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Strategic capability configurations for the internationalization of SMEs: A study in equifinality

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Abstract
With the advent of globalization and the knowledge economy, an important issue lies in the *strategic capabilities* that enable the internationalization of SMEs. Using a configurational approach grounded in strategic management and contingency theory, we argue that strategic capabilities can be leveraged for purposes of small business internationalization to the extent that they are coaligned and thus constitute *capability configurations*. This gives rise to a first research question: What are the different organizational configurations that characterize SMEs with regard to their strategic capabilities for internationalization? And aiming to analyze the configuration-internationalization performance relationship under the assumption of *equifinality*, a property of open systems, we pose a second research question: Do the different capability configurations that characterize SMEs lead to equally successful outcomes in terms of internationalization? In answer to these questions, this article presents the results of a study of 292 manufacturing firms located in Canada and France.

Keywords
capability configuration, equifinality, internationalization, strategic capabilities

Introduction

There has been growing evidence of the internationalization of small- and medium-sized enterprises (SMEs) within the last two decades (Lu and Beamish, 2001; Oviatt and McDougall, 2005). The ability to internationalize has become a competitive necessity for many firms, enabling survival and growth under globalization (Acs et al., 2003; Knight, 2000; Couerderoy et al., 2011). Correspondingly, this phenomenon has received increasing attention from scholars who have sought to characterize the internationalization process and export behavior of SMEs (Moen and Servais, 2002), be it incremental as in the Uppsala model and the network approach (e.g. Johanson and Vahlne, 2009) or radical as in the 'born-global' firms (e.g. Freeman and Cavusgil, 2007a), and to identify the antecedents and consequences of internationalization (Coviello and McAuley, 1999; Higon and Driffield, 2011; Ruzzier et al., 2006; Sousa et al., 2008).

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From both a descriptive and a prescriptive point of view, the most important issue for researchers and practitioners lies in identifying the environmental, organizational and entrepreneurial 'success factors' of internationalization, that is, the predictors of internationalization performance for these organizations (Hollenstein, 2005; Hsu and Pereira, 2008; Wheeler et al., 2008). Among this set of potential predictors, we focus here on identifying the *strategic capabilities* that must be acquired and developed by SMEs in order to perform at the international level (Leonidou et al., 2007). To do so, we apply a configurational approach or more precisely a taxonomical approach (Miller, 1996) grounded in strategic management and contingency theory (Miller, 1981; Van de Ven and Drazin, 1985) by inter-relating the strategic capabilities of SMEs to generate further insight and provide further explanation of the internationalization performance of these organizations. Hence the first research question: What are the different organizational configurations that characterize SMEs with regard to their strategic capabilities for internationalization?

Originating in contingency theory and closely associated to the configurational approach is the notion of *equifinality*, generally defined as the state of achieving a specific outcome through different configuration types (Van de Ven and Drazin, 1985). In applying this notion befittingly to the specific context of SMEs, we aim to further analyze the configuration-internationalization performance relationship in one of its three basic forms, namely suboptimal equifinality (Gresov and Darzin, 1997), and thus pose a second research question: Do the different capability configurations that characterize SMEs lead to equally successful outcomes in terms of internationalization?

Aiming to answer these questions, this article presents the results of a study of 292 manufacturing firms located in Canada and France. In so doing, our main contribution to knowledge will be to fill a gap in the SME internationalization literature, wherein the notion of strategic development has been mostly neglected (Fletcher, 2001), by conceptually founding and empirically determining the internationalization performance of SMEs in a more holistic and strategic manner, from both a descriptive and prescriptive point of view. By integrating a resource-based view of the firm's internationalization, a configurational approach to the firm's internationalization capabilities and equifinality in achieving the firm's internationalization objectives, we thus aim to provide a deeper understanding and better explanation of the internationalization performance of SMEs.

Theoretical background

Within the strategic management literature, research has focused extensively on strategic capabilities as the source of performance differences between individual firms. Defined as ensembles of skills and accumulated knowledge that allow organizations to deploy their assets and coordinate their activities (Desarbo et al., 2005), strategic capabilities are deemed to shape important organizational outcomes such as innovation (Di Benedetto et al., 2008) and internationalization (Hsu and Pereira, 2008; Knight and Cavusgil, 2004). With regard to this last outcome, researchers have rather favored a universalistic approach, considering that the acquisition and improvement of strategic capabilities in such matters as new product and market development (Beise-Zee and Rammer, 2006; Lefebvre et al., 1996; Zahra et al., 1997), networking (Johanson and Vahlne, 2009; Ulubasoglu et al., 2009), technology (Raymond et al., 2005) and human resource (HR) management (Hassid and Fafaliou, 2006) constitute 'best practices' that determine the firm's internationalization performance.

However, the universalistic approach is contested by those who propose a configurational approach (Delery and Doty, 1996). As summarized by Fiss (2007: 1180), these researchers 'take a systemic and holistic view of organizations where patterns or profiles rather than individual independent variables are related to an outcome such as performance'. Firms may achieve a sustainable competitive advantage by creating *capability configurations* as 'a cohesive combination of resources and capabilities that is hard to imitate' (Miller et al., 2002: 43).

In order to better conceptualize the relationship between the strategic capabilities and internationalization performance of SMEs, we view the international small business literature through three distinct yet complementary theoretical lenses, originating in strategic management research, namely the resource-based view, the configurational approach, and contingency theory with its central notions of 'fit' and equifinality. The first lens focuses on the SMEs' strategic capabilities as primary determinants of internationalization outcomes, the second on how these capabilities interrelate and combine to achieve such outcomes, and the third on whether the 'best' outcome may be obtained through one or more such combinations of capabilities.

