve to be investigated further. One is that entrepreneurs' commitment to exploration heavily backed by R&D enables their firms to capture a large share of a few targeted big foreign markets (such as the USA), and that this is sufficient to satisfy their performance aspirations. Another is that in view of the limited resources typical of SMEs, entrepreneurs' choice of engaging in expensive exploratory innovation may well be highly focused and specific to the needs of certain foreign markets only. Ambidextrous innovation strategies only contribute to early internationalization but not to other dimensions of internationalization speed. These results suggest that entrepreneurs' commitment to ambidextrous innovation may help their firm to internationalize early and gain a first-mover advantage, but that ambidexterity only provides a temporary advantage.

Overall, our study underscores the influence of entrepreneurs on their choice of timing and speed of internationalization. Innovation is a critical component of SME international business models (Child et al., 2017). Entrepreneurs' commitment to innovation and the type of innovation pursued reflect their value-creation logics and therefore has important implications for the design of business models which could lead to rapid internationalization of their firm (Hennart, 2014). Ambidexterity which incorporates a high level of exploitative product adaptation may offer quick initial foreign market entry but not sustained competitive advantage once other competing firms follow suit. To sustain firm competitive advantage during subsequent rapid internationalization, SMEs entrepreneurs need to focus more on exploratory innovation strategies aimed at developing or enhancing firm innovation capability which is often valuable and more costly to replicate by competitors, seen from a resource-based view.

Another potential contribution of this study follows from the inclusion of SMEs from both developed and developing economies. Much of the literature on internationalization speed derived from studies of high-tech firms in developed economies and they mainly suggest that speed is predicted by firm innovation strategies (Musteen et al., 2014). The applicability of research findings from developed economy SMEs to developing economy SMEs may be problematic because of institutional and economic differences between the two types of economy (Kiss et al., 2012). Our study shows that developing economy SMEs are more likely to follow a rapid internationalization path into different geographic regions. The sub-sample analysis discussed in Section 4 implies that despite liability of origin considerations, developing economy SMEs can achieve faster international geographic diversification when their entrepreneurs aim to increase differentiation through obtaining exporter status and leveraging the learning advantages of newness. This finding highlights the necessity of adopting an entrepreneur-centered perspective in the study of internationalization speed. This perspective acknowledges the importance of decision-makers' perceptions and purposes, while allowing for the possibility that prevailing contextual conditions may influence the entrepreneur's decisions.

The results of the study offer a useful framework of reference for entrepreneurs as well as their advisors when making plans for international expansion. The multidimensional character of internationalization speed should encourage practitioners to assess different internationalization paths in relation to their circumstances including their innovation strategies, their strategic objectives, and what they have learned from previous experience. For instance, as our findings suggest, a higher speed of deepening is more likely to be pursued by SME entrepreneurs who wish to increase differentiation from competitors through internationalization. Exploratory innovation is important to the achievement of fast international growth. This implies that, for SMEs that plan to increase the share of their international sales rapidly, they have to follow an innovation-based internationalization path by developing the capability for undertaking exploratory innovation.

5.2. Limitations and avenues for future research

Despite its merits, this study has some limitations worth noting. First, the sample includes SMEs in specific contexts: from clothing, software, and biotech industries in three developed and three developing economies; therefore caution should be expressed in generalizing our findings to other types of industry or economy. Second, although we cautiously reviewed relevant research before selecting explanatory variables with reference to the entrepreneur-centered view that informs them, other entrepreneurial characteristics, such as personality, risk propensity, self-efficacy, and fear of failure (Shepherd & Patzelt, 2018) might also influence entrepreneurs' choice of internationalization speed and hence deserve further attention in future research. Third, as illustrated in a review of strategic decision-making by Shepherd and Rudd (2014), the context of firms' strategic initiatives incorporates more perspectives than the ones we selected. In addition to our focus on the entrepreneurs' characteristics, these may include, for example, an environmental perspective which takes into account both home and host country contexts. Moreover, the association of smaller firm size (an aspect of firm context) with earliness of internationalization and faster speed of deepening was unexpected in the light of previous research, and deserves further investigation. Therefore, a fruitful avenue for future studies would be to expand our research model to consider other aspects of an SME's context and, importantly, to investigate whether and how entrepreneurial views about internationalization are formed with contextual factors consciously taken into account. The incorporation of more environmental and cognitive variables in future research could assist a better understanding of the role of strategic choices in internationalization speed.

