

Article



The role of prior domestic experience and prior shared experience in young firm internationalization

International Small Business Journal:
Researching Entrepreneurship
2018, Vol. 36(3) 265–284
© The Author(s) 2017
Reprints and permissions:
sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/0266242617733315
journals.sagepub.com/home/isb



Johan Bruneel

KU Leuven, Belgium; ETH Zurich, Switzerland

Bart Clarysse

ETH Zurich, Switzerland; UGent, Belgium

Erkko Autio

Imperial College Business School, UK

Abstract

This article examines how the prior domestic experience of a founding team influences an entrepreneurial firm's ability to grow international sales. We argue that such experience leads to domestic mind-sets, which limit a team's ability to perceive and interpret international stimuli and impact negatively upon international sales growth. Previous studies have overlooked the shared component of such experience. Prior shared experience allows ventures to learn faster from internationalization as a result of team familiarity and transactive memory systems. In uncertain environments, such as geographically distant regions, ventures that have founding teams with prior shared experience are able to outperform those without such experience.

Keywords

environmental uncertainty, international entrepreneurship, international sales growth, prior domestic experience

Introduction

The international entrepreneurship literature emphasizes the role of entrepreneurs in propelling new venture internationalization (Oviatt and McDougall, 1994). The previous international experience of the founder and, by extension, the founding team is central to this literature (Manolova

Corresponding author:

Johan Bruneel, KU Leuven Kulak, E. Sabbelaan, 53, 8500 Kortrijk, Belgium.
Email: johan.bruneel@kuleuven-kulak.be

et al., 2002). The international experience of founding teams enables new ventures to accelerate the internationalization process as it increases understanding of the benefits of international markets and how to conduct international activities (Bloodgood et al., 1996; Bruneel et al., 2010; Park et al., 2015; Reuber and Fischer, 1997; Shrader et al., 2000). While the impact of international experience prior to starting a venture is relatively well understood in the international entrepreneurship literature, the mechanisms through which other forms of prior experience of the founding team have impact upon international sales growth are not. This omission is surprising since the literature on the cognitive foundations of entrepreneurship shows that different forms of prior experience may have different, and even opposite, impacts on new venture performance (Fern et al., 2012; Furr et al., 2012; Gruber et al., 2013). We address this gap in the international entrepreneurship literature by analysing the specific role of prior domestic experience (PDE) after a firm is founded.

We have chosen to explore PDE for the following reasons. First, international entrepreneurship scholars argue that new ventures who wait longer before starting to internationalize face the problem of 'unlearning' (Autio et al., 2000). While operating domestically, a firm develops routines and knowledge idiosyncratic to that specific context. Over time, these create organizational rigidity and inertia, thereby hindering the new venture's ability to adapt successfully to foreign markets (Autio et al., 2000). Initiating internationalization early on provides entrepreneurial firms with learning advantages of newness that enable them to adapt and compete in foreign markets. However, the internationalization literature overlooks the fact that routines begin to develop even before the venture is founded. Founders bring their previous experiences to new ventures (Baron et al., 1999), and these experiences tend to determine venture behaviour long after start-up (Beckman, 2006). Drawing on the literature on the cognitive foundations of entrepreneurship, we argue that the domestic experience of the founding team prior to starting the company also leads to knowledge and procedures that create rigidities and must be 'unlearned'.

Second, the international entrepreneurship literature investigates empirically the advantages of prior international experience, while the literature on the cognitive foundations of entrepreneurship explores the theoretical mechanisms through which prior experience impacts upon post-founding decision making. However, both ignore the 'shared' aspect of prior experience. This omission is surprising as the team literature indicates significant advantages for founders who have shared experience before starting a new venture (Klotz et al., 2014). Empirical research shows that founders accumulate shared experience while working together in corporate and academic contexts before establishing new ventures (Knockaert et al., 2011; Phillips, 2002). This prior shared experience (PSE) triggers positive team dynamics and thus, constitutes a key resource in entrepreneurial firms (Foss et al., 2008). These positive team dynamics result from team cohesion and transactive memory systems. Shared experience enhances team cohesion, which improves team effectiveness in decision making (Ensley and Pearce, 2001). Transactive memory systems, which refer to a shared understanding of the location of knowledge and information within a team (Lewis, 2003), improve team performance (Huckman et al., 2009). In summary, although shared experience is an important concept in the literature on founding teams (for a review, see De Mol et al., 2015) and is deemed to have mainly positive impacts on team performance, the international entrepreneurship literature devotes limited attention to this type of prior experience in entrepreneurial firms.

We contribute to this gap by analysing how PDE and PSE influence the international sales growth of entrepreneurial firms. First, we propose that PDE negatively influences international sales growth due to domestically idiosyncratic templates and cognitive rigidity in teams, hindering adaptation to foreign markets. Second, we hypothesize that PSE moderates the direct positive effect of international experience (FIE) on international sales growth through its demonstrably

positive impact on team performance. Rather than having a direct effect on a firm's international sales growth, we argue that team cohesion and transactive memory systems in teams with PSE enable entrepreneurial firms to make more effective use of the international experience accumulated during internationalization. Third, we argue that these positive team dynamics, measured through PSE, play a larger role when the decision environment is more uncertain. In our context, we use the geographical scope (GS) of sales as a proxy for uncertainty. This measure captures the firm's level of uncertainty and complexity of internationalization due to geographical and cultural distance (Holmlund and Kock, 1998). Previous research has shown that uncertainty in the environmental context influences the effectiveness of founding team decisions (Hmieleski and Ensley, 2007).

We test our model with a longitudinal (10-year) dataset of young, technology-based ventures in Flanders, Belgium. We contribute theoretically to the international entrepreneurship literature by introducing insights from the literature on teams and on the cognitive foundations of entrepreneurship. Building on the learning-rigidity argument put forward in the literature on the cognitive foundations of entrepreneurship (Beckman, 2006; Fern et al., 2012; Furr et al., 2012; Gruber, 2010; Gruber et al., 2013), we argue that the founding team's PDE inhibits post-internationalization sales growth. We also show that it is important to appreciate the context in which decisions are taken in order to fully understand the impact of prior experience. We make a further theoretical contribution to the emerging literature on the cognitive foundations of entrepreneurship by showing that cognition may have beneficial effects on firm performance when developed during joint working experiences. This literature emphasizes that prior experience in one domain becomes a source of rigidity when individuals need to venture into a different domain (Gruber et al., 2013). We extend the learning-rigidity hypothesis by relaxing it to account for positive team dynamics resulting from sharing prior learning.

Theory and hypotheses

New ventures are not a 'tabula rasa': they are formed by individuals or teams who bring their routines into the new ventures, which continue to determine venture decision making long after the founders have left (Baron et al., 1999). The prior experience of founders has an immediate and long-lasting impact on the new venture's strategy and subsequent performance (Fern et al., 2012; Furr et al., 2012; Gruber et al., 2013; Mathias et al., 2015; Ogbonna and Harris, 2002). The emerging literature on the cognitive foundations of entrepreneurship analyses how different forms of pre-founding experience affect post-founding decisions. Beckman (2006) indicates that corporate ventures started by founders who have worked in a parent organization before starting a company are less innovative than those started by externals. Fern et al. (2012) explain that the founding team's prior industry knowledge affects its choice of product markets, as it tends to choose those in which it has experience. The authors also find that only founding teams with experience, in particular geographical markets, internationalize in those markets. Furr et al. (2012) distinguish between the founding team's 'intra-' and 'extra-domain' prior experience and indicate that in-depth experience in one domain strongly constrains the venture from innovating in others. Finally, Gruber et al. (2008, 2013) indicate that prior market experience becomes a knowledge corridor from which technology ventures have difficulty escaping after founding.

