

Brazilian Exporters: Non-Financial Export Performance Measurements and Their Determinants

Rosane Gertner

College of Staten Island, City University of New York

David Gertner

Pace University

Dennis Guthery

The Thunderbird School of Global Management

Abstract

For nearly three decades, researchers have examined the determinants of the export success of Brazilian firms. These investigations have adopted myriad independent variables, and most of them investigated their impact on a single measure of export performance. This investigation contemplates the impact of thirteen firm and export market characteristics (independent variables) on three non-financial measures of export performance (dependent measures), examined in past studies. The results indicate that several of the regression models developed are highly significant. In addition, the significance of the impact of individual independent measures seems to differ depending on the dependent measure adopted, which may help to explain the discrepant results of past investigations.

Key words: International Marketing, Brazilian Exporters, Export Performance, Determinants of Export Performance, Export Success

Problem

Understanding the determinants of export performance has been the objective of much empirical research. More than a hundred articles on this subject have been published in leading marketing and international business journals since the 1960s. The conclusions reached by researchers in this area have, however, varied widely. These divergences may be attributed to a number of causes: (1) differences in methodology, in terms of design, sampling, sample size, data collection, and response rates; (2) context, in the form of the industry or sector contemplated by the research, the country of study, the information source, and moment in time when the data were collected; (3) external environmental factors, such as socioeconomic, political-legal, technological, cultural, and competitive forces; and (4) differences in statistical analysis, in terms of method, reliability and validity issues, and discussion and interpretation of the data.

In addition to the above-mentioned grounds for disagreements on the impact of several factors on export performance research, several authors have also raised issues related to export performance measurement. Zou and Stan (1998), who meta-analyzed the empirical research on determinants of export performance through a meticulous review of fifty studies published between 1987 and 1997, stress that researchers have used dozens of names to label their measures of export performance. They argue “This is detrimental to the advancement of the literature, as it makes it hard to compare and contrast the findings from different studies.” Sousa (2004) contends similarly that “The lack of agreement on how to conceptualize and operationalize export performance [is the main reason why] the evidence on the factors affecting export performance is largely fragmented and often contradictory.”

The present study is designed to look anew at some determinants of export performance mentioned in the literature, more specifically, certain firm and export market characteristics that may affect export performance. In addition, the study investigates whether the impact of these independent variables changes when different operational methods of export performance are adopted. Data obtained through a mail survey of Brazilian exporters of manufactured goods is the means by which these questions are addressed.

In the next section, we briefly review the literature focusing on Brazilian export empirical research. Following that discussion, the research questions of this article are stated. The methodology adopted in the investigation is then described, and the results are presented and discussed. Lastly, some conclusions are presented in the final section of this article.

Literature Review

Despite a substantial number of studies, the conclusions that can be drawn from the literature on export performance are often conflicting (Zou, Taylor, and Osland 1998). A major cause of the conflict arises from the utilization of different measures of export performance. Shoham (1998) identified 29 measures of export performance found in the literature. More recently Sousa (2004) reviewed 43 empirical studies published between 1998 and 2004 and noted 50 different operational aspects of export performance. Katsikeas, Leonidou, and Morgan (2000), who reviewed more than 100 empirical studies dealing with export performance, contend that export performance is one of the most investigated issues in international marketing and, likely, the most controversial. They argue, “To some extent, this problem can be ascribed to difficulties in conceptualizing, operationalizing, and measuring the export performance construct, often leading to inconsistent and conflicting results” (page 493). Several authors have attempted to develop a

more structured and consistent approach to research in this field by addressing export performance as a construct (Madsen 1987; Matthyessens and Pauwels 1996; Zou, Taylor, and Osland 1998; Shoham 1998; and Diamantopoulos 1998). As with any measure, export performance measures consist of conceptual and operational definitions (Tull and Hawkins 1987). The conceptual definition attempts to define export performance. The operational definitions establish how export performance can be measured. Conceptual definitions of export performance are explicitly stated in only a very few studies and only a few researchers have developed conceptual definitions of export performance.

