Journal of Small Business Management 2003 41(3), pp. 242–261

A Resource-Based Approach to the Study of Export Performance

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This paper presents a comparative study of the export performance of U.S. and Canadian small and medium-sized exporters. A parsimonious model is developed drawing on the resource-based theory of the firm, with three sets of resources, namely firm size, enterprise, and technological intensity. These key resources are good predictors of the export strategy of a firm. Export strategy is modeled as degree of internationalization, and its effect on the overall firm performance is studied using firm-level performance measures. LISREL's multiple group analysis feature is used in the analysis to test the model. The results confirm the validity of the model across the two data sets.

Small and medium-sized businesses (SMEs) are increasingly internationalizing their operations (Anderson 1995). Despite the continuing growth in the number and the magnitude of foreign direct investments around the world, exporting continues to be an important mode of internationalization for these firms. Global export trade is measured in the trillions of dollars annually and contributes to about 20 percent of the world gross domestic product (World Bank 1995).

While the significance of exporting in the global economy is well acknowledged, theoretical developments in the area have not matched the developments in practice. Over the past three decades, scholars have presented various descriptive models of export behavior and performance. In one of the state-of-the-art reviews, Gemunden (1991) noted that there are over 700 explanatory variables that have been advanced in the literature as determinants of export performance. The need for a parsimonious model with a strong theoretical background, which can be tested across a wide range of country data, has been advocated by various scholars (Cavusgil and Zou 1994;

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Gemunden 1991). The research presented in this paper is driven by two key questions: (1) How can we ground exporting research in the received theory of the firm? and (2) What methodology can be used to address the issues of measurement errors, multiple indicators, and multisample research that are being seen increasingly as a necessary approach to advance the field? This paper presents a causal model for export strategy and performance, drawing on the resource-based view (RBV) of the firm, an increasingly important school of thought in the business strategy literature. Using a structural equation modeling approach, we test the conceptual framework on empirical data from U.S. and Canadian small and medium-sized exporters.

Literature Review

Evolution of Export Research

Export research has gone through an evolution over the past three decades. The first decade could be characterized as an exploratory stage preoccupied with issues such as (1) Why do firms export—or more likely, why don't they? (2) What are the factors contributing to high export activity? and (3) Is there a gradual, incremental growth in adoption of export activity? (Bilkey and Tesar 1977; Johanson and Vahlne 1977; Cavusgil 1976; Tookey 1964).

Significant contributions of this research were the identification of firm-specific variables and the decision-maker characteristics that support export performance. The stages model of internationalization (Johanson and Vahlne 1977) was adopted quickly into the export models, providing a dynamic model of export behavior (Bilkey and Tesar 1977; Cavusgil 1976). All these stages models emphasized "experiential" knowledge (Penrose 1959), knowledge gathered through experience in foreign activities, psychic distance, and the incremental resource commitment of the firm. However, scholars have challenged the stages model and have suggested significant modifications to reflect reality (Rao and Naidu 1992; Sullivan and Bauerschmidt 1990; Turnbull 1987).

The second decade saw a phenomenal growth in the number of empirical studies of the export behavior of mostly small and medium-sized enterprises. Managerial attitudes, organizational resources, and product features were studied for their impact on export performance (Beamish and Munro 1987; Cavusgil and Naor 1987; Cooper and Kleinschmidt 1985; Denis and Depelteau 1985; Bilkey 1982). Channel management issues came to the forefront. Reid (1987) argued for an explicit research focus on the anatomy of export channels and their link with firm strategy and performance to assist public policy and export decision-making. The relationship between export strategy and export performance also started receiving attention (Baird, Lyles, and Orris 1994; Cavusgil and Naor 1987; Bilkey 1982).

The third decade of export research was marked by significant advances in methodology and by an increase in the number of comparative studies and large sample research. Holzmuller and Kasper (1991) developed a causal analytical model based on a study involving managers from 110 Austrian SMEs. Their study identified both cognitive and noncognitive abilities of the management with an in-depth analysis of the organizational culture that was conducive to export orientation. This was one of the very few studies that looked beyond the regression models and studied the causal relationships by employing the partial least-squares approach (PLS), a correlation-based statistical technique employing latent constructs (Hulland 1999).

Comparative works that have samples from multiple countries are very limited. Dichtl et al. (1990) carried out an extensive multi-country project doing comparative studies on SMEs from Germany,

Finland, Japan, South Africa, and South Korea and concluded that the foreign market orientation of decision-makers is an important determinant of export performance. Adams and Hall (1993) looked at the factors influencing the growth of SMEs and their export performance by studying 1,132 SMEs from eight European countries and found that country-specific factors affected export performance, while personal factors were relatively more important. Large-sample research has been conducted by Bonaccorssi (1992) using an Italian database of 8,810 Italian manufacturing firms and by Calof (1994) using a Canadian database of 14,072 Canadian manufacturers. Their results highlighted the importance of other variables beyond firm size in determining the export performance of a firm.

While these studies have advanced the field of exporting, a number of deficiencies have been pointed out by scholars. First, most of the studies lack sound theoretical frameworks (Gemunden 1991), relying largely on empirical relationships. Second, the emphasis of most studies has been on the decision to export rather than on the ongoing export strategy and its relationship to overall firm performance (Cavusgil and Zou 1994). With the changing global dynamics and with the growing interest in international activities by firm managers, the focus needs to move from developing explanatory variables to integrating the research to develop a normative model. Third, most of the studies attempt to explain export behavior and performance, ignoring the relationship among the explanatory variables. Much of this has been due to methodological constraints, which can be overcome by using advanced statistical methodologies such as path analysis and structural equation modeling. Fourth, most studies have focused on firms within a single country (or state). Comparative studies, such as Dichtl et al. (1990), can provide data on differences in exporting practices across countries as well as can enhance the external validity of the model. This particularly becomes useful when country differences are related to performance (Beamish, Craig, and McLellan 1993).

RBV of the Firm

To develop a more conceptually rigorous and parsimonious model of export strategy and performance, we draw on the RBV of the firm (Barney 1991; Wernerfelt 1984), an emerging theoretical paradigm in strategic management (Collis and Montgomery 1995). RBV focuses on how sustained competitive advantage is generated by the unique bundle of resources at the core of the firm (Conner and Prahalad 1996; Barney 1991). Early work by Penrose (1959) defined a firm as "a collection of physical and human resources" and pointed to the heterogeneity of these resources (p. 9).

