

# Small and Medium-Sized Firms' Strategies and Export Performance: An Empirical Study

ANASTASSIOS GENTZOGLANIS\*

**Abstract.** *The present paper is an empirical study of innovation and export performance of small and medium-sized firms. By separating a sample of small and medium-sized manufacturing firms in Canada into two categories, high and low exporters, and by assigning each of them their corresponding innovativeness index, we relate the firms' technological characteristics to their export involvement. The results do not reject the hypothesis that the more innovative firms perform better than the less innovative ones in the export markets.*

## Introduction

Small and medium-sized firms' (SMFs) contribution to innovation, regional and national economic growth through exports and job creation, is being increasingly recognized by many economists, management theorists and policy makers (Acs and Audretsch, 1990). Commitment to R&D effort is generally seen as a determinant factor contributing to increasing efficiency and international competitiveness of SMFs (Lefebvre *et al.*, 1994). Both private organizations and governments are currently seeking to better understand the functioning of SMFs and the way production and financial planning decisions are taken within these organizations. On the one hand, a good knowledge of how SMFs grow and develop can help managers to adopt and design appropriate competitive strategies that lead to a better export performance. On the other hand, governments could implement appropriate sciences and technology policies that foster an adequate R&D level for the country. The acquisition of a minimum R&D level is considered essential since firms need a minimum of technological sophistication to keep up or even to go ahead of competitors in productivity-enhancing technologies and provide the possibility to develop market niches in sectors where domestic firms have an advantage.

Despite this recognition, there are few, however, em-

pirical studies that examine systematically the relationship that may exist between certain technological characteristics (R&D commitment, the introduction of new products and production techniques, spillover effects, etc.) and the export performance of SMFs. This paper examines this relationship by developing a research concept within the basic Industrial Organization framework which provides the necessary elements for analyzing SMFs strategic decisions. To the best of our knowledge this study is the first one to put together elements explaining the export and innovation performance of SMFs. It examines a number of technological characteristics of a sample of small and medium-sized manufacturing firms in Quebec, Canada for the period 1990-96. By separating the sample into two categories, high exporters and low exporters and by associating each of them to its corresponding innovativeness index we examine the contribution of technological characteristics to a firm's export involvement. The empirical results obtained through the application of various statistical techniques do not reject our main hypothesis.



\* Associate professor of industrial economics. Department of Economics, University of Sherbrooke, Canada and Centre Interuniversitaire de Recherche Sur la Science et la Technologie. Phone: (819) 821-8000, ext. 2958, Fax: (819) 821-6930. E-mail: agentz@courrier.usherb.ca

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Studies such as this one which investigating the issues of innovation and export performance of SMFs serve several purposes. First, they lead to a better understanding of the present debate, i.e., whether technological characteristics of SMFs contribute to their export performance in an era characterized by intense international competition. Second, they highlight firms' successful strategies which render SMFs' managers more aware and sensitive to the possible ways with which foreign markets may be penetrated with success. Third, they identify policy options which, if adopted, may increase productive efficiencies and competitiveness in an economy where the pace of deregulation, industrial restructuring and its integration to the global economy poses tremendous challenges to both managers and policy makers as well.

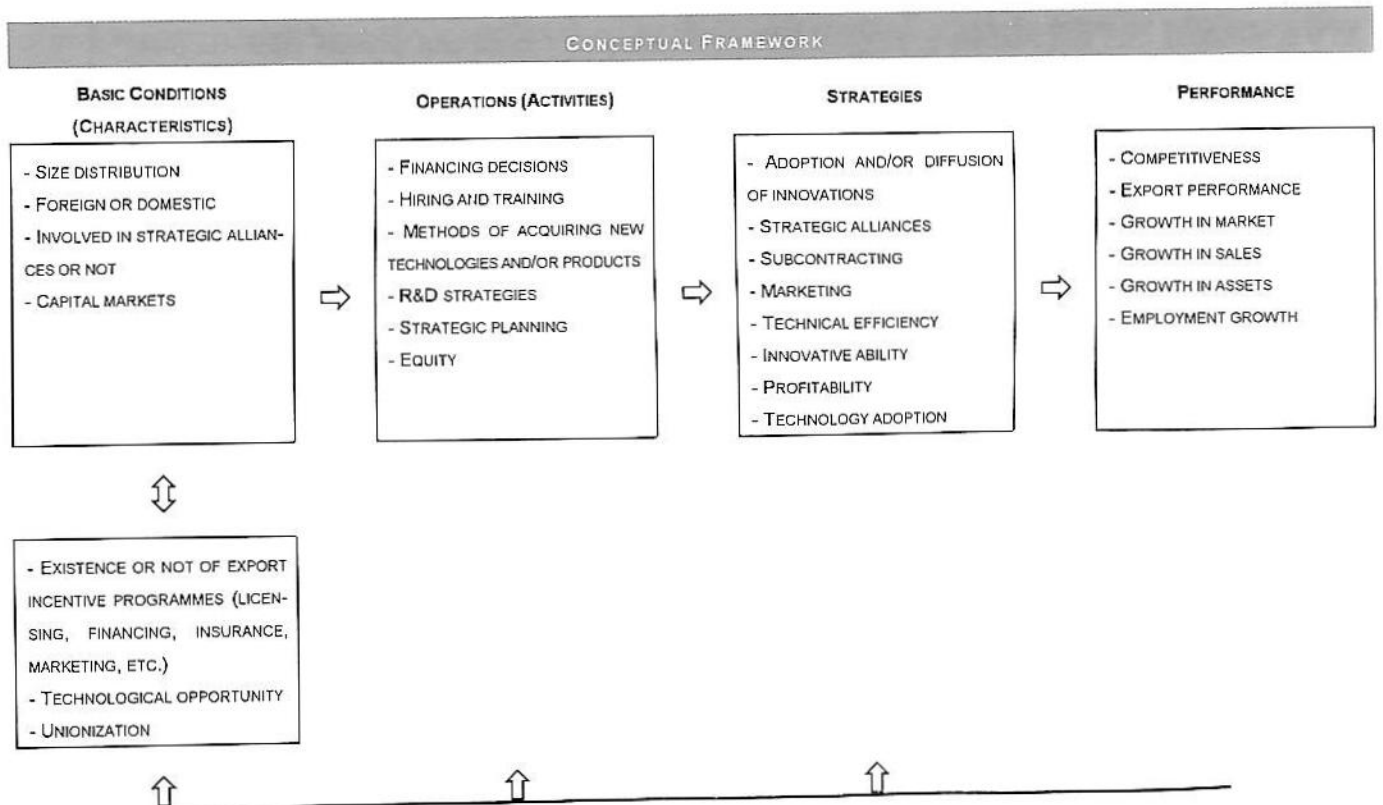
The paper is organized as follows. Section I presents the theoretical framework and examines the bases of the hypotheses linking innovation to export activity of SMFs. Section II presents a brief overview of the empirical evidence on the relationship between SMFs' technological innovation and their export decision. Section III deals with methodological issues and presents the results of the research. Finally, the last section concludes and provides some policy recommendations.