Since the early 1970s, when Brazilian exports increased dramatically, scholars and practitioners have investigated this phenomenon. In one of the pioneering studies on the topic, "Manufactured export promotion in a semi-industrialized economy: The Brazilian case," Tyler (1973) suggested that the success of Brazilian industrial exports was a function of several independent variables such as exchange rates, tax incentives, recession effect, industrial production, LAFTA effects, and world trade volume.

Most of the studies on Brazilian exporting written during the 1980s focused on the individual firm. Some authors attempted to identify the motivations or reasons why particular Brazilian companies began to export (Guagliardi 1981; Souza et al. 1983; Fleury 1986). Others investigated perceived barriers or obstacles faced by Brazilian exporters (Guagliardi 1981; Figueiredo and Almeida 1988; Da Rocha and Christensen 1987). Another topic widely addressed by researchers was the factors that impacted export performance (Fleury and Figueiredo 1980; Gonçalves 1983; Christensen, Da Rocha and Gertner 1987; Carvalho and Guimarães 1988).

In one of the most influential studies of the Brazilian export phenomenon, "An empirical investigation of the factors influencing exporting success of Brazilian firms," Christensen, Da Rocha, and Gertner (1987) made, for the first time, a longitudinal comparison of data collected in 1978 and 1984. The objective was to investigate whether firm characteristics, export management practices, and managers' perceptions of exporting activities could explain the continuance or cessation of exporting by Brazilian companies. The study concluded that in 1978, it would have been possible to predict the firms in the sample that would still be exporting six years later, based on a number of variables, such as regularity of exports and attitudes towards government incentives. Consistent with other findings (Leite et al. 1988; Gonçalves 1983), firm characteristics, particularly size as measured by total sales, seemed to determine largely which firms continued to export and which did not.

Da Rocha and Christensen (1994), in an attempt to summarize research in the field, reviewed 27 studies, several of which were unpublished master's theses or doctoral dissertations available only in Portuguese. The authors categorized the variables that this research indicated as possibly associated with export performance into four groups: Manager Characteristics, Firm Characteristics, Country Characteristics, and Strategy. The authors stress that although not many Brazilian studies had examined the influence of firm size on export performance, those that did found that variables such as size and capital ownership (national vs. foreign) were significantly associated with the performance and export profitability of the Brazilian exporters (Gonçalves 1983; Da Rocha and Gertner 1987). Furthermore, Da Rocha and Christensen (1994) state that limited and contradictory evidence was available concerning the relationship between country characteristics and the performance of Brazilian exporters. Yet the authors noticed that overall the findings of Brazilian researchers on the country's export economy were similar to those of foreign researchers.

Export performance measurement is also an issue in Brazilian-authored empirical research. Dominguez and Siqueira (1993) pointed out that the difficulty of comparing studies on export performance of Brazilian manufacturing companies was due to the fact that the studies used different measures. Da Rocha and Christensen (1994) also reported that in Brazilian-authored research, export performance has been measured according to different criteria, such as export volume, export regularity, export growth, exporting vs. not exporting, export experience, and export involvement.

The study of Brazilian exporting has nevertheless yielded some noteworthy contributions. De Luz (1993), for example, brought to light how export strategies and managers' perceptions and attitudes towards export activities influenced the performance of Brazilian manufacturers. In a more recent study, Aulakh et al. (2000) compared the performances of Brazilian, Chilean, and Mexican exporters, utilizing a four-item scale that assessed the overall role of exports in a firm's sales growth, market share, competitive position, and profitability.