In line with the literature on the cognitive foundations of entrepreneurship, the international entrepreneurship literature explores the role of the founding team's prior international experience (FTIE) in fuelling the internationalization process of new ventures (Jones and Casulli, 2014; Mathews and Zander, 2007). Having prior international experience decreases the perception of uncertainty associated with going abroad because the founding team has knowledge of

international business activities. Founding teams with prior international experience can leverage this experience to accelerate the incremental development of organizational capabilities and routines in order to internationalize (Bruneel et al., 2010).

PDE and international sales growth of firms

The international entrepreneurship literature has overlooked the potential influence of the founding team's prior experience in the domestic market and how this may influence internationalization. We propose that PDE drives cognitive adjustments in the founding team (Nadkarni et al., 2011), which lead to rigidity that hinders the firm's ability to adapt its *current* business model to foreign markets (Carpenter et al., 2001). Such cognitive representations of action–outcome relationships take the form of rules of thumb and internally shared decision heuristics that encapsulate experiential insights into which information is important and what action the firm should undertake in order to accomplish a given goal (Bingham, 2009; Gavetti and Levinthal, 2000; Nadkarni and Narayanan, 2007). Hence, prior experience in the domestic market leads to habits, cognitions and behaviours that negatively influence firm performance when called upon in a different context (Dokko et al., 2009).

Therefore, the greater a founding team's PDE, the stronger the beliefs that the team is likely to hold regarding the 'do's and don'ts' of its business model, and the less willing and able they are likely to be to recognize the need to modify aspects of the model after entry to a foreign market (Barkema and Vermeulen, 1998). Since the entry to a foreign market challenges established beliefs in unpredictable and often subtle ways, domestic mind-sets induced by domestic learning may make such teams more likely to ignore, misinterpret or simply reject relevant feedback received in the foreign market (Carr et al., 2010; Nadkarni et al., 2011). Teams with extensive experience of working in the domestic market may become overly confident about their way of doing business (Barney et al., 1996), which may hinder them from making necessary changes when entering foreign markets. Such teams may be less effective in reaping the benefits of internationalization because their routines and knowledge stem from experiences in the domestic market. In support of this argument, O'Grady and Lane (1996) find a negative association between longer domestic experience and a firm's ability to learn about differences between domestic and foreign customers and about competition in foreign markets. In summary, we predict that

Hypothesis 1. A founding team's PDE will have a direct negative influence on the firm's international sales growth.

PSE and international sales growth of firms

The accumulation of experience leading to a domestic mind-set may also involve team activities. The literature on founding teams focuses explicitly on the shared component of working experience before starting a new venture (Gilbert et al., 2006; Klotz et al., 2014). Shared experience increases team cohesion and leads to transactive memory systems, which improve team performance (Ancona and Caldwell, 1992; Hollingshead, 2000). Teams with prior working experience are more cohesive and have greater trust than those without such experience (Goodstein and O'Reilly, 1988), which results in more and higher quality knowledge being shared between team members (McEvily et al., 2003). Brandon and Hollingshead (2004) define transactive memory systems as the 'shared division of cognitive labour with respect to the encoding, storage, retrieval and communication of information from different knowledge domains' (p. 633). While working

together, team members become familiar with each other's strengths and weaknesses and learn to coordinate task execution (Zhang et al., 2007).

We expect the effects of the founding team's PSE to come into play once the venture starts to internationalize. More specifically, we argue that PSE has an indirect effect on the firm's international sales growth by enhancing the effect of learning from internationalization. Firms accumulate foreign market knowledge while engaging in international activities (Johanson and Vahlne, 1977). They learn about market-specific conditions, the institutional environment, local business networks and social networks (Hilmersson, 2014). Thus, the learning-enhancing effects of team cohesion and intra-team trust only come into effect after firm internationalization. In addition, the benefits of transactive memory systems accrue over time as the team encounters new tasks (Lewis et al., 2005). A more general understanding of new tasks develops more slowly and requires teams to be working on these tasks. Following this, PSE will moderate the relationship between FIE and international sales growth. We expect FIE, measured as the number of years they have been selling products outside their home countries (Brouthers et al., 2009), to have a positive influence on international sales growth after internationalization. This is for two reasons: FIE enables observation and emulation of a wider range of competitive practices than would be possible in the domestic market (Zahra et al., 2000). In addition, FIE reflects firm competence to operate successfully in international markets (Cavusgil and Zou, 1994). Previous empirical studies provide support for such positive relationships (Geringer et al., 2000).

International experience provides firms with opportunities to accumulate foreign market knowledge and develop internationalization capabilities (Clarke et al., 2013). We argue that teams with PSE are able to make more effective and efficient use of such knowledge and capabilities than those that lack such prior experience. As such, accumulated knowledge about foreign markets will be more rapidly and effectively shared among team members with PSE. Importantly, knowledge gained from foreign markets is tacit in nature and is acquired by those involved in foreign activities (Karlsen et al., 2003). Therefore, a challenge for internationalizing firms is to convert this individual knowledge into firm knowledge; otherwise, it will remain locked within individuals, hindering the firm from using it to aid internationalization efforts. Team cohesiveness and trust among team members enhance communication (Zenger and Lawrence, 1989) and make it more effective (Pelled et al., 1999). This facilitates discussion between the founders about the various perspectives offered by a given opportunity (Kor, 2003). As a result, cohesiveness in teams with PSE enhances the exchange of vital and difficult-to-communicate knowledge and information such as is acquired from foreign markets.

Teams with PSE also develop capabilities to internationalize more efficiently, primarily because they have built up routines, as suggested by the literature on transactive memory systems. These routines, embedded in transactive memory systems, allow founding teams to coordinate tasks and responsibilities much more efficiently than novice teams (Brandon and Hollingshead, 2004). Transactive memory systems provide founders with an implicit structure for assigning responsibilities based on their shared perceptions of each other's expertise. Hence, they trust each other's judgements in areas in which they are expected to have built a common expertise and understanding. This makes teams with PSE better equipped to build consensus on strategic decisions about resource commitment to the firm's ongoing internationalization efforts. Therefore, we hypothesize that

Hypothesis 2. PSE will moderate the positive effect of a firm's international experience on its international sales growth, such that the effect of this international experience will be stronger for teams with more PSE.

PSE, GS and international sales growth of firms

Finally, we expect the positive team dynamics resulting from PSE to be stronger when teams operate in uncertain decision environments. Such experience enables teams to cope with uncertainty and provides them with confidence to pursue risky endeavours (Kor, 2006). Therefore, PSE is particularly valuable in highly uncertain environments. In the context of firm internationalization, we argue that the effect of PSE on teams is stronger when the internationalizing firm is confronted with increased uncertainty while broadening its GS of sales. In international entrepreneurship, environmental uncertainty increases as the firm expands its sales to geographically and culturally more distant foreign markets (Holmlund and Kock, 1998). The higher psychic distance of foreign markets increases the uncertainty of operating abroad and decreases the pace of penetrating those markets (Taylor and Jack, 2013).

Increasing the GS will intensify the internationalizing firm's need for coordination to serve more foreign markets. Transactive memory systems allow teams with PSE to save time in coordination (Kor and Mahoney, 2000), and thus, enhance their ability to undertake risky endeavours, such as broadening the scope of international sales. These teams are better able to tolerate uncertainty and handle complex problems. As shown by Akgün et al. (2005), the positive effects of transactive memory systems with respect to coordination become stronger when teams are confronted with more uncertain, complex tasks. Similarly, Ren et al. (2006) find that transactive memory systems are more beneficial when teams need to perform new tasks and operate in uncertain environments.