In addition to these broad limitations, the results of this paper and their suggested interpretation have identified specific fruitful avenues for further research. First, this study follows Chetty et al. (2014), Hilmersson and Johanson (2016), and Hilmersson et al. (2017) in operationalizing internationalization speed as a mean speed. However, some firms may experience a slowdown/acceleration in internationalization since their foundation or a change of speed after the initial internationalization phase. Given the cross-sectional nature of our study, the post-entry dynamics of internationalization speed would be better studied through a longitudinal research design, which enables the recording of critical events reflecting the change of speed as well as the maximum or minimum speed of internationalization at particular points in time. Second, our assessments of both entrepreneur and firm international experience could be refined. In both instances, measures of the quality and relevance of such experience should enhance our understanding of its impact on internationalization speed. For example, was an entrepreneur's international business experience in the current firm's industry and was it successful? We operationalized firm international experience as the number of years since the firm first made any sales abroad. Future research could differentiate between the number of years of operating in intra-regional markets and the number of years of operating in inter-regional markets and examine their influence on speed of deepening and speed of geographic diversification. Third, the quality of internationalization achieved as well as the overall financial performance of SMEs may affect speed. Hence, future research could

consider the inclusion of SMEs financial performance not just as an outcome but also as a potential conditioning/moderating variable, especially in a longitudinal study. Finally, as already noted, the country context in which SME entrepreneurs started the business matters. Contextual influences on internationalization speed require both more extensive (e.g. wider range of industries & home economies) and intensive (e.g. specific contextual features) examination.

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Appendix 1. Illustrations of SME entrepreneurs' reasons for internationalization

First-order theme	Second-order theme	Illustrative quotations
Statements showing what interviewees described as their reason for entering foreign markets	Perception of opportunities abroad	In India, we have lots of firms producing cotton clothing so the opportunities in domestic market are very limited. Foreign companies normally give large orders and their margins are much higher than domestic market.
		The Egyptian market is unfortunately declining. Therefore, we need an export market.
		Huge potential. The size of the market is considerably bigger than the local market.
	Orientation towards differentiation vis-à-vis competitors	The domestic market is declining and factories are accepting lower profit rates to survive. Since I am working with tourist markets, I was encouraged [by these clients] and inclined to export which gets me distinguished from others.
		Doing business abroad can broaden our horizons, helping us with our differentiation in the market.
		Our market is the global digital economy itself, it's huge…If we don't do it [international expansion] then somebody somewhere else is going to come and do something similar, or try to. So I think we've got to seize the day, to a certain extent, and go and expand. If we don't compete globally then we're not going to be able to compete at all, so we just have to start the journey.

Appendix 2. Test of Robustness

Dependent variables	Earliness		Speed of deepening		Speed of geographic diversification	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control variables						
Developing economy	0.10	0.07	0.09	0.11	0.21*	0.23**
	(.236)	(.337)	(.287)	(.168)	(.011)	(.006)
Domestic market size (GDP)	0.19*	0.19*	−0.07	−0.06	0.06	0.02
	(.021)	(.016)	(.392)	(.471)	(.454)	(.796)
Number of network contacts	−0.03	−0.08	0.01	0.00	−0.01	−0.00
	(.696)	(.223)	(.919)	(.972)	(.932)	(.981)
Firm size (log)	−0.33***	−0.33***	−0.18*	−0.22**	−0.09	−0.10
	(.000)	(.000)	(.042)	(.008)	(.328)	(.248)
Family ownership	−0.23**	−0.14*	0.01	0.06	−0.04	−0.01
	(.002)	(.040)	(.873)	(.442)	(.607)	(.892)
Firm international experience			−0.85***	−0.68***	−0.94***	−0.89***
			(.000)	(.000)	(.000)	(.000)
Firm international experience^2			0.59***	0.48**	0.71***	0.69***
			(.001)	(.006)	(.000)	(.000)
Entrepreneur characteristics						
International business experience		0.24***		0.17*		0.07
		(.000)		(.015)		(.327)
Perception of opportunities abroad		0.28***		0.11		0.01
		(.000)		(.109)		(.924)
Orientation towards differentiation		0.06		0.15*		0.16*
		(.374)		(.024)		(.020)
Exploratory innovation#		0.09		0.22**		0.08
		(.216)		(.003)		(.295)
Ambidextrous innovation#		0.16*		0.12		0.12