Wernerfelt (1984) suggested that "resources and products are two sides of the same coin" and presented the possibility that by specifying a resource profile for a firm, it would be possible to find the optimal product-market activities (p. 171).

The term "resource" was conceived broadly of as "anything that can be thought of as a strength or a weakness" of the firm (p. 172).

Barney (1986) introduced the idea of assets being valuable whose strategic factor markets were imperfect due to information asymmetry. Dierickx and Cool (1989) identified a strategic asset as a stock accumulated over a period of time and hence subject to some key characteristics that made it noninimitable, such as time compression diseconomies and causal ambiguity. Barney (1991) combined these to provide four key attributes of a resource that can yield sustainable competitive advantage: (1) valuable; (2) rare; (3) imperfectly mobile or sticky; and (4) nonsubstitutable. The stickiness of the resources arises out of

the fact that a firm's resources are history dependent, causally ambiguous, and socially complex (King and Zeithaml 2001; Eisenhardt and Martin 2000). RBV addresses the central issue of how superior performance can be attained relative to other firms in the same market and posits that superior performance results from acquiring and exploiting unique resources of the firm. Such a viewpoint is valuable because it presents a rich theoretical framework on which export models can be developed and tested. RBV continues to be refined and empirically tested (Bharadwaj 2000; Hadjimanolis 2000; Medcof 2000; Verona 1999; Conner and Prahalad 1996; Markides and Williamson 1996; Miller and Shamsie 1996; Henderson and Cockburn 1994; Amit and Schoemaker 1993).

Resources and Export Strategy

The exporting literature implicitly has addressed many resource issues. Following Penrose (1959), we identify three sets of resources that encompass the resource domain of a firm, namely managerial or organizational resources, entrepreneurial resources, and technological resources. Organizational resources, often proxied by firm size, are a measure of "managerial slack" indicated by the financial and physical resources at the disposal of the firm (Penrose 1959). Entrepreneurial resources or "enterprise," as Penrose termed it, refer to the risk and drive of the managers, who are primarily responsible for the growth of the firm. Technological resources are the tangible and intangible technical assets of the firm. A high-technological intensity typically indicated by a high research and development (R&D) expenditure provides the firm with unique technological know-how, which often promotes the expansion of the firm overseas. Technological intensity as proxied by R&D has not been considered a significant variable in export literature, except for in a few studies in which the results were inconclusive (McGuinness and Little 1981a; Kirpalani and MacIntosh 1980). However, technology has been a significant variable in explaining the internationalization of a firm, as seen in international business literature (Buckley and Casson 1991). Following Penrose (1959), we consider these three resources as the key constructs that constrain or strengthen the export strategy of a firm. Table 1 presents the variables hypothesized to be related to the export activity of a firm, as summarized by Cavusgil and Naor (1987), and indicates how they can be classified into the three broad resource groups.

Export Strategy and Export Performance

In building the export strategy and performance model, we treat strategy and performance as two distinct constructs. Most of the export models use export intensity as a performance measure (Gemunden 1991), and this is relevant at the macro-level when one is interested in maximizing a country's exports. At the firm level, export profitability is more of a concern than export intensity. While export intensity as a performance measure serves to draw policy implications for promoting exports, it is less useful for drawing normative implications for managers of firms. However, at the firm level, export intensity may not be the critical performance indicator. A high intensity indicates that exports are high relative to domestic sales. This may not turn necessarily into higher profits or better image for the company. Earlier studies on the correlation of export intensity with profitability are inconclusive (Gemunden 1991). Our export model treats export intensity as a mediating construct which, in turn, has an impact on the overall firm performance.

As such, export intensity is an outcome of the export strategy of the firm, and quite often the question of

Table 1
Export Marketing Variables and Firm Resources

	Organizational Resources	Entrepreneurial Resources	Technological Resources
Firm-Specific Advantage			
Superior Products		●	
Domestic Market Expansion	●		
Technological Orientation			●
Experience in Distribution	●		
Management Expertise in Marketing	●		
Large Size	●		
Indicators of Resource Commitment to Export			
Export Market Research		●	
Gathering Information about Foreign Market		●	
Assessment of Foreign Market Potentials		●	
Formulating Basic Policies toward Exporting		●	
Visitations to Foreign Markets		●	
Decision-Maker Characteristics			
Type and Extent of Education		●	
Age of Decision-Maker		●	
Proficiency in Foreign Languages		●	
Tolerance for Risk		●	
Aspirations for Growth and Profits		●	
International Orientation		●	
Perceived Attractiveness of Exporting			
Expectations of Risk in Exporting	Not Considered—External Factor		
Expectations of Profits in Exporting	Not considered—External Factor		

"How much to export?" is treated in relation to "What markets to export to?" The exporting literature has dealt with the market expansion strategy (Lee and Yang 1990; Cooper and Kleinschmidt 1985; Ayal and Zif 1979) using export diversity, which normally is measured by the number of country-markets served. The focus is on two broad classes of strategies in terms of the export markets: concentration and diversification. Limited empirical study has occurred on the

impact of geographical diversity on export profitability (Piercy 1981). The empirical findings in the international business literature point to a positive relationship between the degree of internationalization of the firm and its performance (Delios and Beamish 1999; McDougall and Oviatt 1996; Ayal and Zif 1979). Export intensity, as well as export diversity, is reflective of the extent of internationalization of the firm and, more rightly, is indicative of degree of internationalization (DOI) (Sullivan 1994). Hence, export strategy could be better captured by using the construct DOI. Performance can be measured at the firm level using a composite measure of profitability, growth, and market share. A discussion of the conceptual model and the hypotheses to be tested follow.