In addition, greater GS increases the need for teams to consider decision-making situations quickly and effectively. Teams with PSE are able to take decisions more efficiently and implement them more effectively, as they can devote their energy to the challenges associated with expanding international activities to more foreign markets, rather than wasting time on dealing with group processes such as affective conflicts (Eisenhardt and Schoonhoven, 1990; Jackson, 1992). Increased uncertainty as a result of serving more foreign markets may accentuate the potential for interpersonal conflicts in teams without this PSE. Furthermore, because teams with PSE enjoy greater cohesion (Goodstein and O'Reilly, 1988), they may feel less need to collect large amounts of data and engage in extensive analysis, which slow down the decision-making process (Fredrickson and Mitchell, 1984). When teams are operating in uncertain environments, it is crucial that they exchange information rapidly and communicate openly about potential options and plans of action. Teams that have prior experience of working together have greater trust in each other's skills (Kor and Mahoney, 2000) and are less likely to try to take control, as happens naturally under uncertainty (Staw et al., 1981). In contrast, teams with less PSE are more anxious when facing uncertain environments, which stifles decision making and hinders integration of the knowledge residing in the team (Gardner et al., 2012). Uncertainty may also give rise to more intensive and frequent conflicts within teams. Greater cohesion cushions teams against such conflicts as it builds interpersonal comfort in risk taking (Edmondson, 1999). Based on these arguments, we hypothesize that

Hypothesis 3. For firms with high PSE, the relationship between international experience of firms and international sales growth will be stronger when GS is high.

Figure 1 summarizes our hypothesized model.

Data and method

To test our hypotheses, we used a longitudinal panel of firms in Flanders, Belgium. Our focus on a single region reduced non-measured variance resulting from environmental conditions. Our sample

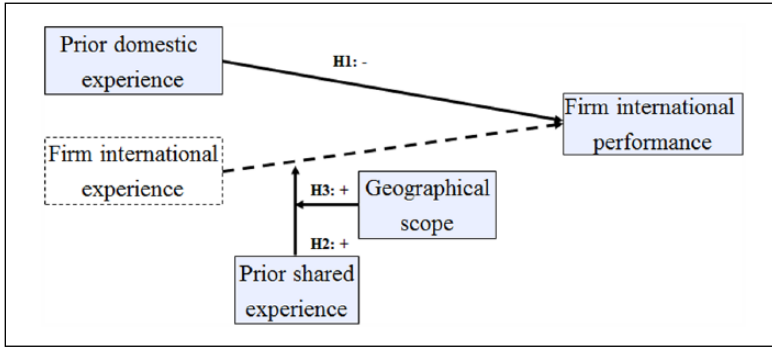


Figure 1. Theoretical framework.

comprised young, technology-based firms founded between 1991 and 2002, all of which had commercialized new products or services based on a proprietary technology or skill. These were entrepreneurial firms in which the owner-manager was the central strategic decision maker. As the firms were generally relatively small, their organizational structures were simple, and there was usually no middle-management layer to insulate the management team from operations. This was, therefore, an appropriate context in which to test our hypotheses.

We started with a sample of 210 firms identified from four databases of firms in Flanders comprising (1) firms in technology sectors, (2) spin-offs from universities, (3) all firms that had received government R&D subsidies and (4) companies in the portfolios of venture capital (VC) investors. Data were first collected on these firms in 2002–2003 through face-to-face interviews with founders or senior managers using a structured questionnaire (Heirman and Clarysse, 2004). In this first round, we collected data on team PDE and PSE. The same firms were interviewed again in 2005 using the same method. During this round, we collected *annual data* on international sales. We also collected data on the international activities by asking the respondents in which year the firm had realized international sales across different regions. The sample size had by then dropped to 182 firms (22 firms had gone bankrupt and six firms had been acquired). Of the remaining firms, we interviewed representatives of 130, of which the substantial majority (83% or 108 firms) had international sales in 2004. From these, we had complete panel data on 77 firms, which constituted our panel. A longitudinal panel design offers more degrees of freedom and greater sample variability, both of which improve the efficiency of econometric estimates (Hsiao et al., 1995).

Our panel data were unbalanced: we had 440 observations across 77 firms, with the number of observations per firm ranging from 2 to 13. We found no systematic differences in age and size between the panel and non-respondents, revealing no response bias. Further examination revealed no significant differences between surviving and failed firms in several key variables at the levels of the team (e.g. size, sector experience and management experience), the firm (e.g. capital and size) and the environment (e.g. complexity of the value chain and sales process in the sector). This indicated that survival bias was not a major concern in our sample. The median age of the panel firms was eight years at the point of data collection. This makes our sample slightly older than that in previous studies of international entrepreneurship, many of which have sampled firms younger than eight years (Autio et al., 2000; Zahra et al., 2000). However, in our study, a slightly higher median age was beneficial, given that we were interested in the effects of experience on international sales growth.

Dependent variable: international sales growth

The dependent variable was the international sales growth of young, technology-based firm's aggregated international holdings. We did not consider other performance measures, such as return on equity or return on assets, as it takes, on average, eight years for new firms to become profitable (Biggadike, 1979). In contrast to employment growth, sales growth is insensitive to the firm's capital intensity or degree of integration (Delmar et al., 2003) and captures the effects of experience on both tacit and explicit knowledge (Argote and Miron-Spektor, 2011). Another important drawback of employment growth is that a firm may grow considerably in terms of sales, with only limited growth in employment. Growth in international sales results from monetary commitments made by customers and, therefore, testifies to the firm's success in entering foreign markets and overcoming the liabilities of newness and foreignness (Autio et al., 2000). We measured absolute rather than relative growth. Using relative growth measures is problematic in studying young, technology-based firms, since the smallest ventures naturally end up with the highest relative growth, even if their growth is negligible in absolute terms (Woo et al., 1989). We operationalized international sales growth as the natural logarithm of change in international sales from first internationalization to international sales in a given year.

Hypothesized variables: PDE, PSE, GS and international experience of firms

PDE was measured as the cumulative time, in years, that the firm's founding team members had been working in the domestic market *prior* to starting the company. In our study, these individuals had founded the ventures and had been involved full-time as executives at the point at which the firm was founded (Eisenhardt and Schoonhoven, 1990). PSE was measured as the time, in years, that the firm's founding team had been working *together* in the domestic market prior to starting the company. Building on Sapienza et al. (2005), we operationalized the GS of sales for each firm as the weighted score of a count of areas in which the firm realised foreign sales at time *t*. We assigned a weight according to the geographical and cultural distance from the firm's home market: a weighting of one was assigned to EU countries, two to other European countries, three to North America and four to the rest of the world. We measured FIE as the years elapsed since the firm first generated cross-border sales (Erramilli, 1991). The choice of yearly increments was appropriate, since it takes time for experience to influence firm performance.

Control variables

We included a set of control variables that are known to influence international sales growth of firms. We were particularly careful to control for the firm's initial quality in order to alleviate concern that initial quality differences may drive time to both internationalization and post-internationalization sales growth. To control for idiosyncratic variation in initial conditions at the time of internationalization, we included the amount of international sales in the first year of exports as a control variable. This control offered a starting point for our performance measurement, as it allowed unbiased prediction of a firm's international sales growth in any given year (Eisenhardt and Schoonhoven, 1990).

Internationalizing firms founded by internationally experienced teams have been found to perform better (Bloodgood et al., 1996). We, therefore, controlled for the FTIE, calculated as the number of years of the founding team's pre-firm experience of both living and working abroad (Sambharya, 1996).

Changes in management team composition may affect shared beliefs, as well as how effectively managers are able to draw on transactive memory systems. We controlled for changes in the

management team by including a dummy variable that captured team entries and exits. Our data contained 56 instances of team changes in management. We also included the size of the founding team as a control, since larger teams are more likely to be able to manage the complexity of internationalization.

Previous research has shown that age at entry, which captures a firm's domestic experience, influences the international sales growth of internationalizing firms (Autio et al., 2000), so we included this as a control variable. However, recent developments in the international entrepreneurship literature suggest that age at entry has a complex, non-linear relation with performance (Tan and Fan, 2013). Therefore, we included the age at entry and the square of age at entry to operationalize this non-linear relationship.