**I. Theoretical framework: innovation and export performance link**

Undoubtedly, a number of factors may contribute to high export rates such as quality of products or services

exported, marketing and distribution channels at home and abroad, marketing strategies of selling low-priced competitive products, good administrative and organizational structure, existence of government and other non-government assistance programmes. Nevertheless, technology plays a vital role in maintaining a good export performance (Mayes *et al.*, 1990; Rosson and Reid, 1987). The strategy of adopting and/or developing successfully new products and production techniques faster than a firm's competitors (first-mover advantage) provides an advantage which, if exploited properly, can help the innovative firm to penetrate national and international markets. SMFs account for a growing percentage of exports and their organizational flexibility renders them capable of penetrating export markets more rapidly than large firms. SMFs are, therefore, a good vehicle in promoting the export orientation of a country (MIC, 1987).

Traditionally, economists have mainly analyzed large-sized firms. Lately, they are turning their attention to SMFs (Reid, 1987, Acs and Audretsch, 1988). The question whether small or large firms are better equipped to conquer export markets is a central one in the current debate. Furthermore, when export performance is associated to innovative performance, size seems to matter a great deal. This is at least the approach taken by authors who adopt the traditional theoretical framework. Within this framework, technological change and export activity are both viewed from a production-of-goods perspective, as a response to the productive efficiency problem.



SOURCE: GENTZOGLANIS, 1994, P. 10.

A firm may achieve savings in production costs (economies of scale and/or scope) only when it manages to increase its size. Apparently, small size impinges negatively on the ability of a firm to achieve the necessary economies of scale and scope and to reduce its costs of production and to realize higher market shares and profitability. Exports are viewed as a means of increasing size and the latter permits firms to acquire easier and at a faster rate new production techniques which render them more competitive (Walters and Samiee, 1990).

With respect to SMFs, this Galbraithian/Schumpeterian-type of hypothesis (i.e., only large firms are capable of generating new technologies), implies that new technologies can be acquired/generated by SMFs only after they have managed to attain high export rates. Exports allow small firms to increase their size and to realize the necessary productive efficiencies and the latter requires the use of new and better technologies. Furthermore, new technologies may allow the introduction of new products which will further enhance SMFs' potential to increase their exports. Technology is thus viewed as an exogenous variable<sup>1</sup> (Baldwin and Scott, 1987).

Technology, however, is increasingly viewed as an endogenous variable, at least within the modern theoretical framework (Levin *et al.*, 1987). The strategy to invest in R&D activities (formal or informal) makes products more sophisticated technically and in many cases price competitive. R&D capabilities enable firms to carry out product adaptation which is frequently necessary to exports. An early consideration of export needs and markets in R&D process allows firms to penetrate export markets faster and this lead time is of considerable importance in the present globally competitive environment. This more aggressive technology strategy enables firms to increase their technical capability in generating and/or imitating new products or production techniques improving thereby their innovativeness and with it their export involvement.

No doubt, the underlying relationship between technological characteristics and export performance is quite complex. The model we present facilitates the conceptualization of certain key aspects of the problem at hand by seeking to identify sets of attributes or variables that determine SMFs' export performance and to build hypotheses detailing the links between these attributes and end performance. The hypothesis to be tested, formulated schematically in this model, states that export performance (competitiveness) depends on the SMFs' strategies, such as adoption and diffusion of new products and production techniques, formation of strategic alliances and subcontracting, marketing, product quality,

low competitive prices, etc. Although each of these factors is theoretically important in explaining export performance, we hypothesize, however, that the innovation strategy is the most effective one in penetrating export markets. It is suggestive to examine, therefore, in some detail the essential technological characteristics of SMFs.

The basic conditions (characteristics) may be divided into two categories. The first one indicates essentially what a firm is and in conjunction with the current strategies employed, they may allow one to make predictions on a firm's future direction. They result from past strategies and performances of SMFs. They cannot be changed in the short run and together with the second category of characteristics (availability or not of government programs, technological opportunity and socio-economic factors) determine the general environment within which a firm is functioning. The identification and the analysis of these characteristics are essential to an empirical study because they may be the determining factors explaining the differences or similarities in performance among SMFs in different industrial sectors.