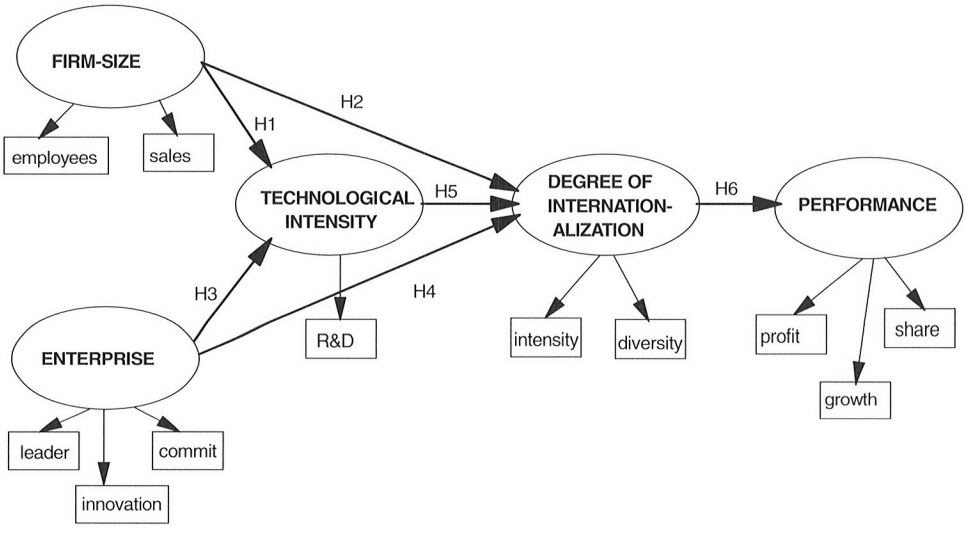
Conceptual Model

An overview of the conceptual model is shown in Figure 1. The five theoretical constructs are shown in ellipses, and illustrative manifest variables that can be used as indicators for the respective constructs are shown in boxes.

Firm Size Factor

Theoretical developments in the RBV of the firm (Penrose 1959; Wernerfelt 1984; Barney 1991) point to the fact that firm size is one of the indicators of a firm's organizational resource base or slack. Firm size is an indicator of managerial and financial resources available in the firm, and to the extent that excess resources are available, a firm will look for opportunities for expansion (Penrose 1959). Firm size as an explanatory

Figure 1
Export Behavior and Performance: A Causal Model[a]



[a]Latent constructs are shown as ellipses and manifest variables are shown in boxes. H1–H6 refers to the corresponding hypotheses in the main text.

variable for export intensity has been a contentious issue in the export literature. Bonaccorssi's (1992) and Calof's (1994) analyses showed that while smaller firms certainly possess fewer resources than larger firms, nevertheless they may have appropriate resources to be involved in international activities. The relationship between firm size and innovation of a firm also has been a much-researched issue (McGuinness and Little 1981a). We take the Schumpeterian view that firm size has a direct relationship with innovation and technological intensity.

H1: *The larger the firm, the higher the technological intensity.*

H2: *The larger the firm, the higher the degree of internationalization.*

Enterprise

Many of the early studies in exporting dealt with decision-maker characteristics. International orientation or similar constructs largely have been used to explain why some firms export and why other firms within the same industry do not export (Cavusgil and Naor 1987). A firm's willingness and commitment to gather information about foreign market have been shown to play a key role factor in its export intensity. RBV provides a theoretical framework in which these variables can be anchored. Penrose (1959) defined "enterprise" as a "psychological predisposition on the part of individuals to take a chance in the hope of gain, and, in particular, to commit effort and resources to speculative activity" and noted that two striking expressions of this enterprise of the firm are (1) willingness to consider expansion across geographic boundaries; and (2) commitment to information-gathering activity (p. 33).

Indeed, whenever expansion is neither pressing nor particularly obvious, a firm has the choice of continuing in its existing course or of expending effort and committing resources to the investigation of whether there are further opportunities of which it is not aware yet. This is a decision that depends on the enterprise of the firm. Drawing from Penrose (1959), "One of the most important ways of reducing subjective uncertainty about the future course of events is surely to obtain more information about the factors that might be expected to affect it" (p. 59).

Since enterprise is that characteristic that drives management to explore new boundaries, we hypothesize that this will cause management to promote high R&D as well as to undertake a higher level of internationalization.

H3: *The higher the enterprise of the firm, the higher the technological intensity.*

H4: *The higher the enterprise of the firm, the higher its degree of internationalization.*

Technological Intensity

Technology is an important factor in a firm's product mobility across national boundaries (Buckley and Casson 1991). The impact of R&D and the product characteristics on export performance also is a well-researched issue. Some results have supported the positive effect of R&D intensity on export motivation (Karagozoglu and Lindell 1998) and performance (Simon 1992; Gemunden 1991; McGuinness and Little 1981a). However, there are a great deal of conceptual and practical difficulties in attempting to relate R&D effort and export success. McGuinness (1981b), for example, found that the R&D effort exerted by a firm is to a large extent a function of situational factors and that the impact of R&D itself is minor in comparison to that of the situational factors. One way of resolving this dilemma is to look at technology as one of the key resources of a firm, and depending on its technological intensity, a firm should be able to exploit its advan-

tage in foreign markets. Technological intensity refers to a phenomenon in which (1) substantial value is added to the product early in the value chain, that is, away from the customer compared to close to the customer; (2) there is significant interindustry flow of technology; and (3) the rate of change of technology is high (Anderson and Tushman 1990). Therefore,

H5: The greater the technological intensity of a firm, the greater the degree of internationalization.

Performance

Earlier we argued the case for looking at profitability, market share, and sales growth when assessing the performance of the export strategy of a firm rather than looking at its export intensity. Good performance would motivate increased internationalization, and thus the causal link could be reciprocal. Such reciprocal causal links can be studied only with multitime period data. For this study, we hypothesize the causal link in only one direction:

H6: The higher the degree of internationalization of a firm, the higher the performance.

Research Methodology

As argued earlier, we emphasized two methodological issues: the need for comparative study data from two countries and the potential of using a causal modeling approach. Comparative study of two economies with dissimilar export profiles using a similar structural equation model provides strong external validity of the model. Covariance structural modeling implemented in the software package LISREL (Byrne 1998; Joreskog and Sorbom 1993) can address the issues of measurement error and multiple indicator constructs and has been employed previously in a single-country exporting study (Bijmolt and Zwart 1994).