Entry mode affects the intensity of the learning experience (Zahra et al., 2000) and firm performance (Holmlund and Kock, 1998). Therefore, we also controlled for the type of entry mode used to serve foreign markets with three dummy variables that captured whether the firms used distributors, direct exports or subsidiaries at time t . As previous research indicates that VC-funded firms grow faster (Davila et al., 2003), we controlled for injections of VC into the firm at time t ($1 = \text{yes}$). We also included a dummy, indicating whether the firm had a product on the market at time t . Together with the VC variable, these two dummies proxied the extent to which the firm had an established business idea (see Heirman and Clarysse, 2004).

We inserted dummies for five industry sectors: electronic equipment, biotechnology, micro-electronics, information and communications technology, and other high-tech sectors. Finally, we included dummies to control for fixed-year effects, since the panel spanned from 1992 to 2004.

Analysis and results

We initially tested for both heteroscedasticity (Baum, 2006) and autocorrelation in the data (Wooldridge, 2002). We employed a cross-sectional time series with feasible generalized, least squares (FGLS) regression analysis to test our model. FGLS regression provides reliable estimates in the presence of heteroscedasticity and autocorrelation (Wooldridge, 2002), and is based on a two-step estimation process. First, a model is estimated by ordinary least squares (OLS). Its residuals are then used to estimate an error co-variance matrix for use in FGLS analysis. This framework allows the error co-variance structure within each group of observations to be fully unrestricted and is therefore robust to any type of intra-group heteroscedasticity or serial correlation.

Table 1 reports descriptive statistics and correlations, and Table 2 presents the results of our hypothesis tests. Model 1 contains the control variables, and Model 2 exhibits the main effects of PDE and PSE. Consistent with *Hypothesis 1*, the coefficient of PDE is negative and significant ($\beta = -.04, p \leq .01$). In Model 3, we enter the interaction term between FIE and PSE to examine *Hypothesis 2*. This hypothesis is supported: the significant positive coefficient of the interaction term between FIE and PSE ($\beta = .01, p \leq .001$) suggests that the relationship between FIE and firm performance is stronger in firms with teams that have more PSE. The three-way interaction between FIE PSE and GS is entered into Model 4 to examine *Hypothesis 3*. In order for the three-way interaction to be meaningful, we also include the lower order interactions between FIE and GS, and PSE and GS. In support of *Hypothesis 3*, the coefficient of the three-way interaction is positive and significant ($\beta = .004, p \leq .05$). As it is difficult to interpret interactions solely from the coefficient, we plot the two- and three-way interactions in Figures 2 and 3, respectively.

Figure 2 illustrates graphically the interaction effect between FIE and PSE on international sales growth of firms. This figure shows that the relationship between FIE and international sales growth is stronger in firms with teams that have more PSE. For a closer examination of the partial effect of FIE on international sales growth in the two-way interaction, we use the following formula (see

Table 1. Descriptive statistics and correlation matrix (N=440).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Prior domestic experience	1.00													
2. Prior shared experience	.47	1.00												
3. Firm international experience	-.02	-.02	1.00											
4. Geographical scope	-.10	.09	.28	1.00										
5. Age at entry	-.04	-.18	-.14	-.21	1.00									
6. Sales in the first year of export ^a	-.05	.03	.04	.03	.15	1.00								
7. Number of founders	.42	.36	-.01	.20	-.18	.03	1.00							
8. Founding team international experience	-.14	.17	-.09	.08	-.09	.18	.13	1.00						
9. Team change	.11	.02	.01	.06	.08	-.04	.17	-.02	1.00					
10. Distributor	-.13	-.17	.02	.20	-.18	-.10	-.18	.09	-.07	1.00				
11. Direct export	-.11	-.07	.06	-.05	.05	.15	.08	.04	-.04	-.32	1.00			
12. Subsidiary	-.02	.23	.16	.39	-.08	.06	-.01	.04	.09	.01	-.16	1.00		
13. Venture capital	.09	.03	.10	.22	-.02	.17	.22	-.09	.19	-.25	.06	.37	1.00	
14. Product	.06	-.14	.22	.14	.10	-.02	.05	-.003	.01	.07	-.05	.002	.03	1.00
Mean	17.62	2.80	4.22	3.84	1.17	4.59	2.05	9.91	.13	.61	.70	.16	.34	.88
Standard deviation	12.47	3.95	2.77	3.10	1.63	1.69	1.07	15.43	.33	.49	.46	.37	.47	.32
Minimum	2.00	0	1.00	0	0	0	1.00	0	0	0	0	0	0	0
Maximum	61.00	14.00	13.00	10.00	8.00	9.21	5.00	105.0	1.00	1.00	1.00	1.00	1.00	1.00

Coefficients with an absolute value above .09 are significant at the .05 level, two-tailed. Year and industry dummies are not reported.

^aLogarithm used in analysis.

Table 2. Results of regression analysis: dependent variable is firm’s international sales growth.

	Model 1	Model 2	Model 3	Model 4
Controls				
Sales in the first year of export	.65*** (.04)	.66*** (.05)	.64*** (.04)	.66*** (.04)
Age at entry	.04 (.06)	.10 (.06)	.20*** (.06)	.11 + (.06)
Age at entry 2	-.02* (.01)	-.03*** (.01)	-.04*** (.01)	-.03*** (.01)
Number of founders	.10* (.05)	.26*** (.07)	.23*** (.07)	.19** (.07)
Founding team’s international experience	.001 (.003)	-.001 (.003)	.005 + (.003)	.007* (.003)
Team change	-.06 (.05)	-.03 (.05)	-.02 (.05)	-.02 (.06)
Distributors	-.04 (.12)	-.23 (.14)	-.21 (.15)	-.20 (.15)
Direct export	.27** (.10)	.30** (.10)	.34*** (.11)	.30** (.10)
Subsidiary	.93*** (.14)	.92*** (.16)	.98*** (.16)	.99*** (.16)
Venture capital	.45*** (.11)	.43*** (.12)	.51*** (.12)	.49*** (.11)
Product	.14 (.12)	.16 (.11)	.17 (.11)	.20 + (.11)
Firm international experience	.15*** (.02)	.16*** (.02)	.13*** (.02)	.10*** (.03)
Geographical scope	.08*** (.01)	.07*** (.01)	.06*** (.01)	.03 (.02)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Key variables				
H1. Prior domestic experience		-.02** (.01)	-.01* (.006)	-.01 (.006)
Prior shared experience		-.02 (.02)	-.07*** (.02)	-.09*** (.02)
Interactions				
H2. firm international experience × prior shared experience			.01*** (.003)	.01** (.004)
Firm international experience × geographical scope				.004 (.004)
Prior shared experience × geographical scope				.004 (.004)
H3. Firm international experience × prior shared experience × geographical scope				.004* (.002)
Constant	1.10** (.42)	.99* (.42)	.95* (.42)	.93* (.44)
Wald Chi2	1342.93***	1628.64***	1940.99***	4552.59***

Number of observations: 440; number of firms: 77. To conserve space, industry and year dummies are included in the analysis but unreported. Unstandardized coefficients are reported, with standard errors in parentheses. *** $p \leq .001$, ** $p \leq .01$, * $p \leq .05$, + $p \leq .10$. One-tailed tests for theorized (directional) effects. Two-tailed tests for control variable effects.

Wooldridge, 2012): $\frac{\partial \text{international sales growth}}{\partial \text{FIE}} = 0.13 + 0.01 * \text{PSE}$. In firms with teams that have no PSE (PSE equals zero years), international sales increase by 13% with a one-year increase in FIE. However, in firms with teams that have high PSE (e.g. PSE equals seven years), international sales increase by 20% with a one-year increase in FIE.