Internationalization of SMEs from a resource-based view

In studying entrepreneurship from a strategic perspective, researchers have used the resource-based view (RBV) to focus on entrepreneurial capabilities as critical factors of the firm's competitive advantage (Alvarez and Barney, 2000; Hsu and Pereira, 2008). The RBV relies on two fundamental assertions, that of resource heterogeneity (resources and capabilities possessed by firms may differ), and of resource immobility (these differences may be long lasting). From this perspective, entrepreneurial firms 'are a bundle of commitments to technology, HR, and processes all blanketed by knowledge that is specific to the firm' (Alvarez and Busenitz, 2001: 761). This bundle of resources and capabilities and how it is developed and managed by the entrepreneur is what produces heterogeneity among firms and makes certain firms harder to imitate (Wright et al., 2001).

A number of researchers have adopted a resource-based, or capabilities perspective, to empirically address the issue of the internationalization of SMEs. Among the first were Dhanaraj and Beamish (2003) who found the product development and market development capabilities of SMEs to successfully predict their internationalization performance, and Añón Higón and Driffield (2011) found a positive relationship between innovation and the decision to export. Westhead et al. (2004) identified human and network resources as the critical determinants. For their part, Johanson and Vahlne (2009) focused on networking with various partners to generate knowledge in a context of uncertainty. It is worth noting, however, that in all three studies, notwithstanding the RBV's emphasis on developing and coordinating capability sets or bundles, singular causation and linear relationships between individual capabilities and internationalization performance was assumed.

Strategic capability configurations for the internationalization of SMEs

As used in strategic management research, organizational configurations are meant to classify organizations by an orchestrating theme or profile, labelled as a typology (Miles and Snow, 2003), a taxonomy (Meyer et al., 1993), a gestalt (Miller, 1981), or an archetype (Lim et al., 2006). In relating these configurations to an organizational outcome, most often performance, the basic assumption has been that 'competitive advantage may reside in the orchestrating theme and integrative mechanisms that ensure complementarity among a firm's various aspects: its market domain, its skills, resources and routines, its technologies' (Miller, 1999: 32). As such, it would seem quite obvious that the configurational approach is also suitable in entrepreneurship research (Harms et al., 2009).

Certain researchers have used a configurational approach to empirically study the internationalization of SMEs. For instance, Roth (1992) first identified five international configuration and coordination archetypes within a sample of 126 medium-sized US firms, and then related these archetypes to the firms' growth and profitability levels. Aspelund and Moen (2005) developed a taxonomy of 283 Norwegian SMEs based on the rapidity and extent of their internationalization. Whereas Freeman and Cavusgil (2007b) used 12 case studies of born-global Australian firms to identify four types of internationalization behaviors based on the firms' entrepreneurial and network capabilities.

Fit, equifinality and the internationalization performance of SMEs

Originating in contingency theory, the concept of 'fit' or coalignment has shown its usefulness from both theoretical and managerial perspectives in strategic management (Venkatraman, 1990) and entrepreneurship research (Naman and Slevin, 1993). The fundamental view of fit propounded by researchers is that it consist of a search for aligning the organization with its environment and to arrange its resources and capabilities so as to support that alignment (Gresov, 1989). From this theoretical perspective, one could surmise that the strategic capabilities of SMEs are leveraged to the extent that they are in a state of coalignment, that is, to the extent that these firms can achieve a coherence among their capabilities that constitutes the essence of their internationalization strategy (Miller, 1996).

Configurational approaches that simultaneously consider many different elements are the ones that have been preferred by researchers in order to empirically assess fit (Meyer et al., 1993). Built upon equifinality, a property of open systems, these approaches assume that there exists a feasible set of equally effective, internally consistent organizational configuration types (Doty et al., 1993). Now, Gresov and Drazin (1997) suggest that there are three forms of equifinality, namely suboptimal equifinality, trade-off equifinality and configurational equifinality, and that each form must be analyzed independently as it corresponds to a different organizational situation.

As applied in this study, because it appears to most befit the situation of manufacturing SMEs, suboptimal equifinality implies that there are multiple and conflicting performance objectives that must be attained by the firm (say, internationalization versus innovation, quality versus efficiency, growth versus profitability), but a low degree of latitude in configuring the strategic capabilities needed to meet these objectives. Being less complex (or more 'simple') organizations than large enterprises, SMEs have less latitude in adopting various capability configurations, and equal performance is deemed to result from the internal coherence of the configurations rather than their fit with external demands (Miller, 1993). Hence, performance will be suboptimal when SMEs develop their strategic capabilities around a single dominant performance objective such as internationalization (Gresov and Drazin, 1997) that would be in conflict with another objective, say financial return.

Research hypotheses

In providing a precise and formalized description of the RBV, Barney (1991) included strategic capabilities among the resources that are possessed by a firm, and that can be used to formulate and implement competitive strategies. In a global knowledge-based economy, a number of SMEs in the manufacturing sector are subjected to strong competitive pressures to attain 'world-class' status by improving their productivity, their flexibility, the quality of their products and services, their information processing capability, and especially their innovation capabilities (Thornhill, 2006; Watson, 2007). As internationalization can be considered as 'inseparable of the overall growth and development of the company' (Nummela et al., 2005: 5), the strategic intent of SMEs is deemed to manifest itself through the acquisition and preservation of strategic capabilities, not only in terms of developing new products and new markets (Ansoff, 1957; Spence, 2003) but also in terms of developing the networks (Hanna and Walsh, 2002), technologies (Rivard et al., 2006) and HR systems that support the preceding capabilities (Subramony, 2009).

The configurational approach to the strategic development of SMEs goes further by seeking to discover to what extent the five individual capabilities previously identified constitute capability configurations or 'gestalts' that form a coherent whole, and to associate these configurations to the SMEs' attainment of a competitive advantage and the realization of organizational outcomes such as growth (Harms et al., 2009; Miller, 1999). Hence, internationalization performance should here

be associated with capability configuration types, rather than being linearly predicted by individual capabilities (Fiss, 2007). And from a contingency perspective, product development, market development, networking, and technological and HR development capabilities would determine the performance of SMEs insofar as they are in a state of strategic coalignment (Gresov, 1989; Miller, 1996; Naman and Slevin, 1993).