Measures

Firm size was measured using the number of employees and annual sales. While small firms are willing to disclose the number of employees, they generally are unwilling to disclose exact sales figures. Therefore, the sales data were collected on an ordinal scale (1 to 3). Enterprise was measured using a self-reported score on three key measures indicative of the entrepreneurial resources of the firm. These were measured on a 5-point Likert scale (strongly disagree to strongly agree) on the following attributes:

- The firm's perception of itself as a technological leader within the industry;
- The firm's perception of the importance of innovation to its export success; and
- The firm's emphasis on devoting resources to cutting edge developments.

Technological intensity was measured using R&D intensity. A firm's ratio of R&D-to-sales is a good indicator of technological intensity, because a high R&D-to-sales ratio implies a high expenditure within the firm on the product and, therefore, relatively high value addition early in the value chain, and it indirectly suggests that the rate of technological change is high and requires large R&D investments.

The DOI was measured using two variables, export intensity and export diversity. Export intensity was measured as a ratio of a firm's exports to its total sales, and export diversity was measured as the number of country-markets served by the firm.

Firm performance was gauged using three measures: profitability, market share, and growth. For this study these measures were self-reported scores of the firms on a five-point Likert scale.

Data

The data used in the empirical test are based on survey questionnaires mailed to a sample of 385 Canadian firms nationwide and 500 U.S. firms located in an industrial Midwestern state. Sixteen questionnaires from the Canadian sample and 14 from the U.S. sample were returned because no forwarding address was available. From the reduced sample size of 369 Canadian firms, 89 useable questionnaires were received (giving a response rate of 24.1 percent); from the 486 U.S. firms, 73 useable questionnaires were received (giving a response rate of 15.0 percent). These response rates are consistent with earlier research on SMEs (Gemunden 1991). Two of the Canadian firms' questionnaires and three of the U.S. firms' questionnaires could not be used in the model since key data were missing, leaving a sample size of 157 firms (87 Canadian and 70 U.S.). The key characteristics of the sample in terms of number of employees, sales volume level, and so forth are given in Table 2.

Data Analysis

We used a second-generation multivariate analysis technique known as structural equation modeling (Bensaou, Coyne, Venkatraman 1999; Byrne 1998). This was preferred to the standard multiple regression analysis for three reasons. First, it is possible to include the measurement errors in the model. All measurement is made with error, and this seldom is dealt with explicitly infirst-generation techniques. Often measurement errors lead to over- or under-estimation of the strength of relationships between constructs. With survey results, this becomes even more important. Second, LISREL and other second-generation methods allow the analysis of multiple criteria and predictor variables and analysis of unobservable theoretical variables, known as latent constructs and which we have used in our model. Third, it is possible to confirm the reliability of the measures and validity of the constructs in the theoretical context.

The causal model shown in Figure 1 was implemented in LISREL. The 11 measured variables and the correlation

Table 2
Sample Characteristics and Measured Variables

	United States (n = 70)	Canada (n = 87)
Employment		
1–20 Employees	28	36
21–80 Employees	23	33
81–500 Employees	19	18
Sales Volume		
Under US$1M	7	17
US$1M–less than US$10M	44	56
US$10M–less than US$50M	17	12
Export Intensity		
Below Five Percent	24	10
Five–15 Percent	24	12
Above 15 Percent	22	65

across the measured variables are shown in Table 3. Note that the table provides descriptive statistics for both the U.S. and Canadian data sets. The correlation coefficients for the Canadian data are provided in the upper triangle of the table, and the coefficients for the U.S. data are provided in the bottom triangle of the table. Box's M test was done to confirm that the correlation tables were statistically different across the two data sets, with a significance of $p < 0.001$. This suggests that one should expect the relationship among the variables to vary across the two models. The variation could come from the differences in the measurement model or from the structural model.

With LISREL, one can specify the constraints either in the measurement model or in the structural model and can determine whether particular parameters or indeed the entire covariance matrices of the observed variables are equal for different groups. The multisample methodology in LISREL allows one to run the model keeping the measurement model constant across the two groups (constrained model) or allowing the measurement model to vary across the two groups (unconstrained model). We first ran the constrained measurement model and then the unconstrained measurement model and compared the significance of the change in the chi-square. The improvement was not significant. So, in our study, we assigned the measurement model to be consistent across the two groups (that is, lambda matrices are invariant across the two groups). From the measurement point of view, this is a valid constraint, since the same instrument was used for both U.S. and Canadian samples and since the data were collected under identical conditions. The covariance matrices were generated based on the two sets of data for the two groups. The LISREL program was run with the multigroup analysis option. Along with the nonstandardized solution, within-group completely standardized solutions and common metric completely standardized solutions also were generated using the program. As a test of common structural parameters across the sample, we constrained the structural model for both groups and found that the chi-square difference was significant, indicating that the parameters were group-specific. The results of the unconstrained model are reported here.

Results and Discussion

As with any structural equation model, we analyze and interpret the results in two stages: (1) the assessment of the reliability and validity of the measurement model; and (2) the assessment of the structural model (Barclay, Higgins, and Thompson 1995; Bollen 1989). This sequence ensures that we have reliable and valid measures of constructs before attempting to draw conclusions regarding the relationships among the constructs.

Measurement Model

The results for the constrained measurement model are shown in Table 4. All the lambda values are highly significant, indicating reliability of the measurement model. Note that technological intensity is a single indicator construct, and thus measurement errors are assumed to be zero. For the firm size, the number of employees as well as the sales figures are used as measures. Measurement error on number of employees was constrained to be zero to prevent a negative error variance (Bollen and Long 1993). For all the constructs except for performance, all the factor loadings are quite high (lambda < 0.68). For the performance construct, the market-share and market-growth constructs do not load as highly as for profitability (lambda = 0.45 to 0.47). The high measurement error can be attributed to the nature of the self-reported score in performance. Often, profitability is assessed readily by the

Table 3
Descriptive Statistics of Measured Variables[a]