Following a period in the 1980s and 1990s of much productive research, interest in the study of Brazilian exporting has dramatically decreased. The conspicuous changes in the global economy and in the competitive and legal environments now present an opportunity to revisit and reexamine the conclusions of previous studies. Exporting continues to be an important economic activity for most developing nations. It has grown significantly in Brazil in recent years. As a result, an understanding of the factors that influence the export performance of Brazilian firms, and a comparison of the findings of Brazilian researchers with those presented in the international literature continue to be important goals of study.

Research Questions

Based on information collected from a random sample of 114 Brazilian exporters of manufactured goods, this study reexamines firm and market characteristics investigated in past studies that might explain export performance. It also investigates whether the significance of these variables changes as different export performance measures are adopted as dependent variables. Hence, two research questions are addressed:

Q 1: What firm and market characteristics (independent variables) significantly impact the export performance (dependent variable) of Brazilian exporters of manufactured products?

Q 2: How do the significant export success factors—firm and market characteristics (independent variables)—differ when diverse measures are used to assess export performance (dependent variable) of Brazilian exporters of manufactured products?

Methodology

The vast published research on export performance and its success factors from the early 1980s until 2003, when this study was conceived, served as the basis for the research instrument developed for this study. A convenience sample of five business executives answered the first draft of the questionnaire. After they did so, they were interviewed, and some of their comments and suggestions with regard to the instrument were incorporated in the questionnaire design.

Given the characteristics of all the data studied, such as number of Brazilian exporters, their differences in size, and their geographic distribution, a mail survey of a randomly selected sample was felt to be the best way to collect the information necessary to address this study's

research questions. Mail survey was also used by forty-two out of the fifty studies reviewed by Zou and Stan (1998) in their meta-analysis of the export performance literature. Only ten percent of the studies they reviewed used personal interviews, and another two percent were based on secondary data.

The research sample was selected from more than 19,000 Brazilian exporters listed on Aliceweb in 2003. Aliceweb was a free online database maintained by SECEX (Secretaria de Comércio Exterior), an agency of MDCI (Ministério do Desenvolvimento, Indústria e Comércio Exterior—the Brazilian Ministry of Development, Industry, and Trade) which provided different statistics and export and import information. According to MDCI, the number of individuals and of micro, small, medium, and large firms that exported from Brazil increased from 19,340 in 2002 to 19,796 (Aliceweb) by 2004.

The data collection was conducted between October 2003 and March 2004. A total of 600 questionnaires were mailed to Brazilian exporters of manufactured products—480 from the original list and 120 replacements. A total of 114 questionnaires were returned, or 18.4% of the total questionnaires mailed, which is consistent with previous return rates.

To investigate the research questions, this study adopted, from past studies, three non-financial dependent measures concerning export performance and seventeen independent measures concerning firm and export market characteristics. These variables are described below: The non-financial measures of export performance are: (1) Perceived Export Experience – if the company is perceived as highly or poorly experienced; (2) Perceived Export Performance – if the exporting performance goals have been accomplished or not; and (3) Perceived Export Achievement – level of satisfaction with company's export achievements.

The independent variables which reflect firm characteristics, export market characteristics, and export experiences are: (1) Export Organization—whether or not the firm has a department/division responsible for exports; (2) Export Executive—whether or not the firm has an executive responsible for exports.; (3) Export Personnel—number of employees involved in export activities; (4) Number of Export Markets—number of countries to which the firm exports; (5) Export Regularity—whether the firm exports frequently, occasionally, or rarely; (6) Company Size/Employees—number of employees (1–19, 20–99, 100–499, 500+); (7) Idle Capacity—percentage of idle capacity (average of the last three years); (8) Number of Years Exporting—number of years since the firm began to export; (9) Capital Origin—percentage of national capital in ownership; (10) Company Size/Sales—annual sales revenue in US\$ (average of the last three years); (11) Years in Business—numbers of years in operation.; (12) Local Business Experience—number of years in operation in Brazil.; (13) Physical Proximity of Main Export Markets—degree to which three main export markets are neighboring; (14) Cultural Proximity—degree to which firm is close to all three main markets of Portuguese or Spanish heritage; (15) Market Diversity—whether three main export markets are located on at least two continents; (16) One Industrialized Market—whether at least one of the three main export markets is industrialized; and (17) All Industrialized Markets—whether all three main export markets are industrialized.