Figure 3 plots the three-way interaction between FIE, PSE and GS in order to determine the direction of this moderation. Following Thanos et al. (2017), we create four plots for all possible combinations of high and low values of PSE and GS of sales. As Figure 3 demonstrates, all four plots slope upwards, revealing that FIE has a positive effect on firm international sales growth in all combinations of high and low levels of PSE and GS, providing additional support for

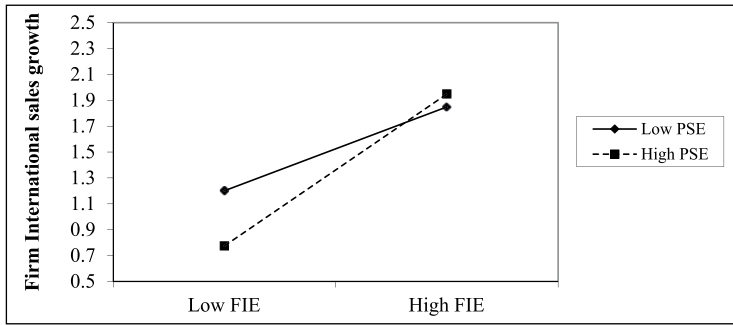


Figure 2. Graphical presentation of interaction between firm international experience (FIE) and prior shared experience (PSE) – Hypothesis 2.

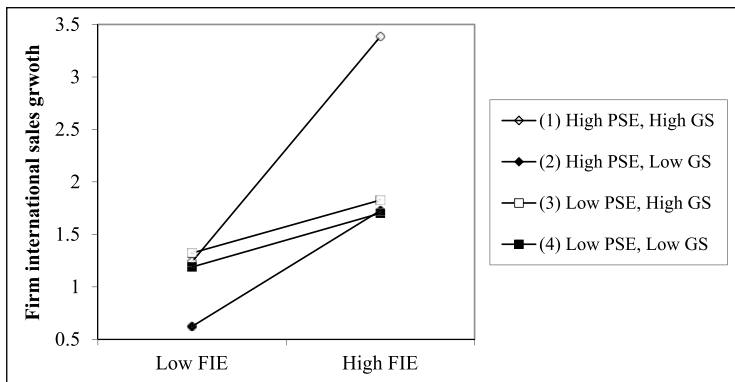


Figure 3. Graphical presentation of interaction between firm international experience (FIE), prior shared experience (PSE) and geographical scope (GS) – Hypothesis 3.

Hypothesis 1. Furthermore, firms with high levels of PSE (lines 1 and 2) appear to experience a higher impact of FIE on firm international sales growth than those with low levels of PSE (lines 3 and 4), irrespective of their levels of GS, providing additional support for *Hypothesis 2*. The relationship between FIE and firm international sales growth is strongest among those with a high level of PSE and a broad GS of sales (line 1). Slope difference tests (Dawson and Richter, 2006) show that the slope of firms with greater PSE and broader GS of sales (slope of line (1) = .39) is significantly steeper than that of firms with greater PSE and narrower GS of sales (slope of line (2) = .20; t -value for slope difference = 2.599, $p < .01$), corroborating the graphical analysis. Thus, graphical analysis of the three-way interaction supports *Hypothesis 3* that the positive effect of PSE is stronger when internationalizing firms are confronted with higher uncertainty, as reflected in a broad GS of sales. We examine in more detail the partial effect of FIE on international sales growth in the three-way interaction using the following formula: $(\partial \text{International sales growth} / \partial \text{FIE}) = .10 + .010 \text{ PSE} + .004 \text{ GS} + .004 \text{ PSE} * \text{GS}$. In firm with teams that have no PSE (PSE equals zero years) and only have international sales in the EU (GS equals 1), international sales increase by 13.4% with a one-year increase in FIE. However, in firms with teams that have high PSE (e.g. PSE equals seven years) and global international sales (GS equals 10), international sales increase by 49% with a one-year increase in FIE

Robustness checks

We performed several robustness checks to exclude alternative explanations and eliminate potential confounding influences. We tested different model specifications using alternative operationalizations of our control variables relating to team change. We conducted additional analyses with the following team variables as controls: (1) two dummies that captured whether a team member had joined or left the firm, (2) the number of members joining or leaving the team and (3) the amount of international experience of those joining and leaving. The results of the analyses with these operationalizations were fully consistent with those reported here.

We operationalized the founding team's PSE as the number of years of joint working experience prior to starting the company. However, in three teams, only some of the founders had joint working experience. Analyses excluding these firms produced results consistent with those reported here.

Discussion and conclusion

The purpose of this study was to analyse the role of founding team's PDE and PSE in the context of firm internationalization. More specifically, we analysed how team dynamics resulting from sharing experiences, through increased team cohesion and the development of transactive memory systems, offset the rigidities resulting from the creation of domestically embedded routines and procedures, as suggested by the international new venture theory.

Theoretical contributions

This study makes several theoretical contributions to the bodies of literature on international entrepreneurship and the cognitive foundations of entrepreneurship. First, we have extended the international entrepreneurship literature by investigating the effects of founding team's PDE and PSE on international sales growth. Jones et al.'s (2011) review of the international entrepreneurship literature emphasizes that 'we need a greater understanding of entrepreneurs and their teams' (p. 643). Previous studies of the influence of team characteristics on new venture internationalization have focused primarily on the team's prior international experience (De Clercq et al., 2012). The founding team's prior international experience increases team awareness of opportunities abroad, decreases fear of operating abroad and provides the firm with international absorptive capacity (Weerawardena et al., 2007). Even after controlling for the effect of prior international experience, our results reveal an important role for founding team's PDE and PSE in international sales growth. This implies that the pre-founding period when teams work in the domestic market, as well as working together, continues to have an important imprinting influence on firm internationalization (Baron et al., 1999). In examining founding team's learning in the domestic market *prior* to founding the venture, our study complements the work of Nadkarni and Perez (2007; see also Nadkarni et al., 2011), who focus on domestic learning in teams *after* founding the firm and before initiating internationalization.

In addition, our findings enhance our understanding of why young firms are able to achieve rapid internationalization soon after inception. The international process model depicts the internationalization of firms as a gradual process regulated by the level of FIE (Johanson and Vahlne, 1977). The central argument of this model is that a lack of foreign market knowledge is an important obstacle to the development of international operations. Firms can only accumulate such knowledge by operating in foreign markets. We find that when PSE is high, young internationalizing firms enjoy better international performance when internationalizing to markets that are more distant both

geographically and culturally. PSE in teams allow them to take better advantage of the accumulation of foreign market knowledge and manage the complexities associated with internationalizing to more 'psychically' distant markets. PSE functions as a lever of FIE, fuelling firm internationalization. Therefore, PSE may be a factor underlying the 'learning advantages of newness'.¹

Second, we introduce elements of the cognitive foundations of entrepreneurship into the international entrepreneurship literature. This emerging literature explores how cognitive frames, such as domestic mind-sets, formed before founding continue to impact on decisions made after start-up (Beckman, 2006; Fern et al., 2012; Furr et al., 2012; Gruber et al., 2013). In line with this literature, we find that domestic mind-sets, proxied by PDE, negatively impact upon a firm's international sales growth. This finding extends the learning-rigidity hypothesis in international entrepreneurship, which has focused exclusively on firm-level learning mechanisms after start-up (Autio et al., 2000). We show that taking into account cognitive elements accumulated in founding teams before start-up explains enduring rigidities in firm internationalization after founding.