	U.S. EXPORTER		CANADIAN		Emp.	Exp. Int.	Sales	Exp. Div	R&D	Leader.	Innov.	Commit.	Profit.	Mkt. Shr.	Growth
	Mean	Std Dev	Mean	Std Dev											
Employees	72.378	91.117	53.303	68.756	—	0.097	0.624**	0.119	−0.086	0.168	−0.092	0.188	0.270*	0.075	0.189
Export Intensity	17.084	18.747	49.840	32.721	0.120	—	0.145	0.448**	0.317**	0.305**	0.383**	0.309**	0.414**	0.278**	0.335**
Sales	2.164	0.726	1.966	0.664	0.749**	0.199	—	0.171	−0.147	0.049	−0.044	0.178	0.249*	0	0.076
Export Diversity	10.732	12.094	9.783	13.423	0.494**	0.477**	0.409**	—	0.062	0.291**	0.237*	0.273*	0.403**	0.193	0.247*
R&D	4.045	4.028	9.675	14.740	0.134	0.151	0.117	0.382**	—	0.251*	0.346**	0.273*	−0.077	0.146	0.104
Leadership	3.464	1.339	4.023	1.133	0.147	0.273*	0.265*	0.219	0.393**	—	0.553**	0.448**	0.406**	0.266*	0.251*
Innovation	3.333	1.453	4.176	1.059	0.093	0.148	0.303*	0.084	0.201	0.638**	—	0.629**	0.211	0.097	0.094
Commitment	3.208	1.288	3.779	1.089	−0.003	0.317**	0.171	0.090	0.221	0.679**	0.591**	—	0.132	0.199	0.214
Profitability	2.852	1.166	2.755	1.236	0.271*	0.427**	0.278*	0.313*	0.235	0.292*	0.208	0.115	—	0.196	0.339**
Market Share	3.360	0.895	3.558	0.953	0.103	0.167	0.059	0.133	0.26	0.253	0.123	0.143	0.610**	—	0.689**
Growth	3.229	0.844	3.252	1.002	0.139	0.233	0.174	0.133	0.105	0.187	0.147	0.221	0.491**	0.660**	—

*$p < 0.05$
**$p < 0.01$
***$p < 0.001$
[a]The top half of the table is Canadian exporters data, and the bottom half is U.S. exporters data. The covariance matrices for U.S. and Canadian data were significantly different (Box's $M = 188.3$, $p < 0.001$).

Table 4
LISREL Common Measurement Model

Latent Construct	Manifest Variable	Factor Loading Nonstandardized)	Factor Loading (Common (Metric)
Firm Size	Employees	0.541***	0.738
	Sales	1	1
Technological Intensity	R&D Intensity	1	1
Enterprise	Leadership Perception	1	0.797
	Innovation Perception	0.986***	0.777
	Willingness to Invest	0.892***	0.747
DOI	Export Intensity	1	0.719
	Export Diversity	0.922**	0.679
Performance	Profit	1	0.835
	Share	0.409**	0.448
	Growth	0.430**	0.473

**$p < 0.01$
***$p < 0.001$

managers, whereas the market share tends to be highly erratic and subject to individual bias (Mitchell, Shaver, and Yeung 1993).

Structural Model

In interpreting the results of the structural model in a multigroup analysis, one should take note of the variance and covariance matrices of the constructs for the different groups as shown in Table 5. Note that the factor variances and covariances for some of the constructs are larger for the U.S. data than for the Canadian data, as seen in Table 5. This necessitates a common metric comparison of the parameters across the two models. The parameters of the structural model (path coefficients) either can be nonstandardized, standardized within group, or standardized across the group. These three sets of parameters are reported as shown in Table 6. The first set is the nonstandardized path coefficients for the U.S. and the Canadian samples. The parameters are not scaled and thus could be used to interpret the relationship easily. The second set is the within-group completely standardized solution, which is simply standardizing the parameters as done for individual groups without considering the equality constraints (of the measurement model). The last set of parameters is the common metric completely standardized parameters, which are obtained by standardizing the observed variables to a common correlation metric. Such a common metric facilitates comparison of parameters with different factor variances.

Model Fit

The goodness-of-fit statistics are the focus of the structural equation model-

Table 5
Covariance among Latent Constructs

Latent Constructs	Tech. Intens.	DOI	Performance	Firm Size	Enterprise
Technological Intensity	0.654			U.S. Data	
DOI	0.117	0.108			
Performance	0.215	0.198	1.219		
Firm Size	−0.039	0.121	0.222	0.557	
Enterprise	0.478	0.166	0.304	0.271	1.325
Technological Intensity	0.217			Canadian Data	
DOI	0.071	0.140			
Performance	0.139	0.274	0.875		
Firm Size	−0.058	0.064	0.125	0.441	
Enterprise	0.231	0.206	0.404	0.030	0.715

ing approach. The results are summarized in Table 7. As shown, the chi-square value of 97.17 for the 80 degrees of freedom model is insignificant; thus, we could accept the null hypothesis that the model presented in the paper is a good fit with the data. The U.S. group contributes to 45 percent of the chi-square, and the Canadian group contributes to 55 percent of the chi-square. This is consistent with the ratio of the sample size used for the analysis. Compared with the independence model, we note that this model is highly substantive. The error statistics of root mean square error of approximation (RMSEA) of 0.037 (which is very close to the recommended lower level of 0.03) confirm that the errors of fit in the covariance matrix are very low. This is confirmed further by a low value for the RMR of 0.069. The fit indicators give an overall confirmation of the fit. Goodness of fit index (GFI) is 0.90 and comparative fitness index (CFI) is 0.97, both confirming an excellent fit of the model to the data. All the modification indices are less than 4.2, indicating no further substantial improvement can be made without sacrificing some theoretical assumptions.