A Pearson Correlation Analysis with the seventeen independent measures was conducted. Correlations equal or greater than 0.5 were then examined. The 0.5 cutoff level was considered stringent enough not to worry about VIF or other collinear diagnostics. The discussion led to the exclusion of four of the independent variables. Therefore, thirteen independent measures were retained for the study.

Six regression analyses were conducted to investigate this study's research questions, two for each of the three non-financial dependent variables. Most of the collinear diagnostics were

below 100, and multicollinear factors did not seem to cause any unstable mathematical calculations. In the first of the two regressions run for each dependent measure, all thirteen variables were entered. The second regression used the step method to select the variables to be included in the model from among the thirteen independent measures. Summaries of the results are presented in Tables 1 and 2.

Results

Table 1 displays a summary of the results of the three linear regression analyses that included all the thirteen independent variables used in the study and which used the enter method. Two of the three models are highly significant, with $p < .000$. The portions of the variance explained by the independent variables in these two models are rather high, with R^2 ranging from .591 to .641. Each of the regression models comprised a different combination of significant independent variables, as described ahead.

When Perceived Export Experience served as the dependent measure ($R^2 = .641, p < .000$), the independent variables that presented significant coefficients were: Export Organization, Export Regularity, and Idle Capacity. The model in which Perceived Export Performance was the dependent measure ($R^2 = .591, p < .000$) included five variables with significant coefficients: Number of Export Markets, Export Regularity, Idle Capacity, Firm Size (Sales), and Firm's Age in Brazil. The third model, with the dependent variable Perceived Export Goals Achievement, was found moderately significant ($R^2 = .378, p < .10$, or = .074), and the coefficient of only one independent variable was significant: Export Regularity.

A summary of the results of the three step-regression analyses is presented in Table 2. All of the three models are highly significant, five of them with $p < .000$. The models included different sets of two, three, or four independent variables with significant coefficients ($p < .05$). The models' R^2 ranged from .294 to .569. When Perceived Export Experience was used as dependent measure ($R^2 = .569, p < .000$), the model included four independent variables: Export Organization, Export Regularity, Idle Capacity, and Number of Years Exporting. The model that had Perceived Export Performance as dependent variable ($R^2 = .457, p < .000$), included the following three independent measures: Number of Export Markets, Export Regularity, and Firm's Age in Brazil. Lastly, when Perceived Exports Goals Achievement served as the dependent variable, the model ($R^2 = .294, p < .000$) included only two independent measures: Number of Export Markets and Export Regularity.

Discussion

Q 1: What firm and market characteristics (independent variables) significantly impact the export performance (dependent variable) of Brazilian exporters of manufactured products?

To address this research question, we ran three regression models, each one using a different non-financial measure of export performance as dependent variable. These three dependent variables were regressed against the set of thirteen firm and export market characteristics used as independent variables. The discussion below is mostly based on the results displayed in Table 1.

According to the results of this study, independent variable Export Organization does not seem to be imperative to explain the performance of Brazilian exporters of manufactured goods.

The variable was found to have a significant impact in only one of the three measures of export performance—Perceived Export Experience.

Another variables that also seems to have a minor impact on export performance are Export Personnel, Firm Size (Employees), Capital Origin, Firm Age, Physical Proximity of Main Export Markets, and Top Three Export Markets Industrialized. These independent variables weren't found to significantly ($p < .05$) impact any of the measures of export performance.

When enter method was used, the independent variable Number of years Exporting was found to be only indicatively significant in one of the three models – Perceived Export Experience. However, it appears as one of the four independent variables that better explain variances in the export performance measured by the dependent variable - Perceive Export Experience. This last variable, Number of years exporting, has been an independent variable pervasively used in past studies as an indicator of experience and expected to be positively associated with export performance.