The configuration approach, moreover, extends the contingency approach by positing that only a limited number of configuration types can be equally successful, that is, by positing equifinality (Harms et al., 2009). Now, the international entrepreneurship studies cited previously suggest that SMEs that demonstrate a stronger international orientation develop product, market, network, technology and HR capabilities that are more aligned with their internationalization objectives (Dhanaraj and Beamish, 2003; Johanson and Vahlne, 2009; Westhead et al., 2004). In the suboptimal equifinality situation that is deemed to characterize most SMEs (Gresov and Drazin, 1997; Miller, 1993), one consistent set of such capabilities would be favored over others, i.e. there would be a 'pseudo-ideal' configuration type with regard to the internationalization performance of SMEs (Payne, 2006). Hence our first research hypothesis follows:

> Hypothesis 1: In the context of manufacturing SMEs, strategic capability configurations that are more aligned with dominant internationalization objectives will produce higher levels of internationalization performance.

In a suboptimal equifinality situation, the environmental context limits managerial discretion, restricting in particular the choices available to small business managers in developing their firm's capabilities (Gresov, 1989). Moreover, the focus on one strategic objective, internationalization in this case, further 'restricts management from being able to utilize numerous configurations to achieve functionality' (Payne, 2006: 758). Now, the basic tenet of contingency theory is that better performance is the consequence of a closer fit between multiple factors of the firm's environment, strategy, and structure (Doty et al., 1993). From a multi-dimensional perspective of fit specifically related to this study, it has been found that SMEs with more 'misfits', i.e. deviating more from an ideal coalignment pattern, incur a greater penalty in terms of performance (Bergeron et al., 2004). Our second research hypothesis thus follows:

> Hypothesis 2: The greater the misfit between a manufacturing SME's strategic capability configuration and the configuration type preferred for internationalization, the worse the SME's internationalization performance.

It is worth noting that a conceptualization of fit as 'profile deviation' (Venkatraman, 1989) underlies the second hypothesis. In this criterion-specific perspective, fit is defined as the internal consistency of multiple contingencies (Drazin and Van de Ven, 1985) wherein a (pseudo-) ideal profile, defined empirically from a taxonomy, is assumed to exist and deviations from this profile result in lower performance.

Methodology

Sample and data collection

This study used secondary data obtained from a database created by a university research laboratory, containing information on 213 Canadian and 79 French manufacturing SMEs (www.uqtr.ca/LaRePe). With the collaboration of an industry association in the province of Quebec (Canada) and in the Rhône-Alpes region (France), the database was created by having the SMEs' chief executive

and functional executives such as the controller, HR manager, and production manager fill out a questionnaire to provide data on the practices and results of their firm. Anonymity and confidentiality is preserved by having the questionnaires transit through the industry association so that firms are known by the research center only by an alphanumeric identifier assigned by the association. Once all the questionnaire data have been manually verified by the research center's personnel, they are typed in via validation software and entered in the database as valid data, ready for benchmarking. Questionnaires with missing or invalid data are returned to the firms for additions or corrections. In exchange for these data, the firms are provided with a complete comparative diagnostic of their overall situation in terms of performance and vulnerability (further information on data collection and validation can be found in St-Pierre and Delisle, 2006).

The size of the sampled firms ranges from 20 to 405 employees, the median being 48, whereas annual sales range from 1 to 55 million dollars (CAD), the median being 5.6 million. Given the study's aims, and as there is no international consensus as to the definition of a manufacturing SME on the basis of size, it will be defined here as an enterprise whose number of employees is greater or equal to 20 and less than 500. Whereas in North America, a manufacturing SME is generally defined as having between 50 and 499 employees (cf. Mittelstaedt, Harben and Ward, 2003), in the European Union an SME is presently defined as having from 20 to 249 employees (cf. Kalantaridis, 2004). More than 15 industrial sectors are represented, including metal products (25.9% of the sampled SMEs), plastics and rubber (15.1%), wood (13.7%), electrical products (6.8%), machinery (5.3%), food (4.9%) and furniture (4.9%). A third of the sampled SMEs (33%) operated in industrial sectors of low technological intensity, 49 percent in sectors of medium-low intensity and 18 percent in sectors of medium-high intensity. There were no firms in high-tech sectors. The descriptive statistics of the research and control variables are presented in Appendix.

Measures

One may note at the outset that there is very little potential for common method variance in this study (Podsakoff et al., 2003), as different managers answer different parts of the questionnaire (e.g. the chief executive answers questions on the firm's internationalization performance and the production manager on its technological capabilities) and different variables are measured with different methods (e.g. objective measures for internationalization performance and subjective for technological capabilities).

Strategic capabilities. Strategic capabilities were assessed through surrogate measures drawn from the extant literature. Hence, capabilities in matters of product development are estimated from two variables generally used to measure R&D intensity, that is, the ratio of product R&D budget to number of employees and the ratio of number of employees dedicated to R&D to number of employees (Barry, 2005). The frequency with which market study and prospecting activities are undertaken is used as an indication of the firm's capabilities with regard to market development (Czarnitzki and Spielkamp, 2003), that is, 'outside-in' capabilities that help it to understand changes taking place in its markets (Day, 1994).

Capabilities, with regard to networking, are ascertained through the business collaborations established in order to achieve greater efficiency, better response to market needs, greater competitiveness (Street and Cameron, 2007), uncertainty reduction and develop new knowledge (Johanson and Vahlne, 2009). These inter-organizational agreements to cooperate and share resources or processes are observed in the domain of R&D and product development (Yuan-Chieh, 2003), production (D'Amours et al., 1999), and marketing (Piercy and Cravens, 1995). The networking

capabilities of manufacturing SMEs are thus estimated by asking managers to indicate the number of formal partnerships established for these purposes with various partners such as customers, suppliers, competitors, and other third parties such as research centers and universities (Al-Laham and Souitaris, 2008).

Following prior studies (Brandyberry et al., 1999; Rai et al., 2006), technological capabilities are measured by the level of assimilation of advanced manufacturing technologies and systems as perceived by the production manager on a scale of 0 (technology not implemented) to 5 (highly assimilated technology). Using Kotha and Swamidass' (2000) classification, the technologies and systems evaluated include four product development technologies, five process technologies and six computer-based production planning and logistics applications.