Comparative Analysis: U.S. and Canadian Exporters

The path coefficients for the U.S. and Canadian samples are comparable for all the paths except for the path from enterprise to DOI. The path coefficient for the U.S. data is not significant. Since this is a perception variable, a larger sample size would be able to shed some light on this. For the other paths, the values are comparable, demonstrating the robustness of the model across two data sets. The sign for the path coefficients for the path from firm size to technological intensity is negative, contrary to H1. One possible explanation is that the technological intensity being measured as a percentage of R&D expenses on sales does not increase on a linear scale with increasing sales or firm size. Smaller firms may have to spend a disproportionately larger sum on their R&D to be as effective as the bigger firms. All other hypotheses are confirmed. Figure 2 gives an overview of the model with the path

Table 6
LISREL Structural Model

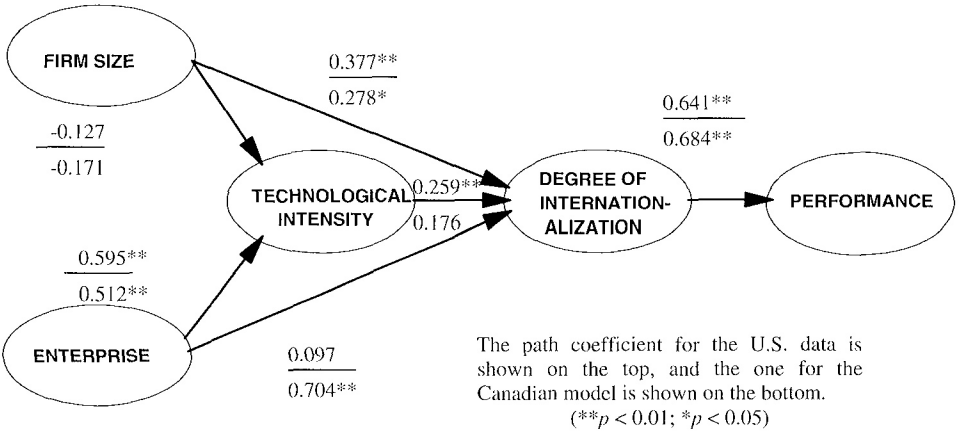
	Path Description (with Hypothesis Number)	Nonstandardized Coefficient (Beta and Gamma)[a]		Within-Group Completely Standardized Solution[b]		Common Metric Completely Standardized Solution[c]	
		US	Canada	US	Canada	US	Canada
H1	Firm Size => Technological Intensity	−0.119	−0.156*	−0.107	−0.222	−0.127	−0.170
H2	Firm Size => Degree of Internationalization	0.190**	0.140*	0.432	0.249	0.377	0.277
H3	Enterprise => Technological Intensity	.384**	0.330**	0.547	0.6	0.595	0.511
H4	Enterprise => Degree of Internationalization	0.034	0.251**	0.121	0.567	0.097	0.703
H5	Technological Intensity => Degree of Internationalization	0.143*	0.097	0.352	0.120	0.258	0.175
H6	Degree of Internationalization => Performance	1.829**	1.955**	0.545	0.782	0.640	0.684

*$p < 0.05$
**$p < 0.01$
[a]Nonstandardized coefficient refers to the absolute value of the path coefficient. This is used when absolute values need to be computed.
[b]Within-group completely standardized solution refers to the values of path coefficients standardized for unit variance within each group. This is used when the relative importance of explanatory variables within each model need to be established.
[c]Common metric completely standardized solution refers to the values of path coefficients standardized across the two groups to compare path coefficients across the two groups. This is used when comparison across the groups for each path coefficient needs to be made.

Table 7
Goodness of Fit Statistics

Chi-Square Statistics	
Chi-Square with 80 Degrees of Freedom	= 97.166 (P = 0.093)
Contribution to Chi-Square from Group 1 (U.S.)	= 45.154 percent
Contribution to Chi-Square from Group 2 (Canada)	= 54.845 percent
Chi-Square for Independence Model (110 D O F)	= 713.294
Error and Residual Statistics	
Root Mean Square Error of Approximation (RMSEA)	= 0.037
90 Percent Confidence Interval for RMSEA	= (0.0; 0.061)
P-Value for Test of Close Fit (RMSEA < 0.05)	= 0.790
Root Mean Square Residual (RMR)	= 0.057
Standardized RMR	= 0.069
Fit Indicators	
Goodness of Fit Index (GFI)	= 0.900
Normed Fit Index (NFI)	= 0.863
Nonnormed Fit Index (NNFI)	= 0.960
Comparative Fit Index (CFI)	= 0.971
Incremental Fit Index (IFI)	= 0.972

Figure 2
Export Behavior and Performance: A Causal Model with Computed Parameters



The path coefficient for the U.S. data is shown on the top, and the one for the Canadian model is shown on the bottom.
(**$p < 0.01$; *$p < 0.05$)

coefficients (common metric). The path coefficients for firm size-to-degree-of-internationalization and for degree-of-internationalization-to-performance are significant for both the U.S. and Canadian samples. The enterprise-to-DOI path is significant for the Canadian sample but not for the U.S. sample. Technological intensity-to-DOI is significant for the U.S. sample but not for the Canadian one—possibly a reflection of the relevant potential domestic market sizes. In the United States, enterprise can translate into greater domestic market growth. In contrast, in Canada, enterprise quickly may saturate domestic market potential, leaving internationalization as a logical focus. The relative importance of these resources to exports can be inferred from the within-group normalized parameter values. For example, in Canada the coefficients for firm size, enterprise, and technological intensity are 0.249, 0.567, and 0.120, indicating the relative importance of entrepreneurial approach in the resource mix compared to those for the U.S. sample (0.432, 0.121, and 0.352, respectively), emphasizing larger and technology-oriented firms. This is consistent with the observation that in small economies, firm size is not as much a factor as in large economies (Bonaccorssi 1992).

Contribution and Limitations

This paper presents a new approach to developing exporting theory that builds on the resource-based view of the firm. Developments in this direction can be helpful in providing a much-needed theoretical base to export studies. The paper builds on the current exporting literature, which has singled out firm-specific advantages as key to export development (Cavusgil and Zou 1994; Naidu and Prasad 1994; Cavusgil and Naor 1987) and grounds these observations in the received theory of the firm. The paper further suggests adopting the covariance structural modeling methodology for comparative studies to enhance the external validity of the theoretical models. Such analysis will help to make more robust conclusions for practitioners.

Despite these significant contributions, the paper has several limitations. First, although the theoretical framework draws on the RBV of the firm, it does not use all the richness of the theory such as mobility, causal ambiguity, and substitutability of resources. There is potential for extending the theoretical arguments to address issues such as product portability across geographic markets and so forth. Second, the operationalization of the constructs can be improved by generating more indicators, as there is sufficient theoretical base for more measurements as well as for broadening the study to a larger number of country samples.