		(.024)		(.107)		(.126)
Industry membership		0.02		−0.07		−0.03
		(.816)		(.368)		(.736)
F value	8.13***	8.92***	7.08***	6.62***	7.83***	5.19***
R^2	0.19	0.37	0.23	0.34	0.24	0.29
Adjusted R^2	0.17	0.33	0.19	0.29	0.21	0.24
N	178	178	178	178	177	177
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Control variables						
Developing economy	0.12	0.13	0.10	0.17*	0.21**	0.27**
	(.133)	(.103)	(.213)	(.048)	(.010)	(.003)
Domestic market size (GDP)	0.18*	0.15†	−0.08	−0.11	0.05	−0.01
	(.023)	(.065)	(.324)	(.196)	(.506)	(.914)
Number of network contacts	−0.06	−0.09	−0.02	−0.02	−0.01	−0.01
	(.413)	(.193)	(.746)	(.771)	(.866)	(.912)
Firm size (log)	−0.38***	−0.32***	−0.21*	−0.18*	−0.09	−0.07
	(.000)	(.000)	(.019)	(.045)	(.296)	(.480)
Family ownership	−0.17*	−0.11	0.05	0.10	−0.03	0.01
	(.024)	(.117)	(.494)	(.156)	(.741)	(.885)
Firm international experience			−0.83***	−0.62***	−0.91***	−0.84***
			(.000)	(.001)	(.000)	(.000)
Firm international experience^2			0.58***	0.44**	0.69***	0.65***
			(.001)	(.009)	(.000)	(.000)
Proactivity	0.16*	0.05	0.13†	0.03	0.03	−0.01
	(.045)	(.525)	(.082)	(.455)	(.658)	(.951)
Entrepreneur characteristics						
International business experience		0.24***		0.17*		0.07
		(.000)		(.017)		(.328)
Perception of opportunities abroad		0.26***		0.09		−0.01
		(.000)		(.211)		(.928)
Orientation towards differentiation		0.06		0.15*		0.16*
		(.339)		(.022)		(.019)
Exploratory innovation#		0.07		0.16*		0.05
		(.358)		(.033)		(.548)
Ambidextrous innovation#		0.16*		0.10		0.11
		(.027)		(.186)		(.177)
R&D intensity (log)		0.11		0.16†		0.11
		(.206)		(.068)		(.252)
F value	7.60***	8.66***	6.55***	6.52***	6.59***	4.81***
R^2	0.21	0.39	0.24	0.36	0.24	0.30
Adjusted R^2	0.19	0.34	0.20	0.31	0.20	0.23
N	176	176	176	176	175	175
	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Control variables						
Developing economy	0.16*	0.18*	0.05	0.11	0.18*	0.21**
	(.041)	(.016)	(.567)	(.175)	(.021)	(.009)
Domestic market size **(log)**	0.13†	0.09	−0.01	−0.03	0.07	0.04
	(.071)	(.245)	(.927)	(.729)	(.291)	(.638)
Number of network contacts **(log)**	0.03	−0.03	−0.01	−0.03	−0.03	−0.04
	(.653)	(.661)	(.124)	(.648)	(.660)	(.605)
Firm size (log)	−0.33***	−0.29***	−0.20*	−0.19*	−0.06	−0.05
	(.000)	(.000)	(.021)	(.022)	(.502)	(.541)
Family ownership	−0.23**	−0.13†	0.04	0.12†	−0.01	0.04
	(.002)	(.055)	(.548)	(.091)	(.871)	(.606)
Firm international experience **(log)**			−0.39***	−0.29***	−0.44***	−0.41***
			(.000)	(.000)	(.000)	(.000)
Entrepreneur characteristics						
International business experience		0.24***		0.19**		0.09
		(.000)		(.006)		(.201)
Perception of opportunities abroad		0.25***		0.11		0.00
		(.000)		(.107)		(.964)
Orientation towards differentiation		0.07		0.14*		0.15*
		(.283)		(.033)		(.027)
Exploratory innovation#		0.06		0.16*		0.03
		(.387)		(.030)		(.686)