Capabilities in the management of HR are evaluated through an aggregate standardized indicator of the level of development of HRM practices (Guest et al., 2003; Huang, 1997), considering the extent of application or intensity of ten practices: job descriptions, recruitment, performance appraisal, incentive compensation (profit sharing and stock ownership), employee participation, information sharing (strategic, economic and operational information), and training. Following Boselie et al. (2005), some practices such as incentive compensation were measured by their coverage (the employees to whom they are applied) and others such as training by their intensity (the degree to which they are applied).

Internationalization performance. Given that exporting is still the prevalent mode of entry into foreign markets for manufacturing SMEs (Armario et al., 2008; Chetty and Campbell-Hunt, 2003), two dimensions of internationalization performance are measured: that is, export intensity using the commonly-used ratio of foreign sales to total sales (Reuber and Fischer, 1997; Ruigrok et al., 2007), and international diversification using an entropy approach that weights sales by market area (Fernández-Ortiz and Lombardo, 2009; Hitt et al., 1997). The formula is $\Sigma_{i=1,3}[P_i \times \ln(1/P_i)]/\ln(3)$ where P_i is the proportion of sales attributed to global market region i (1: national market, 2: US market for Canadian SMEs or EU market for French SMEs, 3: rest-of-world market). Note that Sousa's (2004) review of the literature confirms both export intensity and international diversification to be most appropriate measures of the internationalization performance of SMEs.

Control variables. Given the results of previous studies that have demonstrated the theoretical and empirical importance of organizational and environmental context variables such as the firm's size, age, sector of activity, commercial dependency and location as potential determinants of its internationalization performance (Andersson, 2004; Calof, 1993; George et al., 2005; Hitt et al., 2006; Nakos et al., 1998; Westhead et al., 2001), we included these factors as control variables or covariates in order to increase the validity of the capability configurations and the configuration-performance relationships uncovered. Hence the firm's size was measured by the number of employees and the firm's age was measured by the number of years since its creation (Lu and Beamish, 2006). The industry variable was measured as the technological intensity of the industrial sector in which the firm operates (1: low-tech, 2: medium to low-tech, 3: medium to high-tech, 4: high-tech), using the OECD's (2005) classification (Barry, 2005). The commercial dependency variable or 'power of customers' was measured by the ratio of sales generated by the three most important customers to total sales (Freel, 2000; Spanos and Lioukas, 2001). Location was measured as the country of the firm's headquarters and main production facilities (0: France, 1: Canada).

A test comparing the distribution of the research variables in the Canadian and French manufacturing SMEs found minor differences between the two groups. French SMEs are on average older, have developed less marketing partnerships, invest less in product R&D but have proportionally more personnel engaged in R&D, show greater assimilation of process technologies, and operate

more in low-tech sectors. Their Canadian counterparts are found to operate more in medium to low-tech sectors. As such, the two sub-samples appear to be rather homogeneous: that is, differences regarding capabilities do not appear to be significant enough to prevent combining the two into one sample for the study's purpose (Kish, 2002), noting that the sampled firms' age, industry and country will be explicitly taken into account as covariates in the subsequent analysis. As recommended by Sousa (2004), increasing external validity by using SME data from two different countries adds robustness to the results.

Results and discussion

The correlation matrices of the research and control variables are presented in Tables 1 and 2. An examination of these matrices leads us to conclude that multicollinearity is unlikely to be a problem, as most correlation coefficients are inferior to the 0.30 value. Note, however, the expected strong correlation ($r = 0.80$), given their definition, between the internationalization performance variables, international diversification and export intensity.

A confirmatory factor analysis ascertained the reliability, convergent validity and discriminant validity of the five capability constructs and the internationalization performance construct. As shown in Table 1, all constructs met the 0.7 level for reliability (ρ coefficient, defined as the ratio between the square of the sum of the loadings plus the sum of the errors due to construct variance) and the 0.5 level for convergent validity (average variance extracted by the construct from its measures). Discriminant validity was confirmed by determining that no shared variance between any two constructs was greater than the average variance extracted by these two constructs from their respective measures (Fornell and Larcker, 1981).

In order to test our first research hypothesis, first we had to empirically derive a configurational classification (or taxonomy) of the sampled firms' strategic capabilities, as indicated by Gresov and Drazin (1997). This was done through cluster analysis, using the twelve capability measures as clustering variables, based on the extensive use of this method in previous studies of organizational configurations. This numerical taxonomic approach first aims to group organizations into clusters such that each cluster's membership is highly homogeneous with respect to certain attributes. A second aim is that each group differs from other groups with respect to these same characteristics.

The SPSS TwoStep clustering algorithm was chosen as it can handle a large number of cases and automatically determines the optimal number of clusters (Zhang et al., 1996). A three-cluster solution was found to be optimal in identifying groups of SMEs that could be clearly distinguished from one another, based on an interpretable and meaningful pattern of relationships among the clustering variables. As shown in Table 3, the three strategic capability configurations were labelled as Cluster 1 (with 142 firms), Cluster 2 (with 93 firms) and Cluster 3 (with 57 firms). Significant differences between configuration means for nine out of the twelve strategic capability variables demonstrate the unique character of each configuration type.

Following Ketchen and Shook's (1996) recommendations, the reliability of the clusters was tested by using alternative clustering algorithms, namely K-means and hierarchical clustering algorithms, both of which produced three-cluster solutions as being most interpretable and meaningful. The criterion-related validity of the clusters was assessed by analysis of variance (ANOVA) and analysis of covariance (ANCOVA) tests presented in Table 4, showing significant differences between the three clusters with regard to variables 'theoretically related to the clusters, but not used in defining clusters' (Ketchen and Shook, 1996: 447), namely the two internationalization performance variables. In addition, multiple analysis of variance (MANOVA) tests confirmed the significant relationship between the capability configurations and internationalization performance, notwithstanding the potential effects of the control variables.