Conclusion

A parsimonious model of export strategy and performance drawing on the resource-based theory of the firm was developed in this paper and was tested empirically with U.S. and Canadian SME exporters' data. The results indicate that the theoretical model matches well with empirical data and that the analytical method advanced here could serve as a meaningful way to develop a more rigorous theoretical model that can be validated across a number of country samples. Enterprise, technological intensity, and firm size have been shown to be good predictors of export strategy, and export strategy has been shown to influence positively firm performance.

The implications of this research to theory and practice are many. First, this paper provides theoretically grounded research and offers a strong potential for theory building in an integrative manner (Cavusgil and Zou 1994). Second, for public policy and small business management, this paper offers significant guidelines. Enterprise and technological

intensity as theoretical constructs are well understood by practitioners and administrators. The strong link of these constructs to export strategy implies that public policy and small business management should focus on developing these traits in order to stimulate export growth. The entrepreneurial dimension of the internationalization is brought forth explicitly in this work.

A number of avenues exist for enhancing this research. First, theoretical sophistication can be introduced in the model by refining the constructs and by identifying multiple measures. Second, with a common theoretical platform and with an analytical methodology that can consider multiple country samples, a large-sample multicountry analysis can be developed that can shed significant light on the exporting phenomena. Also, methodologically, LISREL would permit a comparison of means across the two groups, and thus a potential exists for a more sophisticated analysis and could be a powerful theoretical framework for international marketing research.

References

Adams, G., and G. Hall (1993). "Influences on the Growth of SMEs: An International Comparison," *Entrepreneurship and Regional Development* 5(1), 73–84.

Amit, Raphael, and Schoemaker, Paul J.H. (1993). "Strategic Assets and Organizational Rent," *Strategic Management Journal* 14(1), 33–46.

Anderson, PØul H. (1995). *Collaborative Internationalization of Small and Medium-Sized Enterprises*. Copenhagen: DJOF Publishing.

Anderson, Philip, and Michael L. Tushman (1990). "Technological Discontinuities and Dominant Designs: A Cyclical Model of Technological Change," *Administrative Science Quarterly* 35(4), 604–33.

Ayal, Igal, and Jehiel Zif (1979). "Market Expansion Strategies in Multinational Marketing," *Journal of Marketing* 43(2), 84–94.

Baird, Inga S., M.J. Lyles, and J.B. Orris (1994). "The Choice of International Strategies by Small Businesses," *Journal of Small Business Management* 32(1), 48–59.

Barclay, Donald, Christopher Higgins, and Ronald Thompson (1995). "The Partial Least Squares (PLS) Approach to Causal Modeling: Personal Computer Adoption and Use as an Illustration," *Technology Studies* 2(2), 285–324.

Barney, Jay (1986). "Strategic Factor Markets: Expectations, Luck, and Business Strategy," *Management Science* 32(10), 1231–1241.

Barney, Jay B. (1991). "Firm Resources and Sustained Competitive Advantage," *Journal of Management* 17(1), 99–120.

Beamish, Paul W., and Hugh Munro (1987). "The Export Performance of Small and Medium-Sized Canadian Manufacturers," *Canadian Journal of Administrative Sciences* 3(1), 29–40.

Beamish, Paul W., Ronald Craig, and Kerry McLellan (1993). "The Performance Characteristics of Canadian Versus UK Exporters in Small and Medium-Sized Firms," *Management International Review* 23(2), 121–37.

Bensaou, M., Michael Coyne, and N. Venkatraman (1999). "Testing Metric Equivalence in Cross-National Strategy Research: An Empirical Test across the United States and Japan," *Strategic Management Journal* 20(7), 671–689.

Bharadwaj, Anandhi S. (2000). "A Resource-Based Perspective on Information Technology Capability and Firm Performance: an Empirical Investigation," *MIS Quarterly* 24(1), 169–196.

Bijmolt, Tammo H.A., and Peter S. Zwart (1994). "The Impact of Internal Factors on the Export Success of Dutch Small and Medium-Sized

Firms," *Journal of Small Business Management* 32(2), 69–83.

Bilkey, Warren J., and George Tesar (1977). "Export Behavior of Smaller-Sized Wisconsin Manufacturing Firms," *Journal of International Business Studies* 9(Spring–Summer), 93–98.

Bilkey, Warren J. (1982). "Variables Associated with Export Profitability," *Journal of International Business Studies* 13(4), 39–55.

Bollen, Kenneth (1989). *Structural Equations with Latent Variables*. New York: Wiley.

Bollen, Kenneth A., and J. S. Long, eds. (1993). *Testing Structural Equations*. Toronto: Sage.

Bonaccorssi, Andrea (1992). "On the Relationship between Firm Size and Export Intensity," *Journal of International Business Studies* 23(4), 605–35.

Buckley, Peter J., and Mark Casson (1991). *The Future of the Multinational Enterprise*. London: Macmillan.

Byrne, Barbara M. (1998). *Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming*. Mahwah, NJ: Erlbaum.

Calof, Jonathan L. (1994). "The Relationship between Firm Size and Export Behavior Revisited," *Journal of International Business Studies* 25(2), 367–87.

Cavusgil, S. Tamer (1976). "Organizational Determinants of Firms' Export Behavior: An Empirical Analysis," Unpublished Ph.D. dissertation, University of Wisconsin.

Cavusgil, S. Tamer, and Jacob Naor (1987). "Firm and Management Characteristics as Discriminators For Export Behavior," *Journal of Business Research* 15(3), 221–235.

Cavusgil, S. Tamer, and Shaoming Zou (1994). "Marketing Strategy-Performance Relationship: An Investigation of the Empirical Link in Export Market Ventures," *Journal of Marketing* 58(1), 1–21.

Collis, David J., and Cynthia A. Montgomery (1995). "Competing on Resources: Strategy in the 1990s," *Harvard Business Review* 73(4), 118–128.

Conner, Kathleen R., and C. K. Prahalad (1996). "A Resource-Based Theory of the Firm: Knowledge Versus Opportunism," *Organization Science* 7(5), 477–501.

Cooper, Robert G., and Elko J. Kleinschmidt (1985). "The Impact of Export Strategy on Export Sales Performance," *Journal of International Business Studies* 16(2), 37–55.

Delios, Andrew, and Paul W. Beamish (1999). "Geographic Scope, Product Diversification, and the Corporate Performance of Japanese Firms," *Strategic Management Journal* 20(8), 711–727.