Activities reflect primarily the short term and long term operations of the firm which are translated into strategies such as the choice of technology to be used, the establishment of R&D facilities, the financing decisions, the hiring, training and monitoring of personnel, etc. Although strategies are difficult to measure, information on activities permits to identify a firm's advantages or disadvantages as well as to formulate policies aimed at correcting their basic disadvantages. For example, if innovation is a problem with the SMFs it is important to know the methods used to acquire innovations and what innovative activities are actually funded. Activities are thus the firm's internal environment. Although the firm may exercise a certain control on it, the latter is not a complete one, but depends on the com-

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1. Traditionally the arguments advanced to justify the positive effect of firm size on inventive activity are the following: first, size is positively correlated with the availability and stability of internally-generated funds. Capital market imperfections may then confer an advantage to large firms in securing finance for risky R&D projects. Second, there could be scale economies in the technology of R&D. This could be attributed to the fixed-cost nature of R&D activities. Indeed, the returns from R&D could be higher the larger the innovator's sales volume given that fixed costs of innovation could be spread over a higher volume of sales. Finally, R&D is alleged to be more productive in large firms as a result of complementarities between R&D and other nonmanufacturing activities—marketing and financial planning—which may be better developed within large firms.



petitive forces currently in place and the firm's past performance. A firm's operational decisions are translated into strategies which will determine its future performance.

Performance is used to evaluate the result of past strategies. Performance cannot be evaluated by using a single variable. Performance can be captured by a number of variables such as growth in assets, sales and employment, exports, adoption of new technologies, the introduction of new products and production techniques, etc. Nevertheless, given that the main interest of this research is to examine the most important factors contributing to export performance of SMFs, we develop an index measuring such a performance. This index is expressed as a weighted average of the ratio of export sales to total sales of the firm over a certain period of time. Such a simple measure captures the degree of a firm's export involvement and referring to the median export involvement level of the group under examination, it allows to distinguish between high and low exporters. Such a categorization further allows a better examination and study of the technological characteristics of each group. This is done in section IV. The next section reviews the empirical literature linking technology to export performance of SMFs.

## II. Technology and export performance: a review of the empirical literature

In recent years there is a growing interest in the role of micro-level factors in explaining firm's export performance (Cohen and Levin, 1989). The past literature emphasized aggregate aspects of public policy, such as the impact of incentives on aggregate export volume. Recently, *entrepreneurship* is being recognized as one of the most important determinants of long-term economic growth (Romer, 1990). The process of reallocating resources and the adoption of production and management know-how is much more accelerated in entrepreneur-driven firms. Entrepreneurship is thus considered to be the driving force of export and/or technology performance with SMFs. In a recent study reported in Mayes *et al.*, (1990), Rhee and Belot demonstrate that export performance by SMFs in eleven countries has been pioneered by a small core of firms which has further encouraged others to export, creating thereby a network important enough to merit attention from other private and public sources and eventually become a national priority.

Although entrepreneurial innovation is important, economists are still debating on the factors inciting business people to become entrepreneurs. For one, entrepreneurial innovation occurs (Freeman *et al.*, 1982)

when new technologies and scientific developments yield economic opportunities that are seized by entrepreneurs; small, dynamic fast-growing firms emerge and become the primary engine of innovation. Furthermore, innovative ideas often stem from the sensitivity firms have to the environment (Aguilar, 1967). Supposing that environment becomes more sensitive when market forces are very intense, it can be conjectured that more innovative firms will emerge during a period of intense competition and industrial restructuring. Supposing further that the latter occurs when technical changes and other destabilizing factors are present, it is expected that small firms with young and dynamic entrepreneurs will be better equipped to develop innovative strategies (new or improved products and processes) and conquer foreign markets. This hypothesis is confirmed in an empirical study (Kahn and Manopochetvattana, 1989) which found that the group of innovative small firms which includes firms younger than the industry average, is more proactive, more risk taking, inclined more to product differentiation, and spend more on research than the second group populated by firms older than the industry average. These younger more entrepreneurial firms have the courage to attempt to lead the market and to support their strategies by spending more than the industry average on R&D.

Entrepreneurial firms not only spend more on R&D but they also use more scientists and engineers. This enables them to develop an in depth knowledge of the technical base which is very significant for further innovations (Devar and Dutton, 1986). Ettlie *et al.*, (1984) focusing on process innovations argue that firms favoring the concentration of groups of technical specialist within a single organization get the maximum from their knowledge. The argument then goes as follow. The more scientists and engineers are used within an organization the more likely is that new technological innovations would be created and implemented within this organization (Hage and Aiken, 1970). This can further contribute to increasing the firm's export involvement. Indeed, Ong and Pearson (1982) found in their empirical study of 88 small and medium sized electronic firms in the UK that the export performance of these firms was better when they had an in-house R&D facility compared to the ones without such facilities. Apparently, this is true even in industries composed predominately by large firms. In that case the existing small firms resort to a strategy of innovation in order to remain viable. This is consistent with Caves' (1982) findings according to which smaller firms can offset their inherent size disadvantage if they use different strategies from those followed by the larger firms after control-

ling for the negative influences of entry barriers.

The innovation strategy seems to be profitable for SMFs even when new ideas are about to be exploited by large firms. Of course, large firms have the advantages in terms of resources, but it is increasingly recognized that small firms may have an edge on large firms with respect to their unfettered speed of response to changing conditions (Acs and Audretsch, 1987). Where the costs of R&D and of capital investment are high, as for example in chemical or pharmaceutical industries, then large firms are better positioned to lead the way to innovations. But in many other industries where entry costs are relatively low, small and medium sized firms play a larger and ever-increasing role in innovation (Rothwell, 1984) and export markets.