On the other hand, Export Regularity seems to be single the most important factor associated with the export performance of Brazilian exporters of manufactured goods. The measure's coefficients were found to be significant in all of the three models using non financial measures of export performance—dependent variables using enter or step methods.

The independent variable Idle Capacity appears to have a significant impact on Perceived Export Experience, and on Perceived Export Performance.

The independent variable Firm Size (Sales) seems to have an impact Perceived Export Performance. Interestingly, this only happens when the variable is combined in the model with other firm and market characteristics (regression using the enter method). When the regression analysis is forced to choose the variables that have the best fit (step method), the variable is not included in any of the models.

Firm Age in Brazil seems to have a significant impact only on one dependent variable, Perceived Export Performance. Interestingly, the significant coefficients were negative, which indicates that the younger a firm is in Brazil, the better its performance.

Q 2: How do the significant export success factors—firm and market characteristics (independent variables)—differ when diverse measures are used to assess export performance (dependent variable) of Brazilian exporters of manufactured products?

To address Research Question 2, the thirteen independent variables—firm and export market characteristics—were regressed against the three measures of export performance using the step method. The intent was to force the models to opt for the most significant independent variables and to drop out the variables that did not add value to the regression equations.

Five independent variables—Export Personnel, Capital Origin, Firm Size (Employees), Capital Origin, Firm Size (Sales), Firm's Age, Physical Proximity of Main Export Markets, and Top Three Export Markets Industrialized—were dropped out of all three models when the step method was employed. This means that only six of the thirteen independent variables were included in the step-regression models (see Table 2).

Examining the three step models depicted in Table 2, one will notice that, as anticipated, firm and market characteristics associated with the performance of Brazilian exporters of manufactured goods seem to vary depending on the measure of export performance adopted. Most of the step-regression models, all highly significant, included different arrangements of two, three,

or four independent variables out of the thirteen firm and export-market characteristics investigated.

Only one independent variable seemed to work as well when different measures of export performance were adopted. This variable is Export Regularity, a measure that indicates whether the firm exports frequently, occasionally, or rarely. This measure integrated all three step-regression models. In addition to Export Regularity, two of these three models also included the independent variable Number of Export Markets. Lastly, four independent variables—Export Organization, Idle Capacity, Number of Years Exporting, and Firm's Age in Brazil integrated one of three models, combined in different manners.

Conclusions and Implications for Future Research

The results of this investigation allow us to draw some interesting conclusions. First, it is relevant to notice that the group of significant independent variables included in the regression models may vary depending on whether the regression combines all the independent variables (regression using the enter method and the 13 independent measures), or whether the model is forced to choose from among the variables those that have the best fit (step regression), as the comparison of Table 1 and Table 2 indicates. Also important to point out is that, in most cases, a small set of independent variables can significantly explain a large portion of the variance of the dependent measures.

The results indicate that several determinants of export performance studied in the past, such as Export Organization, Export Personnel, Firm Age in Brazil, Physical Proximity of Main Export Markets, and Top Three Export Markets Industrialized, can only help to explain particular measures of export performance.

Independent variable Export Regularity was included in all the three regression models obtained through enter or step-regression analysis and seems to be the most important determinant of export performance among the thirteen variables studied. Another important determinants of export performance seems to be Number of Export Markets, a variable that integrated two of the step models, and Idle Capacity, a variable that loaded into two of the three enter method-regressions. Four out of the thirteen independent measures—Export Organization, Idle Capacity, Number of Years Exporting, and firm's Age in Brazil—were each included in only one of the three step models. Lastly, seven out of the thirteen independent variables used in previous studies and in this study—Export Personnel, Firm Size (Employees), Capital Origin, Firm Size (Sales), Firm's Age, Physical Proximity of Main Export Markets, and Three Main Export Markets Industrialized—were not included in any of the three step-regression analyses.