Table 1. Reliability, Validity and Correlation Matrix of the Research Variables ($n = 292$)

Variables	ρ[a]	AVE[b]	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12	13.
Product development capability	.92	.85													
1. Product R&D budget per empl.			–												
2. No. of R&D empl./no. of empl.			.71	–											
Market development capability	.81	.60													
3. Market study – actual customers			.08	.14	–										
4. Market study – potential cust.			.15	.15	.69	–									
5. Prospecting – new cust./markets			.11	.06	.10	.31	–								
Networking capability	.88	.71													
6. Design and R&D partnerships			.24	.24	.15	.16	.16	–							
7. Production partnerships			–.00	.00	.11	.07	.03	.58	–						
8. Marketing partnerships			.11	.08	.13	.14	.12	.59	.55	–					
Technological capability	.76	.52													
9. Product dev. technologies			.07	.08	–.10	.04	.04	.09	.07	.07	–				
10. Process technologies			–.06	–.08	.13	.14	.08	.22	.14	.07	.32	–			
11. Production mgmt. technologies			.08	.05	.07	.20	.20	.15	.10	.12	.21	.32	–		
HR development capability	1.0	1.0													
12. Extent of dev. of HRM practices			.17	.19	.19	.17	.15	.29	.26	.21	.09	.18	.19	–	
Internationalization performance	.95	.90													
13. International diversification			.26	.25	.19	.22	.13	.15	.05	.10	.06	.13	.12	.23	–
14. Export intensity			.27	.23	.17	.24	.13	.19	.04	.12	.07	.11	.08	.19	.80

[a]reliability coefficient = $(\Sigma\lambda_i)^2/((\Sigma\lambda_i)^2+\Sigma(1-\lambda_i^2))$
[b]average variance extracted = $(\Sigma\lambda_i^2/n)$
Note: Pearson correlation coefficients greater than 0.10 are significant ($p < 0.05$, two-tailed).

Table 2. Correlation of the Research Variables with the Control Variables ($n = 292$)

Variables	Size of the firm	Age of the firm	Industry		Power of customers	Country
			low-tech	med. -high		
Product development capability						
1. Product R&D budg. per empl.	–.02	–.14	–.20	.43	.02	.03
2. No. R&D empl./no. of empl.	–.07	–.14	–.15	.39	.01	.05
Market development capability						
3. Market study – actual cust.	.09	–.01	–.06	.00	–.04	–.06
4. Market study – potential cust.	.14	–.06	–.10	–.01	–.12	.05
5. Prospecting – new cust./mark.	.06	–.17	–.04	.02	–.14	.14
Networking capability						
6. Design and R&D partnerships	.19	.01	–.15	.13	–.05	.14
7. Production partnerships	.15	.12	–.07	–.01	.07	.05
8. Marketing partnerships	.09	.03	.04	.03	–.07	.15
Technological capability						
9. Product dev. technologies	.24	.02	–.23	–.03	.04	–.04
10. Process technologies	.33	.13	–.15	–.19	.03	–.15
11. Production mgmt. techn.	.22	–.01	.05	–.05	–.05	–.11
HR development capability						
12. Dev. extent of HRM practices	.22	–.07	–.13	.14	–.03	–.08
Internationalization performance						
13. International diversification	.20	–.02	–.09	.06	–.11	–.05
14. Export intensity	.19	–.06	–.06	.03	–.04	.01
Control variables						
15. Size of the firm	–					
16. Age of the firm	.04	–				
17. Industry: low-tech	–.11	–.01	–			
18. Industry: medium to high-tech	–.05	–.13	–.28	–		
19. Power of customers	–.04	–.05	–.01	.04	–	
20. Country	.12	–.26	.17	.07	.05	–

Note: Pearson correlation coefficients greater than 0.10 are significant ($p < 0.05$, two-tailed).

In Table 3, Cluster 1 SMEs are characterized by a weaker capability configuration in terms of product development, market development, networking and HRM. And these firms are weakest in their technological capability. The SMEs in Cluster 2 are similar to the preceding group with regard to product development and HR development capabilities, but are stronger in their market development and networking capabilities for product design and R&D. These firms are the strongest, however, in terms of their capacity to assimilate advanced manufacturing technology. Cluster 3 SMEs clearly dominate the two other groups in their capacity to develop new products and to develop their human resources. They are comparable to Cluster 2 firms however with regard to market development and networking capabilities but weaker in technological capability while still being stronger than Cluster 1 firms on most capabilities. In short, the Cluster 1 and Cluster 3 configurations are opposites basically, whereas the Cluster 2 configuration shares certain aspects with the other two. Note, however, that networking capabilities in terms of production and marketing partnerships are the same across the three groups, in line with Johanson and Vahlne's (2009) proposition that certain capabilities must be minimally developed by the SMEs whatever their internationalization level.

Table 3. Strategic Capability Configurations Resulting from Cluster Analysis

Capability Configuration Variable	Cluster 1 (n = 142) mean	Cluster 2 (n = 93) mean	Cluster 3 (n = 57) mean
Product development capability			
Product R&D budget/firm size	513 $_b$	669 $_b$	4 734 $_a$
No. of R&D employees/firm size	0.023 $_b$	0.018 $_b$	0.090 $_a$
Market development capability			
Market study – actual customers	1.9 $_b$	2.3	2.5
Market study – potential customers	1.6 $_b$	2.2 ^{a}	2.4 ^{a}
Prospecting for new cust./markets	3.1 ^{b}	3.4 ^{a}	3.5 ^{a}
Networking capability			
Design and R&D partnerships	0.6 $_b$	1.2	1.3
Production partnerships	0.9 ^{b}	1.4 ^{a}	1.0 ^{a}
Marketing partnerships	0.5	0.7	0.7
Technological capability			
Assim. of product dev. technologies	5.0 $_c$	9.6 ^{a}	6.9 $_b$
Assim. of process technologies	3.0 ^{c}	11.0 ^{a}	5.5 ^{b}
Assim. of production manag. techn.	3.5 $_c$	10.1 $_a$	5.8 $_b$
HR development capability			
Development of HRM practices	−1.2 $_b$	0.8 $_b$	1.8 $_a$