Apparently, entrepreneurial innovation depends as well on the industry's life cycle. Several studies, including Pavitt and Townsed (1987) and Acs and Audretsch (1987) suggest that the opportunities for small firms to innovate tend to be higher when the industry is at the early stages of a product's life-cycle. The introduction of a product and its growth stages during its life-cycle are defined by Vernon (1966) as the absence of a standardized product concept in the market. Because the product design is subject to rapid change and evolution, a relatively high level of skilled labor is required, while the production process remains fairly labor-intensive. Thus, the innovative opportunities for the small firms are presumably greater during the early stages of a product's life-cycle. Nevertheless, SMFs can be innovatively active even in mature and declining stages of an industry's life-cycle, when product innovation plays a relatively minor role but capital-intensity becomes a more prominent feature. Since firms in young industries tend to be more innovative, and given that small firms are relatively more numerous in these industries, the innovation rate of small firms would be relatively higher than that of large firms.

As it might be expected, the contribution of small firms to innovation and exports varies considerably between sectors or industrial activities. Turning to relative R&D efficiency of innovation, Wyatt (1984) noted that in 1975, SMF enjoyed two per cent of total national manufacturing R&D expenditure and between 1969 and 1980, small firms produced 20.6% of total innovation, yielding a relative 10.3 R&D efficiency ratio. The comparable figures for the largest firms were 80% and 43.3% respectively, yielding a relative R&D ratio of 0.54. Thus on the basis of these data, R&D efficiency is very much higher in smaller firms. A possible explanation of this, and one favored by Wyatt (1984), is that there is a lower degree of functional specialization in small firms with a higher proportion of innovative ac-

tivities occurring outside of what is formally defined as R&D. This would imply however, that the informal R&D performed by small firms is considerable. For example, even if we ascribe a 20% share of total R&D to the smaller firms their relative R&D efficiency would still be almost twice as much as the one of the largest firms (Rothwell, 1989). This may then imply a higher penetration of foreign markets. In sum, technology may be viewed as a decision variable that a SMF may use strategically for penetrating foreign markets. The linkage may be between innovation and export performance and not the other way around. This relationship is examined empirically in the following sections.

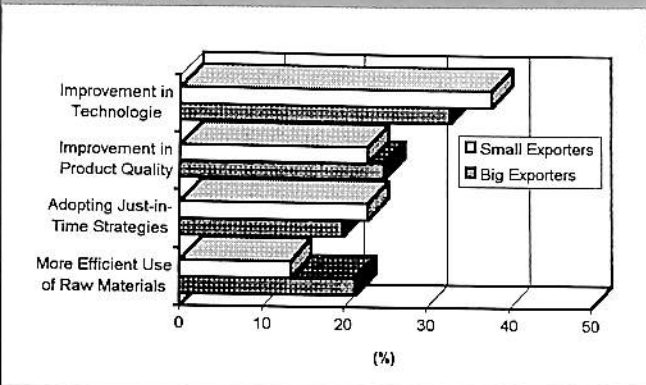
### III. The methodology used

The data were collected by means of self-completed postal questionnaire covering an array of firm characteristics and strategies with respect to products, technology, R&D activities, training programs and the use of government and industry programs. The items in the questionnaire were included after an extensive search of both the export and innovation literature and numerous discussions with industry and government organizations in the province of Quebec, Canada. The questionnaire was pre-tested with eight SMFs in the Sherbrooke region (Quebec), active in both R&D and export activities. The novelty of the study lies in the fact that it takes into account both formal and informal R&D activities and evaluates the role of all levels of government (municipal, provincial and federal) in aiding SMFs to upgrade their technologies and penetrate export markets.

The questionnaire was sent to 300 SMFs in Quebec, in 1996. In choosing the sample firms, a list of establishments which satisfied a number of criteria (size, must have some export sales, and a technical sophistication) was drawn from a bank of more than 7,000 SMFs provided to us by the Centre de Recherche Industrielle du Québec (CRIQ). Data were elicited on Linker-type (see Levin *et al.*, 1987) or itemized rating scales, while quantitative and nominal data were also obtained. We have received 46 usable replies, giving a response rate of about 15%. Although, it is not very high as desired, it is not too critically small to rule out meaningful analysis.

We disposed of two categories of quantitative data. The first one consisted of data directly provided by the firms surveyed, while the second category of data was obtained indirectly from the qualitative responses given in the questionnaire. For evaluating a firm's innovative capacity we constructed an *innovativeness index*, which takes into account the innovative and imitative strategies of a firm and its various ways in acquiring new products

FIGURE 1. STRATEGIES MOSTLY CONTRIBUTED TO ENTERING EXPORT MARKETS.



and production techniques (purchase of a license, mergers & acquisitions, etc.). It is constructed as a weighted sum of the different proportions various strategies have contributed to improving a firm's product and production techniques that had been used by varying degrees of product and technology change during the period 1990-94.

Using the inclusive means method we calculate the scores means for the sample of firms that have replied positively to each category of the questions. From the score mean we calculate the relative means for each category of each question by dividing the sum of the scores of all firms for each individual category by the sum of the scores of all firms, every category included. By ascribing the value of 1 to the mean index, the innovativeness index for every firm is a deviation with respect to the mean. Such an index allows a classification of

firms into low and high innovators. This information can be associated with the low and high exporters variable. A similar methodology is applied to construct various other indices (spillover effects, factors contributing to access foreign markets, etc.). Various indices were then calculated using the relative means and the weighted averages.