Third, our findings also contribute theoretically to the emerging literature on the cognitive foundations of entrepreneurship. This literature shows that pre-founding experience matters and helps to provide an understanding of strategic decisions made by ventures after start-up (Gruber, 2010; Gruber et al., 2013). However, it ignores team dynamics resulting from prior joint working experience in founding teams. We show that working together in the domestic market prior to starting the venture also creates team dynamics that result in team familiarity and transactive memory systems in the founding team. We find support for our hypothesis that such team dynamics positively moderate the relationship between FIE and international sales growth. Founding teams with shared experience learn faster from their international presence and, hence, catch up more easily with teams that internationalize their business *de novo*. Hence, the advantage of internationalizing early on is only temporary and fades if the founding teams have developed team cohesion and transactive memory systems. This implies that research on cognitive foundations should take into account the extent to which these cognitions are developed during joint working experiences by team members prior to founding.

Fourth, we extend the theoretical literature on international entrepreneurship and the cognitive foundations of entrepreneurship by showing that PSE becomes more important when teams are confronted with greater uncertainty. For instance, when a new venture wants to broaden its GS of sales, we assume that this will be perceived to be highly uncertain. In such contexts, team cohesion and transactive memory systems seem to prevail over individual cognition. Hence, cognitive research on ventures in uncertain environments should take such team dynamics into account. With regard to the international entrepreneurship literature, we find that team dynamics seem to be even more critical if the new venture's market is truly global and it needs to examine whether it should rapidly broaden the GS of its sales. This is an important finding that raises theoretical questions about the overall validity of the learning-rigidity mechanism put forward by international new venture theory. It suggests that potentially detrimental routinization that may have developed domestically in teams with prior working experience should not be over-emphasized, as this ignores the positive effects of having worked together.

Alongside our key contributions to the literature on international entrepreneurship and the cognitive foundations of entrepreneurship, our study contributes to the literature on new venture teams by broadening the application of PSE to international new ventures. The founding team's PSE has been used in studies of new ventures operating in turbulent industry environments to proxy the level of team cohesion, allowing for cognitive conflicts while minimizing affective conflicts (Eisenhardt and Schoonhoven, 1990; Kor, 2003). A common argument in these studies is that teams with shared experience are better able to manage the high level of uncertainty in turbulent industries. In high-velocity environments, as in Eisenhardt and Schoonhoven's (1990) study, team dynamics become

even more important. In our context, internationalizing in geographically and culturally distant regions calls for team dynamics which offset the negative impact of domestically developed routines that the team must unlearn, as shown by the positive impact of our three-way interaction.

Finally, although in this article we have not theorized about the effects of entry modes on international sales growth, our results contain some interesting findings, suggesting that both direct exports and subsidiaries are positively associated with international sales growth, whereas collaborating with distributors is not. These findings suggest that entry mode affects firm performance because it influences the firm's ability to gain foreign market knowledge (Holmlund and Kock, 1998). Learning through internationalization depends on the extent to which the entry mode allows direct and deep involvement in international markets (Zahra et al., 2000). Direct exports and subsidiaries provide opportunities for frequent social interaction with foreign customers, and getting first-hand feedback from local customers is important in enabling firms to adjust their products and services to local requirements. These findings should be sufficient to persuade researchers to examine further the performance implications of entry mode choice in international ventures (Bruneel and De Cock, 2016).

Practical implications

This study has practical implications for entrepreneurs who are aiming to internationalize, as well as for investors targeting high-growth international ventures. Our analysis shows that PSE may not be crucial for a founding team to be successful in firm internationalization. We show that if they internationalize into geographically distant markets, teams with prior joint working experience may even surpass ventures by teams whose founders have prior international experience. This is a counter-intuitive finding with major implications for the evaluation of high-potential founding teams and the self-evaluation of founders, for instance, when composing a team to raise VC. However, there is an important contingency: shared domestic experience is no guarantee in making the decision to internationalize. Team dynamics come into play only after the venture has started to internationalize and build the routines and team required to help its internationalization process. However, the enduring negative impact of having only domestic experience shows that the lack of an international mind-set needs to be compensated for during the internationalization process by attracting international experience into the venture. Thus, an important role may be attributed to external stakeholders such as venture capitalists, who may bring in such a mind-set after start-up to compensate for a lack of prior international experience in the founding team.

Our study also has implications for policy makers. Supporting regional innovation clusters and a local ecosystem of technology start-ups in which graduates build up joint working experience may not lead to internationally oriented, VC-backed technology ventures in the short term, but may be a source of internationalization and aspiration-driven ventures for second-generation start-ups in which these people play a leading role. The fact that joint domestic working experience leads to more internationalization in these second-generation start-ups implies a clear need to support these locally oriented technology ventures.

Limitations and future research

The limitations of this study are partially inherent in the research design and suggest potential avenues for future research. This study focused on only one region, Flanders in Belgium. This design also limits unmeasured variance. However, Flanders is a small, open economy, where many residents are fluent in several languages. Flanders-based companies may be particularly well-equipped to take advantage of internationalization, and firms from more monocultural regions may

experience greater problems and smaller benefits. Moreover, as noted above, we only considered young firms operating in high-technology sectors. As learning is crucial in such industries, our sample may have been particularly prone to exhibiting learning effects. In addition, the sample firms were biased towards earlier rather than later internationalization. Similar studies might be conducted in more mature industries and include later internationalizers. Additional studies in different sectors could help establish the generalizability of our findings.

Although this is one of the first longitudinal studies to examine the relationship between PDE, PSE and international sales growth of firms, it is nevertheless restricted to a particular time frame and spans a relatively short period. Although we controlled for yearly effects, an extension of this study might consider longer time periods characterized by different economic dynamics. For example, our study period did not cover a long and deep recession, and the dynamic described here might play out differently during a recessionary period, when hazards to survival are greater.

We have no specific information about the exact nature of founding team's PSE, apart from that it took place in the domestic market. An interesting extension would be to examine the exact nature of its collaborative experience. For example, does such experience have potentially different effects if teams have collaborated in a previous start-up or in R&D teams in established organizations? Examining this in more detail would provide a fruitful extension to this study. Furthermore, we used PSE as a proxy for transactive memory systems, as team members learn about each other's skills and knowledge while working together. Implicitly, we made the assumption that transactive memory in teams would be higher, the longer team members had been working together. While this operationalization is advantageous for longitudinal studies, future studies might use more direct operationalizations of transactive memory by using survey-based items (see Akgun et al., 2005).² To operationalize environmental uncertainty, we employed a measure based on geographical and cultural distance (Sapienza et al, 2005). While this operationalization is acceptable in the context of Belgium, it does not necessarily apply to other contexts such as the United States or China. Moreover, uncertainty is somewhat subjective, so future studies might use survey-based items to measure perceived environmental uncertainty (see Brouthers and Brouthers, 2003).

Another potential avenue for future research would be to consider the valence of experiences. Rather than focusing on the duration of experience, as in our study, future research might study the role of positive and negative experiences in firm internationalization. One interesting opportunity for further research might be to examine in depth the complex relationship between the valence of experiences, learning and firm internationalization. Such studies would potentially call for a qualitative design.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The financial support of the Intercollegiate Center for Management Science (ICM) is gratefully acknowledged.

Notes

1. We thank an anonymous reviewer for pushing our thinking on this point.
2. We thank an anonymous reviewer for this comment.
3. We thank an anonymous reviewer for this comment.

References

- Akgün A, Byrne J and Keskin H (2005) Knowledge networks in new product development projects: A transactive memory perspective. *Information & Management* 42(8): 1101–1120.