*p < 0.05; **p < 0.01; ***p < 0.001.
$_{a,b,c}$

Table 4. Breakdown of Control Variables and Internationalization by Configuration

Capability Configuration Variable	Cluster 1 (n = 142) mean	Cluster 2 (n = 93) mean	Cluster 3 (n = 57) mean	ANOVA F	ANCOVA $F^{¶}$
Size of the firm (no. of employees)	52 $_b$	89 $_a$	86 $_a$	15.3***	–
Age of the firm (no. of years)	27 $_{a.b}$	34 $_a$	24 $_b$	3.9*	–
Industry (technological intensity)					
Low-tech	0.34 $_a$	0.26 $_{a,b}$	0.14 $_b$	4.2*	–
Medium to low-tech	0.49 ^{b}	0.67 ^{a,b}	0.54 ^{a,b}	3.5*	–
Medium to high-tech	0.17 $_{a,b}$	0.07 ^{b}	0.32 $_a$	7.6***	–
Power of customers					
% of sales to the 3 main customers	0.43	0.43	0.41	0.1	–
Country (1= Canada, 0 = France)	0.78	0.68	0.74	2.7	–
Internationalization performance					
International diversification	0.248 $_c$	0.343 $_b$	0.660 ^{a}	54.6***	29.3***
Export intensity	0.102 ^{c}	0.200 $_b$	0.612 $_a$	137.5***	77.0***

¶with covariates: Size of the firm, Age of the firm, Industry, Power of customers and Country
*p < 0.05; **p < 0.01; ***p < 0.001.
$_{a,b,c}$

Returning to Table 4, one can also characterize the three configuration types in terms of the control variables and of internationalization performance. Thus, SMEs in Cluster 1 are smaller on average than those in the other two groups, and they are more present in low-tech industries than SMEs in Cluster 3. Firms in Cluster 2 are older on average and less present in medium to high-tech industries than those in Cluster 3. Moreover, the three groups show significantly distinct levels of internationalization performance, both in terms of international diversification and export intensity. Cluster 3 is clearly the higher-performing capability configuration type, and Cluster 1 is the lower-performing type, whereas Cluster 2 stands in the middle with regard to internationalization. And this remains true when the effects of the control variables are taken into account.

Following Payne's (2006) approach, the results of multivariate regression analyses performed for the individual SMEs in the sample are presented in Table 5. The independent variables are the configuration group memberships, i.e. two dichotomous or 'dummy' variables (1: yes, 0: no) indicating whether the firm is a member of Cluster 2 or Cluster 3, with Cluster 1 membership as a constant term (i.e. the base category against which the other two categories are assessed) in the regression equation. The dependent variables are the two indicators of internationalization performance, namely international diversification and export intensity. Given the high correlation between these last two variables, a multiple equations regression method allows one to simultaneously test each independent variable across the two regression equations, as these equations are not independent.

Two regression models are tested for each dependent variable, the first (model 1) only includes the configuration group membership variables, whereas the second (model 2) also includes the control variables. Multivariate F tests show the total effect of each independent variable upon the dependent variables when both are considered simultaneously. Furthermore, a MANOVA tests the overall relationship between the capability configurations and the two internationalization performance variables.

Table 5. Multivariate Regression Analysis[a]

	International diversification		Export intensity		Multivariate *F* test	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Configuration cluster 1[b]	11.3***	5.6***	6.2***	2.6**	67.8***	17.9***
Configuration cluster 2	3.1**	2.3*	3.7**	3.1**	7.1***	4.7**
Configuration cluster 3	10.4***	9.5***	16.5***	15.8***	136.8***	128.0***
Size of the firm		2.0*		1.4		2.1
Age of the firm		–0.3		–0.5		0.2
Industry						
(low-tech)		0.2		0.8		0.4
(med.-high-tech)		–0.1		–1.8		3.0
Power of customers		–1.8		–0.5		2.2
Country		–0.9		0.2		1.1
F	54.6***	14.8***	137.5***	35.6***	MANOVA	
R^2	0.27	0.30	0.49	0.50	Wilks' lambda = 0.515 $F = 55.5$***	

[a] *t* coefficient ($n = 292$)
[b] constant
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Given that the SMEs in Cluster 3 show the strongest product development and HR development capabilities, the results support Hypothesis 1 in that the capability configuration type represented by this last cluster is clearly the higher-performing type, both in terms of international diversification and export intensity. The validity of these results is enhanced by the lack of added explanatory power provided by the control variables when they are included in the regression equations, as 27 percent of the variance in international diversification and 49 percent of the variance in export intensity are explained solely by membership in the configuration clusters (versus 30% and 50% with the added control variables). This allows us to conclude that strategic capability configurations can serve as powerful yet concise means of analysis and prediction when studying the internationalization of SMEs.

In order to test the second research hypothesis, we needed to measure the extent to which an individual firm's strategic capability configuration deviates from the higher-performing configuration type. Following the 'fit as profile deviation' perspective (Venkatraman, 1989), a mean score was obtained for each capability variable in the dominant configuration group, i.e. the 57 firms in Cluster 3. Deviation was then calculated as the absolute value difference between this mean score and an individual firm's score. Hence the sum of these twelve differences measures the total distance (or misfit) between the firm's capability configuration and the higher-performing configuration type.

The results found in Table 6 add the deviation variable as a predictor of internationalization performance. These results provide partial support to Hypothesis 2 as the misfit between an SME's, strategic capability configuration and the more ideal configuration type (Cluster 3) is found to be a significant predictor of international diversification but not of export intensity, again with no effect from the control variables. Also, membership in the configuration groups alone explains significantly less variance in international diversification (31% in model 1 and 33% in model 2) than in export intensity (51% and 52%).