Ambidextrous innovation#		0.18*		0.07		0.09
		(.016)		(.327)		(.228)
R&D intensity (log)		0.12		0.14		0.07
		(.143)		(.104)		(.403)
F value	7.73***	9.02***	8.43***	7.76***	10.49***	6.40***
R^2	0.18	0.38	0.23	0.36	0.27	0.32
Adjusted R^2	0.16	0.33	0.20	0.32	0.25	0.27
N	176	176	176	176	175	175
	Model 19	Model 20	Model 21	Model 22	Model 23	Model 24
Control variables						
Developing economy	0.84	0.05	0.16	0.12	0.27*	0.27**
	(.410)	(.586)	(.119)	(.212)	(.011)	(.010)
Domestic market size (GDP)	0.24*	0.25*	−0.10	−0.01	0.01	−0.01
	(.012)	(.019)	(.301)	(.913)	(.946)	(.963)
Number of network contacts	−0.04	−0.10	0.03	0.07	−0.01	0.04
	(.698)	(.250)	(.733)	(.375)	(.941)	(.635)
Firm size (log)	−0.31**	−0.23*	−0.21†	−0.22*	−0.07	−0.10
	(.002)	(.020)	(.052)	(.028)	(.505)	(.362)
Family ownership	−0.27**	−0.12	−0.04	0.12	−0.09	0.05
	(.003)	(.167)	(.646)	(.151)	(.348)	(.585)
Firm international experience			−0.94***	−0.48*	−0.98***	−0.67**
			(.000)	(.035)	(.000)	(.007)
Firm international experience^2			0.69**	0.34	0.77***	0.54*
			(.002)	(.106)	(.001)	(.019)
Entrepreneur characteristics						
International business experience		0.21**		0.22**		0.15†
		(.010)		(.010)		(.089)
Perception of opportunities abroad		0.32***		0.09		−0.08
		(.000)		(.221)		(.304)
Orientation towards differentiation		0.10		0.36***		0.33***
		(.191)		(.000)		(.000)
Exploratory innovation#		0.07		0.22*		0.21*
		(.427)		(.013)		(.028)
Ambidextrous innovation#		0.11		0.01		0.11
		(.225)		(.884)		(.281)
R&D intensity (log)		0.16		0.09		0.06
		(.138)		(.392)		(.585)
F value	6.62***	7.87***	5.71***	7.69***	5.32***	5.76***
R^2	0.23	0.45	0.27	0.49	0.25	0.42
Adjusted R^2	0.19	0.39	0.22	0.43	0.21	0.35
N	117	117	117	117	117	117

exploitative innovation as the reference category. Standardized coefficients (βs) were reported with *P* values in parentheses. ***p ≤ 0.001; **p ≤ 0.01; *p ≤ 0.05; † p ≤ 0.10.

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Linda Hsieh is a Senior Lecturer at SOAS University of London. Her research on internationalization of firms has been published in Journal of World Business, Journal of International Management, and Management International Review.

John Child is Professor of Commerce at the University of Birmingham. His papers have appeared in many international journals. Among his 24 books, *Corporate Co-evolution*, co-authored with Suzana Rodrigues, won the 2009 Terry Book Award of the Academy of Management. His current interests focus on the internationalization of SMEs, and hierarchy in organizations and society.

Rose Narooz is a Lecturer in International Business and Enterprise at Adam Smith Business School, University of Glasgow, UK. Her research focuses on international entrepreneurship, international business and social entrepreneurship.

Saïd Elbanna is Professor of Strategic Management at Qatar University. He is author of more than 35 journal articles, ranging from decision-making to strategic planning and internationalization of SMEs.

Joanna Karmowska is a Senior Lecturer at Oxford Brookes University, UK. Her research interests focus on organizational temporariness, creative organisations and SME internationalization. Her work has been published in journals such as the British Journal of Management, Journal of World Business, Industrial Relations Journal and Urban Studies.

Svetla Marinova is Professor of International Business and International Marketing at Aalborg University, Denmark. She is author and editor of 9 books and more than 60 articles ranging from firm internationalization and the role of institutions to international marketing, strategy and entrepreneurship in emerging and transition economies.

Pushyarag Puthusserry is a Senior Lecturer in Strategy and International Business at the University of Kent. His research focuses on strategy, international entrepreneurship and international business.

Terence Tsai is an Associate Professor of Management at China Europe International Business School. His research interests include firm sustainability strategies and internationalization of Chinese firms.

Yunlu Zhang is a Research Associate at China Europe International Business School and Chief Strategy Officer at Landsea Group, a Chinese real estate conglomerate. Her research focuses on the internationalization strategies of Chinese SMEs.