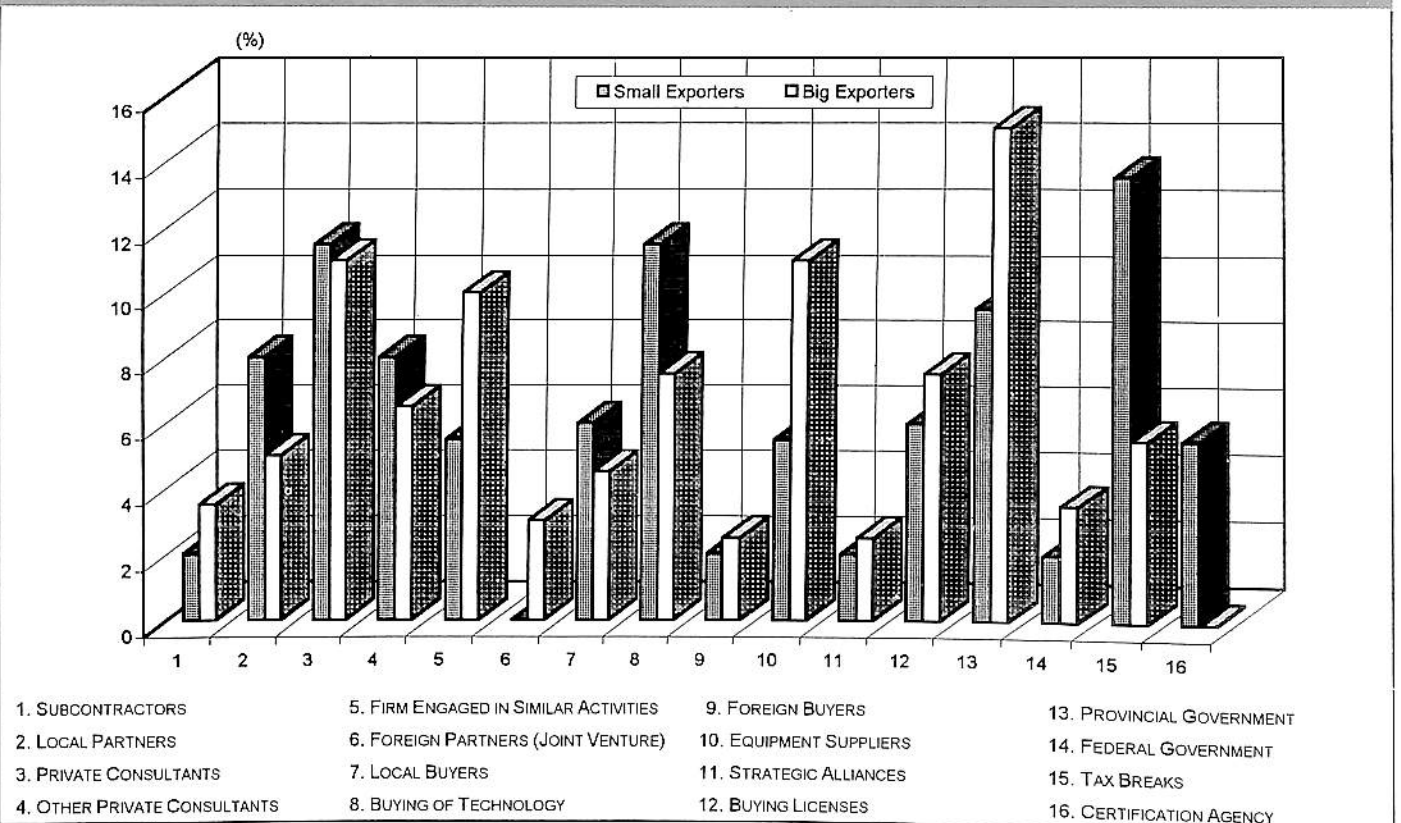
Performance on the other hand can be defined in various ways, each corresponding to a distinct export strategy. For the purposes of this analysis we develop a performance index defined as the weighted average of a firm's export sales to its total sales during the 1990-94 period.

**The results**

The average number of employees per firm is 155 and more than 3/4 of them are in form of partnerships. The majority of the sample exports to other Canadian provinces and to the United States, while there is a small number of them being very active in European and Asian markets. The most important means in penetrating export markets were personal contacts (85% of the firms), while clients is the second most significant factor, implying that reputation (i.e., quality) is an important factor of success.

It is important to note that the most *effective* strategies for penetrating export markets were technology improvement (37.8% of the small exporters) and product

FIGURE 2. FIRM'S EFFORTS TO UPGRADE ITS TECHNOLOGICAL CAPABILITY.



quality (20% for large and 22.2% for small exporters) (figure 1), while the adoption of "just-in-time" strategies were the next most important one (20% for small exporters). Among the most significant hurdles in penetrating export markets were the search for clients and the establishment of contacts. Language problems or bureaucratic procedures are not highly evaluated.

An important and interesting observation is the distinction we make between present strategies used to penetrate export markets and the ones employed at the start-up of the firm. It seems that, at start-up, improvements in the quality of products and techniques of production were the most important ones followed by direct

efforts of the firm. Once reputation (quality) is established and the firm becomes better known, the direct efforts of the firm in getting clients become the most significant factor followed by improvement in quality of products and techniques of production.