Table 6. Multivariate Regression Analysis with Deviation from Dominant Configuration[a]

	International diversification		Export intensity		Multivariate *F* test	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Configuration cluster 1[b]	7.4***	5.9***	4.2***	2.9**	28.3***	18.5***
Configuration cluster 2	3.4***	2.6**	3.9***	3.3***	8.0***	5.5**
Configuration cluster 3	11.0***	10.1***	16.8***	16.0***	140.4***	129.7***
Size of the firm		1.7		1.1		1.5
Age of the firm		–0.5		–0.6		0.2
Industry						
(low-tech)		0.1		0.7		0.4
(med.-high-tech)		–0.0		–1.5		2.3
Power of customers		–1.8		–0.6		2.1
Country	–2.4**	–1.2	–1.5	0.1	2.9	1.6
Deviation from dominant configuration type (misfit)		–2.2*		–1.4		2.4
F	40.8***	14.5***	95.1***	32.3***	MANOVA	
R^2	0.31	0.33	0.51	0.52	Wilks' lambda = 0.503 F = 55.4***	

[a] *t* coefficient (n = 292)
[b] constant
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Given that achieving international diversification is a more complex endeavor than exportation to a single market or to markets close by (e.g. the US market for Canadian SMEs), this last result suggests that the two indicators of internationalization performance used in this study are not equivalent, cannot be substituted one for the other, and thus are not necessarily explained by the same determinants. This is also in line with previous SME internationalization studies where exportation is considered to be the easiest, the most simple and thus the initial form of internationalization, whereas diversification requires that SMEs develop new networking and learning capabilities (Sousa, 2004). It is also important to note that the direction of deviation variable's effect on internationalization performance is as hypothesized, i.e. the negative sign indicating in all cases that the greater the misfit, the worse the performance.

Within the taxonomy derived from our study, the better-performing capability configuration for internationalization lies with the SMEs in Cluster 3. We found these firms to show the best performance by concentrating on their product development and market development capabilities. However these SMEs have also developed networking capabilities with regard to product design and R&D and they show the strongest HRM capabilities among the three groups. As such, their strategic capability configuration would allow Cluster 3 firms to meet a demand for internationalization but also competing demands for innovation and productivity. Hence these firms could be called 'global' SMEs (as opposed to 'international' SMEs for the other two groups).

In terms of predicting the SMEs' internationalization performance, the 'second best' capability configuration type is that of Cluster 2. These firms are shown to be the most developed in terms of technological capabilities. Nonetheless, these firms are also seen to develop strong market-linking capabilities. Given their typical capability configuration, contextual demands for quality and efficiency that originate from the market and the competition would compete with internationalization for these SMEs' attention and could explain why they do not perform as well internationally as Cluster 3 firms.

The worst-performing SMEs with regard to internationalization are those in Cluster 1, noting that their performance in absolute terms is still quite acceptable, with an average export intensity of 25 percent. These firms are the least developed in terms of market development, networking and technological capabilities. While their typical capability configuration is internally consistent, it may satisfy no dominant functional demand, be it internationalization or another strategic function. Given that these SMEs are of the same age, but of smaller size on average than the two other groups, their continued existence and performance may be better explained by their 'value appropriation' capabilities, configured to extract profits in the marketplace (Reitzig and Puranam, 2009), than by the 'value creation' capabilities examined in this study. Here one could further explore the owner-managers' strategic orientation to better understand their firm's capability configuration and the type of performance they aim for.

Implications

There are a number of research implications that emanate from this study, given the present level of knowledge on the strategic management of manufacturing SMEs in the now global economy.

Contributions to knowledge

First, we have identified different organizational configurations that characterize SMEs with regard to their strategic capabilities for internationalization. In so doing, we have contributed to the literature on international small business by using a configurational approach based on a systemic and holistic capabilities-based view to gain further insight into the strategic co-requisites of

international business venturing. We have also contributed to research on equifinality by applying this notion to further understand the capability configuration-internationalization performance relationship in a suboptimal equifinality context typical of manufacturing SMEs. And in supporting both research hypotheses, strong corroborating evidence obtained in the specific context of international SMEs has been provided to Payne's (2006: 764) assertion that 'a suboptimal situation may empirically resemble an ideal type context and can be largely supported by contingency theory'. As the proposed multidimensional contingency fit-misfit model was empirically validated in its ability to predict internationalization performance, the capability configurations found have theoretical and practical significance.

The results presented here provide added theoretical validity to the configurational (as opposed to the universalistic or 'best practices') approach to determine the link between the strategic capabilities and internationalization performance of these firms, that is, to explain their strategic orientation. The coalignment of capabilities thus constitutes a fruitful theoretical basis to investigate the determinants of strategic behavior and internationalization of manufacturing SMEs. A methodological contribution also resides in the effectiveness with which the cluster analysis-based configurational perspective allowed us to describe and predict the level of internationalization achieved through development of strategic capabilities. The taxonomical rather than typological approach employed in this study may allow for a better understanding of the complex realities of SMEs in the context of internationalization, where predicting the behavior of firms is extremely difficult.

Managerial contributions

This study also has some prescriptive implications for owner-managers of manufacturing SMEs and for those whose mission is to provide assistance to these firms. Given the increasing complexity of the business environment, it has become essential, even urgent to better understand the strategic orientation of SMEs and the international business competencies needed by these firms in order to provide them with the appropriate support (Knight and Kim, 2009). When changes in the organizational or environmental context require strategic decisions that affect the SME's development, internationalization and performance, these decisions and their consequences must be related to the firm's existing capabilities in order to prevent failures.

Public policy aiming to stimulate the internationalization of SMEs should be formulated to reach more precise strategic targets, by taking into account the different capability configurations identified in this study as well as the owner-managers' objectives. In relation to internationalization, the generic, 'shotgun' or 'one size fits all' approach to public policy is thus not appropriate. Given their limited resources, most SMEs cannot implement business practices or adopt behaviors that are not aligned with their strategic objectives. Public policies should thus modulate their programs and support to SMEs in relation to this diversity. Doing so would increase the 'world-class' capability required by SMEs to compete in a global economy and would provide greater knowledge of the various internationalization modes and behaviors by which these organizations attempt to reduce their strategic risk. Hence, aiming to intensify export activities may be critical to certain SMEs, but may not be relevant to others. Also, public policies and support measures that are better targeted could increase the reactive capacity of SMEs while rendering these interventions more effective and more profitable. This also reinforces Leonidou et al.'s (2007) conclusions, suggesting various ways for governments to stimulate the internationalization of SMEs by acting upon factors, such as strategic capabilities, that correspond to the specificity, orientation and international engagement of these organizations.