- Ancona DG and Caldwell DF (1992) Demography and design: Predictors of new product team performance. *Organization Science* 3(3): 321–341.
- Argote L and Miron-Spektor E (2011) Organizational learning: From experience to knowledge. *Organization Science* 22(5): 1123–1137.
- Autio E, Sapienza HJ and Almeida JG (2000) Effects of age at entry, knowledge intensity, and imitability on international growth. *Academy of Management Journal* 43(5): 909–924.
- Barkema HG and Vermeulen F (1998) International expansion through start-up or acquisition: A learning perspective. *Academy of Management Journal* 41(1): 7–26.
- Barney J, Busenitz L, Fiet J, et al. (1996) New venture teams: Assessment of learning assistance from venture capital firms. *Journal of Business Venturing* 11: 257–272.
- Baron JN, Hannan MT and Burton MD (1999) Building the iron cage: Determinants of managerial intensity in the early years of organizations. *American Sociological Review* 64: 527–547.
- Baum CF (2006) Testing for groupwise heteroskedasticity. *The STATA Journal* 6(4): 590–592.
- Beckman CM (2006) The influence of founding team company affiliations on firm behavior. *Academy of Management Journal* 49: 741–758.
- Biggadike R (1979) The risky business of diversification. *Harvard Business Review* 57(3): 103–111.
- Bingham CB (2009) Oscillating improvisation: How entrepreneurial firms create success in foreign market entries over time. *Strategic Entrepreneurship Journal* 3(4): 321–345.
- Bloodgood J, Sapienza HJ and Almeida JG (1996) The internationalization of new high-potential US ventures: Antecedents and outcomes. *Entrepreneurship: Theory and Practice* 20: 61–76.
- Brouthers KD and Brouthers LE (2003) Why service and manufacturing entry mode choices differ: The influence of transaction cost factors, risk and trust. *Journal of Management Studies* 40(5): 1179–1204.
- Brandon DP and Hollingshead AB (2004) Transactive memory systems in organizations: Matching tasks, expertise, and people. *Organization Science* 15(6): 633–644.
- Brouthers LE, Nakos G, Hadjimarcou J, et al. (2009) Key factors for successful export performance for small firms. *Journal of International Marketing* 17(3): 21–38.
- Bruneel J and De Cock R (2016) Entry mode research and SMEs: An agenda for future research. *Journal of Small Business Management* 54(S1): 135–167.
- Bruneel J, Yli-Renko H and Clarysse B (2010) Learning from experience and learning from others: How congenital and interorganizational learning substitute for experiential learning in young firm internationalization. *Strategic Entrepreneurship Journal* 4(2): 164–182.
- Carpenter MA, Sanders G and Gregersen HB (2001) Bundling human capital with organizational context: The impact of international assignment experience on multinational firm performance and CEO pay. *Academy of Management Journal* 44(3): 493–511.
- Carr J, Haggard K, Hmieleski K, et al. (2010) A study of the moderating effects of firm age at internationalization on firm survival and short-term growth. *Strategic Entrepreneurship Journal* 4(2): 183–192.
- Cavusgil ST and Zou S (1994) Marketing strategy–performance relationship: An investigation of the empirical link in export market ventures. *Journal of Marketing* 58(1): 1–21.
- Clarke JE, Tamaschke R and Liesch P (2013) International experience in international business research: A conceptualization and exploration of key themes. *International Journal of Management Reviews* 15(3): 265–279.
- Davila A, Foster G and Gupta M (2003) Venture capital financing and the growth of start-up firms. *Journal of Business Venturing* 18(6): 689–708.
- Dawson JF and Richter AW (2006) Probing three-way interactions in moderated multiple regression analysis: Development and application of a slope difference test. *Journal of Applied Psychology* 91(4): 917–926.
- De Clercq D, Sapienza HJ, Yavuz IR, et al. (2012) Learning and knowledge in early internationalization research: Past accomplishments and future directions. *Journal of Business Venturing* 27: 143–165.
- De Mol E, Khapova SN and Elfring T (2015) Entrepreneurial team cognition: A review. *International Journal of Management Reviews* 17(2): 232–255.
- Delmar F, Davidsson P and Gartner WB (2003) Arriving at the high-growth firm. *Journal of Business Venturing* 18(2): 189–216.

- Dokko G, Wilk SL and Rothbard NP (2009) Unpacking prior experience: How career history affects job performance. *Organization Science* 20(1): 51–68.
- Edmondson A (1999) Psychological safety and learning behavior in work teams. *Administrative Science Quarterly* 44(2): 350–383.
- Eisenhardt KM and Schoonhoven CB (1990) Organizational growth: Linking founding team, strategy, environment, and growth among United States semiconductor ventures, 1978–1988. *Administrative Science Quarterly* 35(3): 504–529.
- Ensley M and Pearce C (2001) Shared cognition in top management teams: Implications for new venture performance. *Journal of Organizational Behavior* 22(2): 145–160.
- Erramilli KM (1991) The experience factor in foreign market entry behavior of service firms. *Journal of International Business Studies* 22(3): 479–501.
- Fern MJ, Cardinal L and O’Neill HM (2012) The genesis of strategy in new ventures: Escaping the constraints of founder and team knowledge. *Strategic Management Journal* 33(4): 427–447.
- Foss NJ, Klein PG, Kor YY, et al. (2008) Entrepreneurship, subjectivism, and the resource-based view: Toward a new synthesis. *Strategic Entrepreneurship Journal* 2: 73–94.
- Fredrickson JW and Mitchell TR (1984) Strategic decision processes: Comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal* 27: 399–423.
- Furr NR, Cavarretta F and Garg S (2012) Who changes course? The role of domain knowledge and novel framing in making technology changes. *Strategic Entrepreneurship Journal* 6(3): 236–256.
- Gardner HK, Gino F and Staats B (2012) Dynamically integrating knowledge in teams: Transforming resources into performance. *Academy of Management Journal* 55: 998–1022.
- Gavetti G and Levinthal D (2000) Looking forward and looking backward: Cognitive and experiential search. *Administrative Science Quarterly* 45(1): 113–137.
- Geringer JM, Tallman S and Olsen DM (2000) Product and international diversification among Japanese multinational firms. *Strategic Management Journal* 21: 51–80.
- Gilbert BA, McDougall PP and Audretsch DB (2006) New venture growth: A review and extension. *Journal of Management* 32(6): 926–950.
- Goodstein J and O’Reilly C (1988) It’s what’s up top that counts: The role of executive team demography and team dynamics in determining firm success or failure. Working paper, School of Business Administration, University of California, Berkeley, CA.
- Gruber M (2010) Exploring the origins of organizational paths: Empirical evidence from newly founded firms. *Journal of Management* 5: 1143–1167.
- Gruber M, MacMillan IC and Thompson JD (2008) Look before you leap: Market opportunity identification in emerging technology firms. *Management Science* 54(9): 1652–1665.
- Gruber M, MacMillan IC and Thompson JD (2013) Escaping the prior knowledge corridor: What shapes the number and variety of market opportunities identified before market entry of technology start-ups? *Organization Science* 24(1): 280–300.
- Heirman A and Clarysse B (2004) How and why do research-based start-ups differ at founding? A resource-based configurational perspective. *The Journal of Technology Transfer* 29(3–4): 247–268.
- Hilmersson M (2014) Experiential knowledge types and profiles of internationalising small and medium-sized enterprises. *International Small Business Journal* 32(7): 802–817.
- Hmieleski KM and Ensley MD (2007) A contextual examination of new venture performance: Entrepreneur leadership behavior, top management team heterogeneity, and environmental dynamism. *Journal of Organizational Behavior* 28: 865–889.
- Hollingshead AB (2000) Perceptions of expertise and transactive memory in work relationships. *Group Processes & Intergroup Relations* 3: 257–267.
- Holmlund M and Kock S (1998) Relationships and the internationalization of Finnish small and medium-sized companies. *International Small Business Journal* 16(4): 46–63.
- Hsiao C, Mountain DC and Illman KH (1995) A Bayesian integration of end-use metering and conditional-demand analysis. *Journal of Business & Economic Statistics* 13(3): 315–326.
- Huckman RS, Staats BR and Upton DM (2009) Team familiarity, role experience, and performance: Evidence from Indian software services. *Management Science* 55(1): 85–100.