For purposes of verifying whether export activities are linked to innovation activities, we examined in detail the firms' technological and R&D characteristics. About 70% of responding firms have had R&D activities. However, only 24% of them had a formal R&D department, while the majority of them (56%) had informal R&D activities. Apparently, there are significant spillover effects in the R&D activities of SMFs. The

FIGURE 3A. MEAN SCORE OF FACTORS WHICH HAVE CONTRIBUTED TO IMPROVING QUALITY/DESIGN OF THE FIRM'S PRODUCT AND/OR PRODUCTION TECHNIQUES.

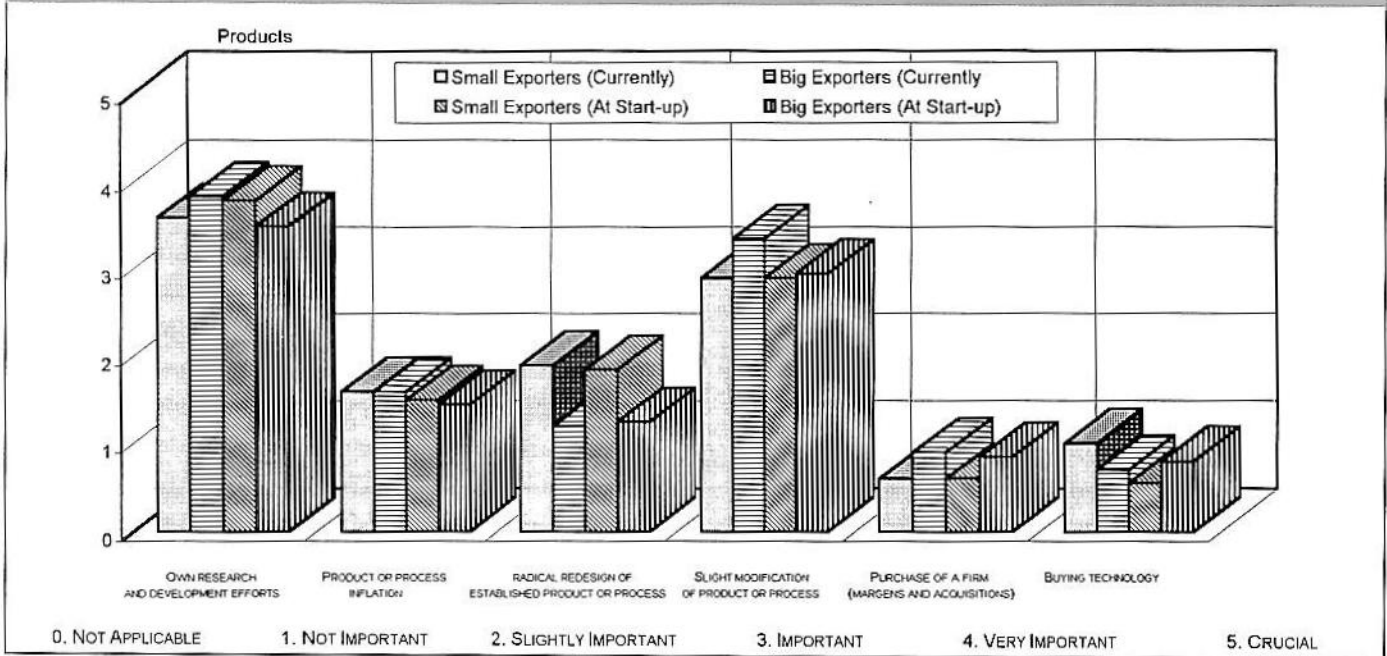
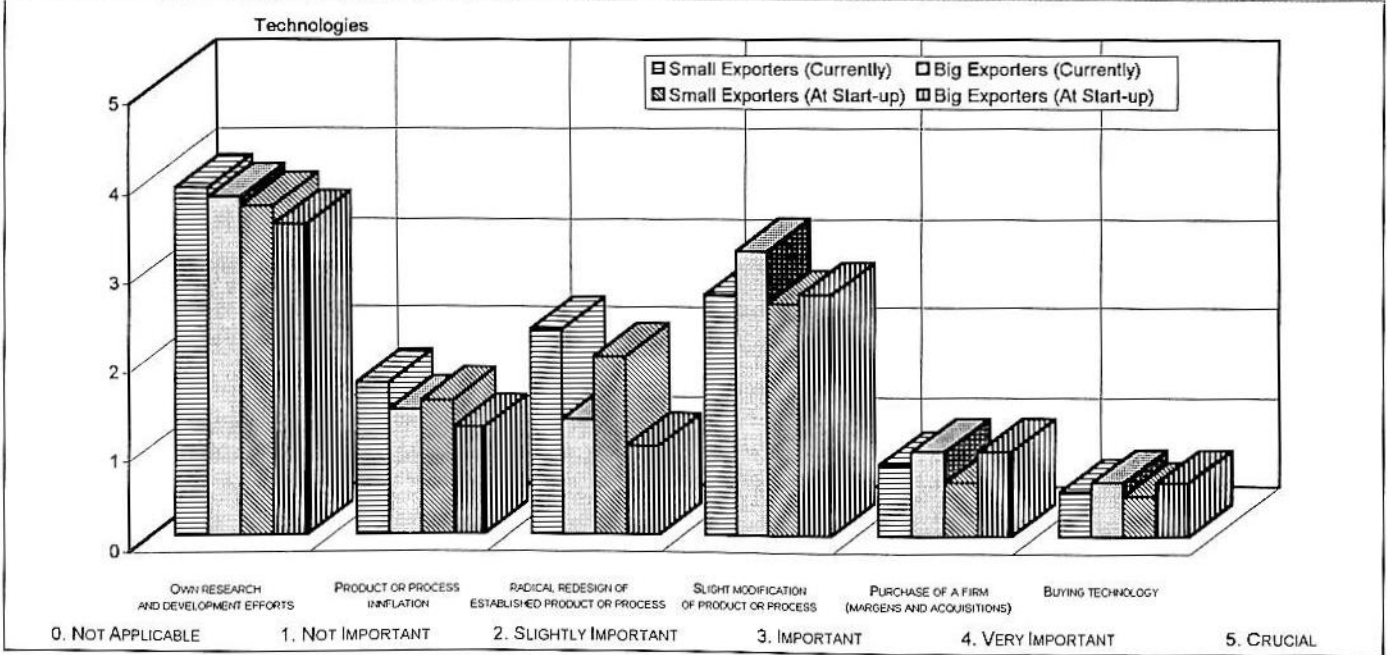
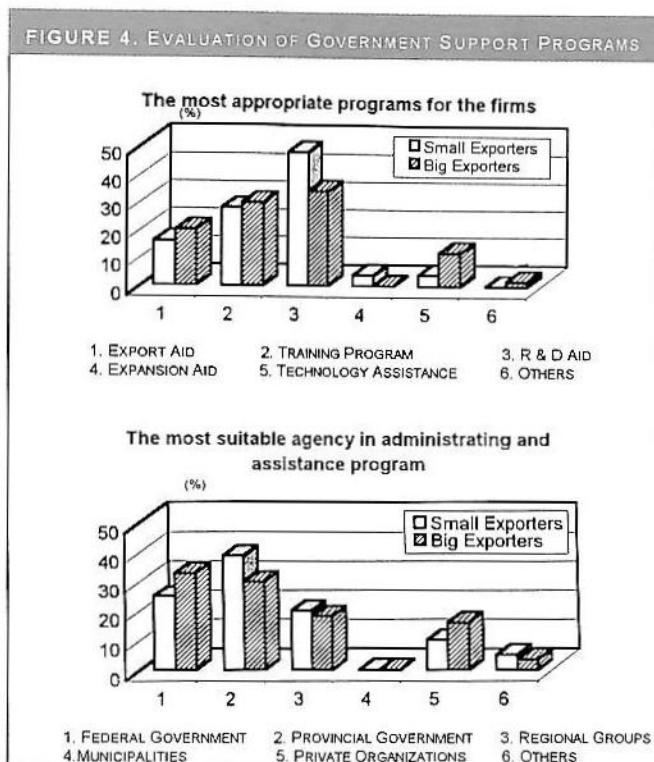