In conclusion, this study confirmed that part of the discrepancy regarding the significance of the determinants of export performance might be explained by the fact that past studies have measured export performance in different ways, as many authors conjectured. Therefore, scholars must more stringently define the dependent variable used in their investigations, rather than using the generic label “export performance” as definition. Lastly, it is interesting to notice that perceived success in export seems to be more related with regularly of exporting and number of export markets that the company serves rather than with number of years that the company exports.

TABLE 1
Multiple Regression Analyses – Enter Method
Dependent Variables – Non-Financial Measures of Export Success
Independent Variables – Firm and Export Markets Characteristics

INDEPENDENT VARIABLES Firm and Export Markets Characteristics	DEPENDENT VARIABLE		
	EXPORT SUCCESS		
	Non-Financial Measures		
	Perceived Export Experience	Perceived Export Performance	Perceived Export Achievement
	β Coefficient (t value)	β Coefficient (t value)	β Coefficient (t value)
Export Organization	.287 *	.173 (1.302)	.108 (.661)
Export Personnel	.083 (.682)	.177 (1.361)	.214 (1.334)
Number of Export Markets	.244 † (1.910)	.487 *** (3.567)	.198 (1.178)
Export Regularity	-.266 * (-2.298)	-.350 ** (-2.827)	-.364 * (-2.385)
Firm Size (Employees)	.081 (.636)	.167 (1.231)	.212 (1.265)
Idle Capacity	.257 * (2.297)	.287 * (2.407)	.115 (.781)
Number of Years Exporting	.238 † (1.962)	.029 (.225)	.058 (.361)
Capital Origin	.046 (.390)	-.224 † (-1.776)	-.134 (-.865)
Firm Size (Sales)	-.007 (-.054)	-.330 * (-2.348)	-.030 (-.173)
Firm Age	-.070 (-.525)	-.160 (-1.134)	-.075 (-.429)
Firm Age in Brazil	-.102 (-.956)	-.331 ** (-2.906)	-.117 (-.832)
Physical Proximity of Main Export Markets	-.056 (-.547)	.000 (.004)	.104 (.772)
Top Three Export Markets Industrialized	.061 (.410)	-.066 (-.413)	-.207 (-1.060)
Model Statistics			
R ²	.641	.591	.378
Adjusted R ²	.521	.454	.170
F	5.349	4.327	1.821
Sig.	.000	.000	.074

† p < .10; * < .05; ** p < .01; and *** p < .001

TABLE 2
Multiple Regression Analyses – Step Method
Dependent Variables – Financial and Non-Financial Measures of Export Success
Independent Variables – Firm and Export Markets Characteristics

INDEPENDENT VARIABLES Firm and Export Markets Characteristics	DEPENDENT VARIABLE		
	EXPORT SUCCESS		
	Non-Financial Measures		
	Perceived Export Experience	Perceived Export Performanc e	Perceived Exports Goals Achievement
	β Coefficient (t value)	β Coefficient (t value)	β Coefficient (t value)
Export Organization	.303 *** (2.787)		
Export Personnel			
Number of Export Markets		.427 *** (3.715)	.272 * (2.136)
Export Regularity	-3.69 *** (-3.397)	-.417 *** (-3.669)	-.381 ** (-2.987)
Firm Size (Employees)			
Idle Capacity	.258 * (.011)		
Number of Years Exporting	.292 ** (2.686)		
Capital Origin			
Firm Size (Sales)			
Firm's Age			
Firm's Age in Brazil		-.264 * (-2.418)	
Physical Proximity of Main Export Markets			
Top Three Export Markets Industrialized			
Model Statistics			
R ²	.569	.457	.294
Adjusted R ²	.533	.424	.265
F	16.780	13.745	10.389
Sig.	.000	.000	.000

† p < .10; * < .05; ** p < .01; and *** p < .001

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