- Jackson SE (1992) Consequences of group composition for the interpersonal dynamics of strategic issue processing. In: Shrivastava P, Huff A and Dutton J (eds) *Advances in Strategic Management*. Greenwich, CT: JAI Press, pp.345–382.
- Johanson J and Vahlne J-E (1977) The internationalization process of the firm: A model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies* 8(1): 23–32.
- Jones MV and Casulli L (2014) International entrepreneurship: Exploring the logic and utility of individual experience through comparative reasoning approaches. *Entrepreneurship: Theory and Practice* 38(1): 45–69.
- Jones MV, Coviello N and Tang YK (2011) International entrepreneurship research (1989–2009): A domain ontology and thematic analysis. *Journal of Business Venturing* 26(6): 632–659.
- Karlsen T, Silseth PR, Benito GRG, et al. (2003) Knowledge, internationalization of the firm, and inward-outward connections. *Industrial Marketing Management* 32: 385–396.
- Klotz AC, Hmieleski KM, Bradley BH, et al. (2014) New venture teams: A review of the literature and roadmap for future research. *Journal of Management* 40(1): 226–255.
- Knockaert M, Ucbasaran D, Wright M, et al. (2011) The relationship between knowledge transfer, top management team composition, and performance: The case of science-based entrepreneurial firms. *Entrepreneurship: Theory and Practice* 35(2): 777–803.
- Kor YY (2003) Experience-based top management team competence and sustained growth. *Organization Science* 14(6): 707–719.
- Kor YY (2006) Direct and interaction effects of top management team and board compositions on R&D investment strategies. *Strategic Management Journal* 27: 1081–1099.
- Kor YY and Mahoney JT (2000) Penrose's resource-based approach: The process and product of research creativity. *Journal of Management Studies* 37(1): 109–139.
- Lewis K (2003) Measuring transactive memory systems in the field: Scale development and validation. *Journal of Applied Psychology* 88(4): 587–604.
- Lewis K, Lange D and Gillis L (2005) Transactive memory systems, learning, and learning transfer. *Organization Science* 16(6): 581–598.
- McEvily B, Perrone V and Zaheer A (2003) Trust as an organizing principle. *Organization Science* 14: 91–103.
- Manolova TS, Brush CG, Edelman LF, et al. (2002) Internationalization of small firms: Personal factors revisited. *International Small Business Journal* 20(1): 9–31.
- Mathews JA and Zander I (2007) The international entrepreneurial dynamics of accelerated internationalisation. *Journal of International Business Studies* 38(3): 387–403.
- Mathias BD, Williams DW and Smith AR (2015) Entrepreneurial inception: The role of imprinting in entrepreneurial action. *Journal of Business Venturing* 30(1): 11–28.
- Nadkarni S and Narayanan VK (2007) Strategic schemas, strategic flexibility, and firm performance: The moderating role of industry clockspeed. *Strategic Management Journal* 28(3): 243–270.
- Nadkarni S and Perez PD (2007) Prior conditions and early international commitment: The mediating role of domestic mindset. *Journal of International Business Studies* 38(1): 160–176.
- Nadkarni S, Herrmann P and Perez PD (2011) Domestic mindsets and early international performance: The moderating effect of global industry conditions. *Strategic Management Journal* 32(5): 510–531.
- Ogbonna E and Harris L (2002) Managing organizational culture: Insights from the hospitality industry. *Human Resource Management Journal* 12(1): 22–53.
- O'Grady S and Lane HW (1996) The psychic distance paradox. *Journal of International Business Studies* 27(2): 309–333.
- Oviatt BM and McDougall PP (1994) Toward a theory of international new ventures. *Journal of International Business Studies* 25(1): 45–64.
- Park S, LiPuma J and Prange C (2015) Venture capitalist and entrepreneur knowledge of new venture internationalization: A review of knowledge components. *International Small Business Journal* 33(8): 901–928.
- Pelled LH, Eisenhardt KM and Xin KR (1999) Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative Science Quarterly* 44: 1–28.

- Phillips DJ (2002) A genealogical approach to organizational life chances: The parent–progeny transfer among Silicon Valley law firms, 1946–1996. *Administrative Science Quarterly* 47(3): 474–507.
- Ren YQ, Carley KM and Argote L (2006) The contingent effects of transactive memory: When is it more beneficial to know what others know? *Management Science* 52(5): 671–682.
- Reuber AR and Fischer E (1997) The influence of the management team’s international experience on the internationalization behaviors of SMEs. *Journal of International Business Studies* 28(4): 807–825.
- Sambharya RB (1996) Foreign experience of top management teams and international diversification strategies of US multinational corporations. *Strategic Management Journal* 17(9): 739–746.
- Sapienza HJ, De Clercq D and Sandberg WR (2005) Antecedents of international and domestic learning effort. *Journal of Business Venturing* 20(4): 437–457.
- Shrader RC, Oviatt BM and McDougall PP (2000) How new ventures exploit trade-offs among international risk factors: Lessons for the accelerated internationalization of the 21st century. *Academy of Management Journal* 43: 1227–1248.
- Staw BM, Sandelands LE and Dutton JE (1981) Threat-rigidity effects in organizational behavior: A multi-level analysis. *Administrative Science Quarterly* 26(4): 501–524.
- Tan A and Fan T (2013) Integrating international new ventures and staged theory: Age at entry, survival and growth. *Paper presented at the annual meeting of the academy of management*, Orlando, FL.
- Taylor M and Jack R (2013) Understanding the pace, scale and pattern of firm internationalization: An extension of the ‘born-global’ concept. *International Small Business Journal* 31(6): 701–721.
- Thanos IC, Dimitratos P and Sapouna P (2017) The implications of international entrepreneurial orientation, politicization and hostility upon SME international performance. *International Small Business Journal* 35(4): 495–514.
- Weerawardena J, Sullivan Mort G, Liesch PW, et al. (2007) Conceptualizing accelerated internationalization in the born global firm: A dynamic capabilities perspective. *Journal of World Business* 42: 294–306.
- Woo CY, Cooper AC, Dunkelberg WC, et al. (1989) Determinants of growth for small and large entrepreneurial start-ups. In: Brockhaus RH Sr, Churchill NC, Katz JA, et al. (eds) *Frontiers of Entrepreneurship Research*. Boston, MA: Babson College, pp.137–147.
- Wooldridge JM (2002) *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.
- Wooldridge JM (2012) “Introductory Econometrics: A Modern Approach”, 5th edition, Mason, OH: Cengage Learning.
- Zahra SA, Ireland RD and Hitt MA (2000) International expansion by new venture firms: International diversity, mode of market entry, technological learning, and performance. *Academy of Management Journal* 43(5): 925–950.
- Zenger TR and Lawrence BS (1989) Organizational demography: The differential effects of age and tenure distributions of technical communication. *Academy of Management Journal* 32(2): 353–376.
- Zhang ZX, Hempel PS, Han YL, et al. (2007) Transactive memory system links work team characteristics and performance. *Journal of Applied Psychology* 92(6): 1722–1730.

Author biographies

Johan Bruneel is Assistant Professor of innovation and entrepreneurship at KU Leuven and senior researcher at the department of management, economics and technology at ETH Zurich. His current research focuses on the performance of social enterprises, the performance implications of firm internationalization, and the impact of resource allocation decisions on new venture performance.

Bart Clarysse holds the Chair of Entrepreneurship in the Department of Management Technology and Economics at ETH Zurich. His on-going research interests include the analysis of acquisition decisions by established companies to enter new technological domain or adjacent markets. He studies the growth strategies of technology ventures in adjacent markets and the valuation patterns of these ventures.

Erkko Autio is Chair in Technology Venturing and Entrepreneurship at Imperial College Business School. His current research interests are in entrepreneurship and entrepreneurship policy (notably, National and Regional Entrepreneurial Ecosystems), innovation ecosystems, innovation momentum strategies, business model innovation and innovation from Big Science.