FIGURE 3B. MEAN SCORE OF FACTORS WHICH HAVE CONTRIBUTED TO IMPROVING QUALITY/DESIGN OF THE FIRM'S PRODUCT AND/OR PRODUCTION TECHNIQUES.







**TABLE 1**

**INNOVATION AND EXPORT PERFORMANCE OF LOW AND HIGH EXPORTERS**

INNOVATIVE INDEX OF HX ET LX	HX	LX
ORIGINAL NEW PRODUCTS	19%	8.3%
IMITATED NEW PRODUCTS	3.2%	3.0%
RADICAL REDESIGNED PRODUCTS	15.3%	10.4%
SLIGHTLY MODIFIED PRODUCTS	14.2%	12.4%
UNCHANGED PRODUCTS	16.5%	22.7%
OVERALL INNOVATIVENESS INDEX	39.25%	18.9%

**TABLE 2**

**SIGNIFICANT RESULTS FROM MANN-WHITNEY U TESTS**

INNOVATIVE INDEX OF HX ET LX	HX		LX		Z
	MEAN	SD	MEAN	SD	
ORIGINAL NEW PRODUCTS	0.72	0.15	0.63	0.27	1.73**
IMITATED NEW PRODUCTS	0.56	0.14	0.42	0.13	0.89*
RADICAL REDESIGNED PRODUCTS	0.86	0.21	0.57	0.13	2.45**
SLIGHTLY MODIFIED PRODUCTS	0.69	0.19	0.65	0.22	0.6
UNCHANGED PRODUCTS	0.82	0.27	0.74	0.17	1.92**
OVERALL INNOVATIVENESS INDEX	0.71	0.15	0.54	0.21	2.17**

SIGNIFICANT DIFFERENCES: \*P<0.10; \*\*P<0.05.

technological capability of high exporters has been increased by equipment providers and private consultants, while for low exporters the main sources were private consultants and outside purchase of technology. Govern-

2. The power efficiency of the Mann-Whitney U test is approximately 95% as compared with the t-test. The Mann-Whitney test uses a ranking of all observations in order to test hypotheses regarding two population distributions.

ment plays a significant role in upgrading the technological capability of small firms. Tax breaks are highly evaluated by small exporters (15.5%) while other R&D programs offered by the provincial government are highly estimated by the high exporters (16%) (figure 2).

Most of their R&D effort has been concentrated in introducing new products rather than techniques of production. Moreover, the most important factor in introducing or modifying products was their own R&D effort. Radical redesign of established products was less common than minor changes but common enough to occupy the third place just before radical changes. As far as factors contributing to improving techniques of production are concerned, the firm's own efforts was the most important one. Minor changes in the existing technologies occupied the second most important position. The relative importance of these factors remained the same at the start-up and as a current strategy (figure 3A and 3B).

As far as the role of government is concerned, the results show that both levels of government contribute to a firm's export performance. Responders evaluate more federal government's support (export and technology) programs (29%) compared to the programs established by provincial government and regional groups (25.8%) respectively. As far as the most appropriate government programs are concerned, the R&D aid program is most highly evaluated (51.1% by low exporters and 39.8% by high exporters), while the training and export aid programs get 34.4% and 18.2% respectively (figure 4).