Future research should allow for a better understanding of the multiple adjustments to their capabilities that manufacturing SMEs will have to make in order to increase their international performance in the face of the new competitive challenges brought about by globalization and

the knowledge-based economy. Furthermore, these firms operate in situations of uncertainty that require frequent adjustments to their business processes: thus the need for flexibility in order to respond to changes in their business environment. SME owner-managers should thus consider their firm only as a producer of goods and services but also as a producer of knowledge, where the capacity to learn from multiple sources becomes a determining factor in their international performance (Hsu and Pereira, 2008). The choice of the capabilities to analyze could be based on the different dimensions and the results obtained could then be compared to these strategic types.

Limitations and conclusion

Although the studied sample of firms is relatively representative of manufacturing SMEs in terms of size and industry, it may have certain particularities that limit the generalization of the results. The measures employed may not adequately reflect the breadth and depth of the SMEs' capabilities in matters of products, markets, networks, technologies and HRM. Moreover, added dimensions of the internationalization construct were not taken into account. The sampled firms participated in a performance benchmarking activity that can by itself reveal a certain divergence with the manufacturing SME population in terms of capabilities and internationalization. Finally, because co-alignment is a dynamic process, a longitudinal study could reveal additional results that the present cross-sectional study cannot obtain, notably a causal link between the capabilities and internationalization of SMEs. Also, a more dynamic perspective could answer the question of the stability of the configurations over time and their eventual link with the firm's age, entrepreneurial orientation and internationalization intent (De Clerq et al., 2005) or with the owner-manager's motivations (Hutchison et al., 2007).

Starting from a strategic perspective founded on the firm's strategic orientation and capabilities, the results of this study reveal that a specific capability profile with regard to products, markets, networks, technologies and human resources is associated to a greater level of internationalization for manufacturing SMEs. This supports the basic contingency argument that strategic capabilities can be leveraged for purposes of internationalization to the extent that these capabilities are in strategic coalignment, that is, constitute coherent capability configurations.

Facing competition that is more and more global and under pressure from their main business partners, many manufacturing SMEs are called upon to grow and internationalize. In light of their strategic objectives, developing in a coherent manner their capabilities with regard to products, markets, networks, technologies and human resources thus constitutes a key success factor for these firms. This should lead researchers to identify the interactions among the strategic attributes of manufacturing SMEs that determine the performance of these organizations, notably in terms of internationalization, rather than identifying individual determinants of performance. Moreover, from a more 'institutional' perspective (DiMaggio and Powell, 1983; Hitt et al., 2006), one could verify if the adoption of a particular capability configuration effectively results from a strategic choice made by the manufacturing SME or is rather the result of its business environment and organization mode through coercive, mimetic or normative isomorphisms.

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Appendix. Descriptive Statistics of the Research Variables (n = 292)

Variable	Mean	Median	S.D.	Min.	Max.
Product development capability					
product R&D budget/no. of employees (CAD $)	1 387	158	3 177	0	26 800
no. of R&D employees/no. of employees	0.034	0.014	0.071	0	0.790
Market development capability[a]					
market study – actual customers	2.2	2.0	1.4	0	5
market study – potential customers	2.0	2.0	1.3	0	5
prospecting for new customers/markets	3.3	2.0	1.3	0	5
Networking capability[b]					
product design and R&D partnerships	0.9	0.0	1.2	0	5
production partnerships	1.1	1.0	1.3	0	6
marketing partnerships	0.6	0.0	0.9	0	4
Technological capability					
assimilation of product development technologies[c]	6.8	6.0	5.8	0	20
assimilation of process technologies[d]	6.1	5.0	5.3	0	25
assimilation of production management technologies[e]	6.3	5.0	5.6	0	30
HR development capability					
extent of the development of HRM practices[f]	0.0	–0.1	4.7	–14.1	13.8
Size of the firm: number of employees	70	48	59	20	405
Age of the firm: number of years since creation	28	21	24	1	181
Industry (technological intensity)[g]					
low-tech	0.27	–	–	0	1
medium to low-tech	0.56	–	–	0	1
medium to high-tech	0.17	–	–	0	1
Power of customers: % of sales to the 3 main customers	0.43	0.40	0.24	0.02	1.00
Country (1: Canada, 0: France)	0.73	–	–	0	1
Internationalization performance					
international diversification[h]	0.358	0.347	0.298	0.000	1.000
export performance[i]	0.233	0.130	0.275	0.000	0.970

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

[a] frequency of realization of the activity (1: low, 5: high)

[b] number of partnerships with prime contractors, customers, suppliers, competitors, research centers, colleges and universities, and other SMEs

[c] $\Sigma_{k=1,4}$[*perceived* assimilation of product development technology$_k$, on a scale of 0 to 5] product development technologies = computer-aided draughting, CAD, CAM, CAD/CAM

[d] $\Sigma_{k=1,5}$[*perceived* assimilation of process technology$_k$, on a scale of 0 to 5] process technologies = programmable automata, CNC, robots, FMS, automated handling

[e] $\Sigma_{k=1,6}$[*perceived* assimilation of production management technology$_k$, on a scale of 0 to 5] production management technologies = computerized production planning, bar-coding, EDI, MRP, MRP-II, ERP

[f] $\Sigma_{k=1,10}$[extent of application or intensity of HRM practice$_k$ (standardized)] HRM practices = task descriptions, performance appraisal, recruitment, training, dissemination of strategic information, of economic information, of operational information, consultation, profit sharing, stock ownership

[g] associated to the industrial sector, following the OECD's (2005) classification

[h] $\Sigma_{j=1,3}[P_j \times \ln(1/P_j)]/\ln(3)$ where P_j is the proportion of sales attributed to global market region j

[i] foreign sales / total sales

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