Denis, Jean-Emile, and Denis Depelteau (1985). "Market Knowledge, Diversification, and Export Expansion," *Journal of International Business Studies* 16(4), 77–89.

Dichtl, Erwin, M. Leibold, Hans-Georg Koglmayr, and Stefan Mueller (1990). "International Orientation as a Precondition for Export Success," *Journal of International Business Studies* 21(1), 23–41.

Dierickx, Ingemar, and Karol O. Cool (1989). "Asset Stock Accumulation and Sustainability of Competitive Advantage," *Management Science* 35(12), 1504–1514.

Eisenhardt, Kathleen M., and Jeffrey A. Martin (2000). "Dynamic Capabilities: What Are They?" *Strategic Management Journal* 21(10–11), 1105–1121.

Gemunden, Hans-Georg (1991). "Success Factors of Export Marketing: A Meta-Analytic Critique of the Empirical Studies," in *New Perspectives on International Marketing*. Ed. S.J. Paliwoda. London: Routledge, 33–62.

Hadjimanolis, Athanasios (2000). "A Resource-Based View of Innovativeness in Small Firms," *Technology Analysis and Strategic Management* 12(2), 263–281.

Henderson, Rebecca, and Iain Cockburn (1994). "Measuring Competence? Exploring Firm Effects in Pharmaceutical Research," *Strategic Management Journal* 15(Special Issue), 63–84.

Holzmuller, Hartmut H., and Helmut Kasper (1991). "On a Theory of Export Performance: Personal and Organizational Determinants of Export Trade Activities Observed in Small and Medium-Sized Firms," *Management International Review* 31(special issue), 45–70.

Hulland, John (1999). "Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies," *Strategic Management Journal* 20(2), 195–204.

Johanson, Jan, and Jan-Erik Vahlne (1977). "The Internationalization Process of the Firm—A Model of Knowledge Development and Increasing Foreign Market Commitments," *Journal of International Business Studies* 8(Spring–Summer), 23–32.

Joreskog, Karl G., and Dag Sorbom (1993). *LISREL Version 8.0 Manual.* Chicago: SSI Scientific Software International.

Karagozoglu, Neomi, and Martin Lindell (1998). "Internationalization of Small and Medium-Sized Technology-Based Firms: An Exploratory Study," *Journal of Small Business Management* 36(1), 44–59.

King, Adelaide W., and Carl P. Zeithaml (2001). "Competencies and Firm Performance: Examining the Causal Ambiguity Paradox," *Strategic Management Journal* 22(1), 75–99.

Kirpalani, Vishnu H., and Norman B. MacIntosh (1980). "Internal Marketing Effectiveness of Technology-Oriented Small Firms," *Journal of International Business Studies* 11(Winter), 81–90.

Lee, Chong S., and Yoo S. Yang (1990). "Impact of Export Market Expansion Strategy on Export Performance," *International Marketing Review* 7(4), 41–51.

Markides, Constantinas C., and Peter J. Williamson (1996). "Corporate Diversification and Organizational Structure: A Resource-Based View," *Academy of Management Journal* 39(2), 340–367.

McDougall, Patricia P., and Benjamin M. Oviatt (1996). "New Venture Internationalization, Strategic Change, and Performance: A Follow-Up Study," *Journal of Business Venturing* 11(1), 23–40.

McGuinness, Norman W., and Blair Little (1981a). "The Influence of Product Characteristics on the Export Performance of New Industrial Products," *Journal of Marketing* 45(Spring), 110–122.

——— (1981b). "The Impact of R&D Spending on the Foreign Sales of New Canadian Industrial Products," *Research Policy* 10(1), 78–98.

Medcof, John W. (2000). "The Resource-Based View and Transnational Technological Strategy," *Journal of High Technology Management Research* 11(1), 59–74.

Miller, Danny, and Jamel Shamsie (1996). "The Resource-Based View of the Firm in Two Environments: The Hollywood Film Studios from 1936 to 1965," *Academy of Management Journal* 39(3), 519–543.

Mitchell, Will, Myles Shaver, and Bernard Yeung (1993). "Performance Following Changes of International Presence in Domestic and Transition Industries," *Journal of International Business Studies* 24(4), 647–669.

Naidu, G.M., and V.K. Prasad (1994). "Predictors of Export Strategy and Performance of Small-Sized and

Medium-Sized Firms," *Journal of Business Research* 321(1–2), 107–115.

Penrose, Edith T. (1959). *The Theory of the Growth of the Firm*. New York: John Wiley.

Piercy, Nigel (1981). "Export Strategy: Concentration on Key Markets versus Market Spreading," *Journal of International Marketing* 1(1), 56–67.

Rao, T.R., and G.M. Naidu (1992). "Are the Stages of Internationalization Empirically Supportable?" *Journal of Global Marketing* 6(1–2), 147–170.

Reid, Stan D. (1987). "Export Strategies, Structure, and Performance: An Empirical Study of Small Italian Manufacturing Firms," in *Managing Export Entry and Expansion: Concepts and Practice*. Ed. Philip J. Rosson and Stan D. Reid. New York: Praeger, 335–357.

Simon, Hermann (1992). "Lessons from Germany's Midsize Giants," *Harvard Business Review* 70(2), 115–23.

Sullivan, Daniel, and Alan Bauerschmidt (1990). "Incremental Internationalization: A Test of Johanson and Vahlnes's Thesis," *Management International Review* 30(1), 19–30.

Sullivan, Daniel (1994). "Measuring the Degree of Internationalization of a Firm," *Journal of International Business Studies* 25(2), 325–42.

Tookey, Douglas (1964). "Factors Associated with Success in Exporting," *Journal of Management Studies* 1(March), 48–66.

Turnbull, Peter W. (1987). "A Challenge to the Stages Theory of the Internationalization Process," in *Managing Export Entry and Expansion*. Ed. P.J. Rosson and S.D. Reed. New York: Praeger, 21–40.

Verona, Gianmario (1999). "A Resource-Based View of Product Development," *Academy of Management Review* 24(1), 132–142.

Wernerfelt, Birger (1984). "A Resource-Based View of the Firm," *Strategic Management Journal* 5(2), 171–180.

World Bank (1995). *World Tables*. Baltimore: Johns Hopkins University Press.