Table 1 reports some differences in innovation for the two groups of exporters. The group of high exporters (firms having an export rate higher than the average) performs better in terms of R&D activities, such as intra-mural R&D than the group of low exporters (LX). The high exporters were doing more formal and informal R&D and had more radical or original product innovations than low exporters. Supposing that these innovations have a greater impact on product prices and costs, no wonder why high exporters succeed better in export markets than low exporters. Nevertheless, the importance of low exporters should not be minimized. Although their products undergo no change at all or they are slightly modified, the export markets are not out of their reach, implying that factors other than innovation strategy (such as marketing, export channel dependence, etc.) may play a role in explaining their export performance. In short, the two groups of firms are different from a technological point of view which may explain as well the significant difference in their export performance.

Table 2 sheds more light on the differences in innovation between low and high exporters. Given the two



samples are not distributed normally, the Mann-Whitney U test<sup>2</sup> is used to test their differences.

The results of the test indicate that high exporters have a higher propensity to get involved in R&D activities. Differences in radical and/or new innovations, as well as the overall innovation activities are seen to be statistically significant between the two groups. High exporters with innovation strategy have a higher propensity to look after foreign markets, given that they have a technological sophistication. This implies that the perceived uncertainty in the export decision situation is lower for innovative firms.


These results should be interpreted cautiously. The reader should bear in mind that these estimates are obtained using a relatively small sample of observations, although quite respectable. The model's explanatory power may increase by using more disaggregated data and longer time periods. By dichotomizing the sample into two periods, it would be possible to take into account structural changes occurred at various time periods especially during the creation of NAFTA and other trade agreements (industrial reconversion measures).

However, in the absence of all this additional information, it may be argued that the present results are quite reasonable. They allow one to argue that SMFs need to develop and adopt strategies related to innovation and networking (collaboration between clients and suppliers) if they want to succeed at export markets. Government support programs seem to be crucial at facilitating identification and the early penetration of export markets. Policy makers aiming at improving a country's technological capability via SMFs should

not underestimate the contribution of government innovation and export programs.

## Conclusions

This study examined the relationship between various technological characteristics and the export performance of small and medium sized Canadian firms. The results do not reject the hypothesis that innovative firms perform better than less innovative ones at the export markets.

From a policy point of view, it can be argued that firms with weak technological capability are more vulnerable to international competition than the ones with a strong capability. Innovation strategies can contribute significantly in improving their competitiveness. From a management point of view, the results suggest that managers have to pay more careful attention to R&D strategies and to the importance of realizing R&D activities (formal or informal) and to follow an aggressive strategy of product development. These strategies are suitable to increasing a firm's technological sophistication and allow a firm to maintain its market niches and even to penetrate more foreign markets. Nevertheless, these results need to be confirmed by other studies and they should not be overemphasized. The methodology in the study can be improved as well as supplemented with other methodological approaches. Furthermore, there is a need for in-depth qualitative and longitudinal studies to better capture the process of the export decision of the firm and its association to the innovation strategy. At any rate, this study offers material for reflection on issues of crucial importance for SMFs and large alike. 



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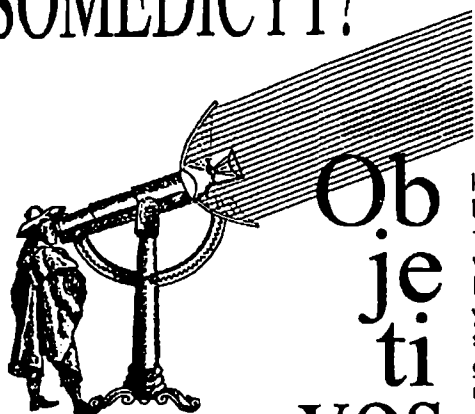
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¿Qué es la SOMEDICYT?

Es una asociación que agrupa a científicos, periodistas, maestros y divulgadores en general, comprometidos con la aplicación de proyectos y actividades para desarrollar y difundir el conocimiento científico y técnico, en diversos espacios abiertos a todos los sectores de la población y a través de distintos medios de comunicación.

## Actividades

Creación del túnel de la ciencia en la estación del metro la Raza de la ciudad de México, Universum y la Casa de la Ciencia en Cuernavaca, Morelos. La realización de congresos anuales de divulgación de la ciencia, la creación del Premio Nacional de Divulgación de la Ciencia en memoria de Alejandra Jaidar, la creación de la Red Nacional de Divulgación de la ciencia, la participación del comité asesor de la Semana Nacional de la Ciencia y la Tecnología, organizado anualmente por el Conacyt y la SEP.



Objetivos

Hacer que el conocimiento científico y técnico sea accesible a toda la población; impulsar y promover la divulgación científica en el país, fomentando el interés y el apoyo de individuos e instituciones; favorecer el acercamiento entre la comunidad científica y el resto de la sociedad; ampliar e intensificar la participación de los científicos y los técnicos en las tareas de divulgación; lograr que la divulgación sea reconocida como una labor fundamental, al igual que la investigación y la docencia; ampliar los canales de divulgación utilizando los medios masivos de comunicación; contribuir a la formación de divulgadores profesionales que adopten el espíritu de la investigación científica: el antidogmatismo, la objetividad y el análisis crítico.

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Informes: Somedicyt, Museo de las Ciencias Universum, Casita de la Ciencia. Planta baja, Circuito Cultural Universitario. Ciudad Universitaria. C.P. 04510. México, D.F. Tel. 622-73-30 fax: 536-18-58. Correo electrónico: delaruz@servidor.unam.mx